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ORIGINAL LECTURES.	Administrative Matters. —The Bill for the Amendment of the Medical Act, 1859, &c. (Continued from p. 798.)	PROFESSORIAL CORRESPONDENCE.	THE CHAIRMAN'S ADDRESS TO THE FELLOWS OF THE MEDICAL SOCIETY OF LONDON.
Lecture on General Hygiene Delivered by Dr. Henry H. Mudge, F.R.S., at the Lecture Hall, 11, St. Andrews Place, N.	ORIGINAL ARTICLES.	GENERAL CORRESPONDENCE.	REPORTS OF THE ASSES OF THE MEDICAL SOCIETY.
GENERAL CORRESPONDENCE.	The Food of William Palmer	Signs of Eye in Cholera	The Medical Profession
Case of Syphilitic Meningitis Cerebrum. By Henry Green, M.D., F.R.C.S. Edin., and M.B.A.	The Influence of Saline in Medicinal Waters	Resection of the Antrum	Case of Acute Enterocolitis
Case of Dropsy of the Larynx. By Henry H. Mudge, M.D., F.R.C.S.	REVIEWS.	On the Treatment of Cholera	MEDICAL NEWS.
THE LONDON PRACTICE OF MEDICINE AND SURGERY.	An Inquiry into the Effects of the Symplics of the F.R.S., &c.	On the Treatment of Cholera	News of the College of Surgeons Appointments and Elections Deaths
Dr. W. G. Harrison's New Treatise on Hygiene in the Medical Profession and the Public Health of the United Kingdom and the Colonies	A Manual of Pathological Anatomy, and of the Practice of the Medical Profession. By Frederick Mack- enzie, M.D., F.R.C.S.	On the Treatment of Cholera	Medical Correspondence from London &c.
	FOREIGN CORRESPONDENCE.	On the Treatment of Cholera	On the Treatment of Cholera
	France	On the Treatment of Cholera	On the Treatment of Cholera

A Course of Practical Chemistry,
designed for the use of Medical Students, and adapted to the
requirements of the Examinations of the Royal College of
Physicians, and of the Royal Society of Medicine, &c.
London: John Churchill, New Burlington Place.

Records of Obstetric Consultation
compiled, and a Treatise on, by Dr. W. G. Harrison, M.D., F.R.C.S.
London: John Churchill, New Burlington Place.

On the Medical Selection of Lives
for Insurance, by WILLIAM MORTON, M.D., F.R.C.S.
London: John Churchill, New Burlington Place.

The Editors beg to announce that the
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and that the paper will be sent free to all subscribers.

What our Food consists of, and How
it is assimilated, by Dr. W. G. Harrison, M.D., F.R.C.S.
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Crawford, F.R.C.S.
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with
London: John Churchill, New Burlington Place.

ORIGINAL LECTURES.

LECTURES

ON

GENERAL NATURAL HISTORY.

By THOMAS H. HUXLEY, F.R.S.

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LECTURE II.

We have found that it is the peculiar characteristics of animals as living beings to pass through a cycle of successive changes of form—a cyclical development, in fact. Now, in four out of the five great sub-kingdoms of animals, not only are the first vital changes (comprising the process of yolk division) of the same character, but the forms of the periods of visible matter which exhibit them is the same. In the Vertebrata, the Mollusca, the Annelida, and the Coelenterata it is an "ovum," a minute spheroidal mass, containing a cavity with a central particle—the germinal vesicle and spot—usually located by a surrounding vitelline envelope. An ovum is essentially a bud-like detached process of the parental substance; but it differs from other buds in that it requires to be subjected to the influence of a spermatozoon, the bud-like product of another organism, or of another part of the same organism, before its development can commence.

The general nature of the process of development has been well formulated by Von Baer as the gradual differentiation of the simple into the complex, a definition which holds equally well whether we consider the germ histologically or morphologically. The special nature of development will be fully considered in treating of each class, but I wish now to direct your attention to the fact, that development not only begins in an ovum but ends in the production of one, or of its equivalent, the spermatozoon. Development, in fact, ceases only with the attainment of the adult condition, and the mark of the adult condition is the production of one or spermatozoa in the reproductive organs of an animal. Hence the vital changes are cyclical; beginning with an ovum they end in an ovum; and thus, though there is a physical continuity between the progenitors of a race and her latest progeny, yet the material substance presents a series of distinct, though constantly recurring, cycles of form.

I have restricted these remarks to the four higher sub-kingdoms of the animal world, for at present there is much doubt whether they will apply with equal truth to the Echinodermata. Ova and spermatozoa have hitherto been found only in some of the Spongiaria, and we possess no evidence of their existence in the Foraminifera, Graptolites, Thalamidæ, or Infusoria proper. Does the axiom "omne vivum ex ovo" hold here, or does the opposite hold? I think it mainly in our insufficient knowledge? It is only, I think, in our investigations here to show, that among the lower animals there is hardly any limit to the number of times cycles of change into which the great cycle, from ovum to ovum, may break up under favourable conditions.

The proposition that every living thing proceeds from an egg is locally maintained in opposition to the doctrine of "apoptical generation;" but it was not held to be inconsistent with the latter by the illustrious proponent of the axiom himself, who expressly states, that he means by "ovum" merely the "generative capsule"—substantive capsule, or rather, latent, potential; which "potentiality," he allows, may arise either spontaneously or from pre-existing forms of life.

NO. 10. By beginning the following passage, among others,—"I have sometimes ventured to conjecture, and of it myself, that the ovum, strictly speaking, does not exist as the generative potential, but as the generative actuality, and that it is only in the moment of its division that it ceases to be a mere potentiality, and becomes a true ovum, or rather, a true germ, or rather, a true embryo."—Huxley, *Philosophy of Zoology*, p. 107. "The ovum, strictly speaking, is not a mere potentiality, but a true ovum, or rather, a true embryo."—Huxley, *Philosophy of Zoology*, p. 107. "The ovum, strictly speaking, is not a mere potentiality, but a true ovum, or rather, a true embryo."—Huxley, *Philosophy of Zoology*, p. 107.

If it turn out that some of the processes never develop either as an spermatozoon corresponding with those of the higher animals, we shall have to add the word "ovum" in the aphorism in as wide a sense as that in which Harvey employed it. But even in this case, so long as such "potentially" is invariably found to proceed from forms similar to those which it produces, we shall be as far as ever from "apoptical generation."

The latter phrase is, in fact, intelligible in only two senses; either it means that stable matter which forms in the formed part of one kind of living being may give rise to some other quite distinct kind; or else that visible matter may arise independently of all pre-existing life, and develop into a living being. For the latter form of life I believe there is no shadow of scientific evidence, and indeed it is very strange to suppose that the former has still its supporters, and it must be constantly confessed, that the phenomena presented by mould growth on the one hand, and those attending the origin of the great plant on the other, are so completely perplexing to render any a priori rejection of cases of apoptical generation, in this sense, highly unphilosophical. There is no doubt, however, that the whole course of modern investigation tends to show that the probabilities against the occurrence of apoptical generation are enormous. It goes, that nothing but the very highest class of evidence can justify its assumption in any given case. [3]

Among the higher animals, we trace the whole developmental cycle proceeding from a single ovum—the case of the whole series of changes from the embryo to the adult condition—the individual. The individual man is neither the embryo nor the child, nor the youth nor the adult man, but the sum of all these. No part of the individual among these higher forms can live independently, and its successive states pass so gradually into one another, that there is no dividing between our ideas of independence and those of individuality; on the contrary, they are so mixed up, that we cease to regard them as one and indivisible. However, even in the lower vertebrata, the amphibia, for example, we find a certain difference presenting itself, the successive developmental stages of the vertebrate—the embryo and the frog, presenting wider and more sharply marked distinctions. The difference increases as we enter the invertebrate series, where, among the insects for instance, the successive stages of development, the larva, pupa, and imago states are so all appearance so definitely separated from one another, and so widely distinct, that their development has received the particular and distinctive application of "metamorphosis." I would particularly observe, however, that this process differs in an essential respect from ordinary development; the periodical cycles of the caterpillar are no more than the equivalent of the constant and invariable casting of the epidermal organs in other animals; the larva skin—the pupa case, simply amounts from view these developmental changes of the most ordinary character, by which the larva is converted into the imago; and the case of the larva, pupa, and imago conditions constitutes the individual insect.

Suppose now that the cast larval skin, or the pupa-case, could live for a while after their separation, just as the tail of a lizard will live for a while after its separation from the body—would this alter the nature of the case? I would the larval skin cease to be what it was before? a stage in the life of the individual—a more independent part of the individual in fact. Assuredly not. But this is by no means a hypothetical case. We shall find among the siphonophorans, that certain siphonophore undergo a metamorphosis of precisely this kind—the *Niphonaria* larva possessing a certain amount of vitally independent of the structure things to which it gives rise. In this case, therefore, it is possible, that the successive stages of the individual (represented by the *Niphonaria* and the siphonophore) should be for a while co-existent. Imagine again, that these co-existent stages of the individual were, like many of the lower animals, able to maintain their vitality when divided into several parts; I by so dividing them we should obviously have made no change in what constitutes the individual; which would still equal the sum of all these portions. Now, this case also exists in nature. I shall have to point you to you the homologous instance among the lower invertebrates in which the homologous of the larva, pupa, or rather, of the imago, or by

Fig. 10. A small siphonophore, *Niphonaria*, of which the larval stage is visible on the right. (From Huxley's *Philosophy of Zoology*, p. 107.)

fashion, a multitude of separate forms, these again giving rise to others in the same way, until at last the ecological individual may be represented by thousands or even millions of distinct entities. Now, between these self-maintaining, independent existences, on the one hand, and more detached layers or stages of development on the other, you will find that no line of demarcation can be drawn. In whatever relation the latter, therefore, stand to the individual, in the like category must the former be ranged; but as their independent existence admits a distinct basis for their consideration, I shall use the term "ecoid," some time since proposed, and now frequently adopted, to distinguish each part of an individual animal as having an independent existence.

The phenomena of ecoid development have, however, been viewed in a very different manner. When first Chambers drew attention to them, as they occur in the helix, he imagined that the various forms proceeded from one another by corresponding processes of generation; and he drew the conclusion that there was a race of what he called the "alteration of generations," the progeny resembling, not its parent, but its grand-parent, and going due to an offspring resembling the parent, and so forth.

The conclusion of two entirely distinct modes of propagation was propounded by Huxley, who extended the views and the terminology of Chambers to a great number of other cases; at the same time furthering a subject, already dilated enough, with new terms and views not unobscuredly based upon somewhat fanciful analogies.

Now can I find that much light was thrown upon the subject by Professor Owen's work in "Parthenogenesis," whereby evidence has indeed pointed an hypothesis, but, so far as I can discover, no other advantage.

The learned Professor, in fact, while perceiving and admitting the distinction between true generation and the process of ecoid development, which he calls "parthenogenesis," or virgin generation, seems unable to conceive the possibility of such development without the exercise of some male influence. In no case of the so-called "alteration of generations," however, is there any such direct influence; it is the very essence of the process that it takes place without the intervention of spermatization—that it is budding, or fission, and not sexual generation. Not very frequently the part from which the budding or fission takes place retains the simplest morphological structure, having undergone no further differentiation, but remaining in the condition of any young part, or in that for the term are equivalent of the primary form of the germ. Professor Owen, if I understand him rightly, proposes to obtain the difficulty arising from the acknowledged absence of any direct or immediate action of the male, by supposing that each a part really is a portion of the primary mass of the germ, and that it gives rise to a new being—simply because it retains the "spermatid force" imparted to it, in common with the rest of the germ, in the formation of the original egg.

As a matter of fact, it is almost self-evident that the period-events of the viviparous, or "Parthenogenetic" apilis, contain more of the "spermatid origin" than any other of the glands of the human skin, or than does the deep layer of the epidermis of the human skin. The assumption that any of the primitive germ mass of the first apilis developed by sexual generation is contained unchanged in the period-events of its ecoid existence is questionable; the assumption that the period-events of even any one of these successives are entirely composed of such unchanged germ-mass involves, I imagine, a physical impossibility—the period-events forming a much larger mass than the whole of the primitive germ-existence. It is to be noted, on the other hand, that the "cells" of the period-events of the viviparous Apilis are merely the descendants of the primitive germ-mass retaining the simple histological condition of their predecessors—the proposition is as just as it is true; but, in this case, how do they differ from any other young thing? and why does not "Parthenogenesis" take place every day?—one *Alseodonta* springing full grown, not, indeed, from the brain, but from the very mucous of the scalp, whose thence ought to result at least in much "spermatid force" as that contained in the parent-cumulus of the clearest series of ecoids, developed from an apilis germ.

How much of the primitive germ-existence again remains in the colony of *Elyda* tubi, which has, perhaps, extended over a space of an acre before the process of development of its individual units, and

ing the "spermatid force" were retained in the "Parthenogenetic" tissue, how far is the statement, that "parthenogenesis" takes place in consequence of the "spermatid force," to be taken as in any way helping us to a clearer view of the phenomena?

I confess it appears to me, that the phenomena of ecoid development are in exactly the same footing as the most ordinary phenomena of generation; and that the latter are generally in truth, or at least, explained by a hypothetical extension of "spermatid force" to the former.

The ecological individual, then, is the sum of all the successive stages of development through which the product of a single fecundated ovum passes, whether these stages have an independent existence or not. Of each individual ecoid there are almost infinite multitudes; and they constitute the facts of that branch of Morphology which is known as Ecology. Now, the first object of the ecologist is to become acquainted with these facts; the second, to classify his knowledge into general propositions, whereby it becomes, not only readily retainable in the memory, but serves as an instrument for further investigations.

A classification which is constructed as so only, or chiefly, to serve a mnemonic purpose is not only useful but necessary in the infancy of science, where the primary object is the attainment of exact knowledge; but, where a great body of such information has been obtained, the persistent adherence to an artificial classification may be not only useless but positively injurious, to its progress.

The period at which an artificial classification of animals could serve any useful purpose has long since passed away; and, from the time of Cuvier, classification has been in decay, if not in fact, dead; it has striven to be only the expression of the generalizations of Morphology. What are these generalizations? An extensive consideration of the varieties of animal individuals at once shows that there are greater or smaller groups among them, whose members are as much like one another, and, at the same time, present so constant a difference from other forms, that they may all conveniently take the individual name. Such groups are what are in unscientific English, called "kinds." Man, horse, sheep are such "kinds," and so are negroes, herds, and tortoises; and, in my apprehension, the great majority of what are technically called "species" are groups of precisely the same character; that is to say, they are simply the modified assemblages of individuals which can be distinguished from others by a common character. This is very far, however, from being all that is implied by the term "species," as commonly used, naturalists ordinarily meaning that a species is something very different from a mere definable "kind" or sort of living being,—that "species," in short, have physiological characters by which they can be distinguished from all other kinds. These characters are twofold,—1. The individuals of a species are supposed to be descended from a single parent, or pair of parents, originating independently of all other living beings; 2. Their fecundability is supposed to be limited.

The space of a lecture, or even of many lectures, would be wholly insufficient to discuss the arguments in favour of and against these propositions, or, in other words, the important but now difficult question of the existence of physiological species; and I will, therefore, merely state, briefly, what appear to me to be the fairest conclusions from the evidence hitherto brought forward.

As regards the first part of the accepted definition of species, I am not aware, that we have demonstrative evidence of the unity of parentage of any one species whatever, although the balance of probabilities appears to be strongly in favour of the correctness of this view. Assuming single parentage, however, the question arises, how did the first ancestor or ancestors originate? The ordinary reply is, that they were independently created. In this case the question passes out of the domain of science altogether, and is continually given up as a matter of inquiry; for we can only inquire into the conditions of a phenomenon; and, by assuming a special creative act, we admit it to be unconditional. On the other hand it is to be remembered, that we have not the slightest scientific evidence of such unconditional creative acts; not, indeed, could we have such evidence; for, if a species were to originate under one's very eyes, I know of no amount of evidence which would justify me in admitting it to be a special creative act independent of the whole vast chain of causes and effects. As the evidence, then, of the other hand, of the

glial parents of species did not come into existence in this manner, but in some comprehensible way—in the ordinary course of things, as we phrase it—then there can be no doubt that some form or other of that hypothesis—not less flawed by its supporters, than by its opponents—called the "Theory of Progressive Development" will present by far the most satisfactory solution of the difficulty.

The hypothesis of progressive development maintains that the ancestors of species were not themselves independently and specially adapted, but were the result of the modification of individuals of pre-existing species, and that thus, in the course of long ages, a gradual development was effected from simple visible matter up to the highest forms of life, corresponding with the analogous changes now occurring in the course of the embryonic development of the highest animals.

That such an hypothesis is fair and scientific, that many facts corroborate the possibility of such a gradual development, and that it is very difficult to imagine the origin of species in any other way, are propositions which will, I think, receive the assent of candid thinkers; but, on the other hand, it must equally be admitted, that there is nothing which can be deemed by called demonstrative evidence in its favour, and that the facts of Paleontology, though by no means incompatible with the hypothesis, afford it not even a shadow of positive support.

On various the theory of progressive development would necessarily fall to the ground, were the proposition which forms the second part of the modified doctrine of species, viz. that the modifiability of species is limited, indisputable. Unfortunately it is very far indeed from being so.

The individuals of every species are on all hands admitted to be modifiable by conditions, the principal of which may be said to be parental, climatal, and educational. Any individual may be made to deviate to a certain extent from the typical form of its species by a modification of the light, heat, &c., which it receives, and by training, and it will tend to transmit the deviation thus produced to its offspring. It is conceivable that this offspring may be further modified in the same way, and may transmit its further deviation from the original type to its offspring, and so on until you have reached an amount of divergence results. Among our domestic animals it is known that very great changes have been thus effected upon the type of the species, and the "breeds" or "races" thus produced may differ as widely from one another as do many species, while among plants this is still more remarkably the case. The amount of difference between any two allied forms with whose history we are unacquainted is not in itself, therefore, conclusive, either for or against their specific distinction.

There is no evidence, so far as I am aware, to show the existence of a limit to the modifications which may be produced by climate and training, although there is no doubt that the process of modification is exceedingly slow, and that mere races are often exceedingly persistent.

The evidence relating to the limits of parental modification, on the other hand, appears to be conflicting. Very widely distinct kinds naturally will not breed together. Even among those which are more closely allied and will interbreed, the hybrids are, among animals, rarely fertile, though this rule would by no means appear to hold good so generally in plants. On the other hand, there is evidence to show that advantageous varieties of a species often interbreed with great difficulty. Even very physiological species distinguishable by their want of power to cross fertile hybrids, as is commonly supposed, the year is almost useless in practice, from the impossibility of applying it in any but a very few cases; and when we consider that there are numerous instances among plants, in which species A, acting as a male will fertilise B, while B acting as a male will not fertilise A; and others, such as that of the pineapple and orange, in which, in one country hybridisation never occurs naturally, while in another it is constant and the hybrids are fertile; I think the only conclusion to be drawn is, that the test of hybridism is almost valueless.

Such, now, so far as I am aware, the main points in the evidence which has been adduced for and against the doctrine of the existence of physiological species; and I think our conclusion from these must be, that the positive evidence is wholly insufficient to establish that doctrine; and that it is most inexpedient to allow such a doctrine, based as it is entirely upon unproved assumptions, to form one of the fundamental positions of natural history. Hereafter, therefore, I shall use the word "species" only in two senses: either it

will mean the smallest group of individuals which can be defined by a common character, and absolutely separated from all other groups by that character, and this might be termed a morphological species; or, it will denote simply the smallest convenient group into which a mass of individuals can be arranged, quite irrespective of any absolute lines of demarcation; of which latter merely conventional species there are unfortunately too many.

Others are groups which stand in the same relation to Species as the latter to Individuals, and Families are like groups of Genera; Orders of Families; Classes of Orders; Sub-kingdoms of Classes, and Kingdoms of Subkingdoms. Now are these Genera, Families, &c., mere conventional arrangements, or are they properly the expression of fixed Morphological Laws? I am inclined to the latter opinion, chiefly because I can find no evidence that any transitional form exists or ever has existed between the larger of these groups, such as sub-kingdoms; and because the evidence of our information has hitherto invariably shown that supposed cases of transition from one great group to another are no real transitions at all. It was once supposed that the Amphibians connected the Vertebrata with the Annelids; that the Cheilopoda connected the Arachnida with the Mollusca; that the Pelycosaur connected the Vertebrata with the Polyzoa; and that the Echinodermata were the link between the latter and the Annelids. In all these cases, however, careful investigation has ended in showing the supposed transitional forms completely into one of the groups which they were supposed to connect, and separating them from the other. I am inclined to believe that the same result will occur from a similar scrutiny of the supposed transitions between Classes, Orders, Families, and Genera; and that thus we shall at length obtain a series of fixed and absolutely limited groups, whose definitions, taken together with those of the morphological species, will constitute the expression of the Laws of Organic Continuation. If I may so term them, of Animal Forms. At present, however, I am bound to confess that this belief is no better than what the Big game Murray was wont to call a "derivative imagination."

It remains only then, before proceeding to the special study of the different divisions of the Animal Kingdom, I should explain to you shortly the nature of the classification followed, and the reasons which have led me to its adoption. Linnaeus, after giving the great divisions of the vertebrates pretty nearly the form which they now retain, left the whole mass of invertebrate animals, except the insects, under one head, that of Vermes, roughly subdivided into various tentacles, molluscs, testacea, helminths, and zoophytes. One of the earliest, and, at the same time, one of the greatest services rendered by Cuvier to natural history, consisted in the analysis of this great heterogeneous mass, which he commenced in 1794; and ended in 1817, by its reconstruction into the subkingdoms of the articulate, mollusca, and radiata, parallel with and equal to the vertebrata. This was an immense step; but no one who has ever carefully studied Cuvier's *Radiata* can have imagined that it was his final. As our knowledge of the lower forms of animal life has increased, in fact, the conclusion has forced itself upon the mind, that the radiata of Cuvier, like the vermes of Linnaeus, is both more than a familiar-room for the storage of those forms with which Cuvier and his contemporaries were necessarily very imperfectly acquainted; and very great improvements which have of late years been made in the general classification of animals had consisted in the development of a group from the "Radiata" and its transference into its proper place elsewhere.

Thus Miss Edwards long since demonstrated that the polyzoa properly belong to the molluscan subkingdom. Sixty years ago M. F. de Lamarck clearly proved the necessity of uniting together the whole "Polyzoa," the zoophytes, and the tentacles, under the title of "Cnidaria," a circumstance of which I was ignorant, when, in 1811, I ventured to propose the term "Nematophora," for a group with identical limits. The term Protista has been used since Cuvier thus proposed it, in various senses. I employ it here to denote that very natural and more distinct group which comprises what have been termed the "soft-bodied animals." The (partial) Infusoria; the Foraminifera or Mollusca; the Ctenophores; the Spongiata; and the smaller forms of radiata and mollusca. I regard the presence and the collection of radioliferous sponges to the mollusca, vertebrata, and mollusca; and I consider that the radiata subkingdom must be given up altogether, and its place supplied by these two. It does

idea to correct, therefore, there will be five, instead of four, subdivisions of *Animalia*.

But the "Radiata" of Cuvier contains, besides the Polypæ, the Coelenterata, and the Protozoa, a great number of other forms—the Trematoda (including the Cystica and Cestoda), the Nemertea and Rotifera, and the Helminthozoa. I imagine that the position among the *Animalia* assigned to the former three groups in the following table is one which will not be questioned by those who have recently made these their study.

Of the whole group of Radiata, then, the Helminthozoa alone remain undivided of. The position which I have given them among the *Animalia* is as yet, I am sorry to say, sustained by no better authority than my own. The positive evidence in favour of the place which I have assigned to them will be laid before you when the class comes under discussion; but I may point out, in the meanwhile, the strong negative evidence in favour of my view, viz., that the Helminthozoa naturally have nothing to do with either the Protozoa, the Coelenterata, the Mollusca, or the Vertebrata; and that the only obvious alternative, if my view be rejected, is to make these into a sub-kingdom by themselves—a step which, I conceive, no naturalist would be inclined to take.

I shall speak of the minor subdivisions under the head of sub-vertebrata; and here I might leave the subject, were it not improper to ignore a different arrangement, which has been put forth within the last year by an eminent contemporary, and which will be found to differ very widely indeed from that here proposed. Professor Owen divides the animal Kingdom into four "provinces," the Vertebrata, the Mollusca, the *Animalia*, and the Radiata, divided in their extent with the divisions of the same name introduced by Cuvier. His arrangement of the sub-divisions, however, is, I believe, almost entirely peculiar to himself. The student of the *Animalia*, for instance, is astonished to find the Echinæ and the Clavellia removed from the Crustacea altogether, and, instead, occupying the position of classes equivalent to the Crustacea, the Insecta and the Arachnida. The arrangement of the peculiar Radiata is, I confess, in no way less intricate; it is divided into three "sub-provinces," Radiaria, Hydraria, and Infusaria. The last of these is made to embrace the Helminthozoa, the Polypæ, the Actinæ, the Annelida, and the Hydroids,—groups of animals which differ from one another in organization as much as the Vertebrata, the *Animalia*, and the Mollusca do. In the second division of the "Hydraria," I find the Coelenterata, Testudinæ, and Spongiata; the last a term which should be omitted from science, as it is based upon an unscientific view.) In the last division, "Infusaria," are the Rotifera, Kinestopoda, and Polygastera, of which three groups no single alternative could be made in common. At the same time, the efforts which have been made to improve the classification of the Radiata on this and the other side of the channel are, so far as I can observe, entirely ignored. It is my duty to express my belief that the general adoption of such a classification as this would be one of the most thoroughly progressive steps ever taken since Zoology has been a science, and would insure to a most valuable extent its advance in this country.

Arrangement of the Animal Kingdom.

VERTEBRATA.				
[MAMMALIA.]				
BIRDIA.				
JAV.				
REPTILIA.				
[SAURICILIA.]				
Amphibia.				
FISH.				
MOLLUSCA.		ANNELIDA.		
Cyphelopoda.	Metopopoda.	Insecta.	Arachnida.	
Gastropoda.	Alveola.			
{ Paludicola.	Gastropoda.	Myriapoda.	Crustacea.	
				Paropoda.
				Lancelellomata.

[It is long ago, it is true, that the necessity of this arrangement was obvious to the noble mind of William Swinhoe.—"An eight-spined beakless animal, as described by Swinhoe, from the *Amoy*, in *Philosophical Transactions*, vol. 18, p. 145, and in *Annals and Magazine of Natural History*, vol. 18, p. 145, and in *Illustrations of the Zoology of Amoy*, p. 145. See also the *Illustrations of the Zoology of Amoy*, p. 145. See also the *Illustrations of the Zoology of Amoy*, p. 145.]

NEUROPODA.		ACTINOPODA.	
Neurotopoda.	Acetabula.	Amphibia.	Cyphelopoda.
*Polypæ.	*Helminthozoa.	*Radiaria.	*Insecta.
	*Rotifera.	*Hydraria.	*Arachnida.
		*Mollusca.	*Crustacea.

*COELENTERATA.

Hydraria. Actinæ.

*PHOTOZOA.

Infusaria.	Spongula.	Gastropoda.
Metopopoda.	Paropoda.	Paludicola.

The groups marked * formed the "Radiata" of Cuvier.

ORIGINAL COMMUNICATIONS.

CASE OF HYSTERIA SIMULATING CATALEPSY.

By HENRY GRAMSHAW, M.B.C.S. Eng., and L.S.A.

As I have lately met with two cases somewhat alike in character, and as I have by me the notes taken when in attendance on the last, I shall not hesitate to transmit them for publication, in the hope that, if they possess no feature of unusual interest, they may, at all events, be added to the experience of those who have not come in contact with disease taking precisely this form.

On the morning of March 10, 1886, I was sent for in haste to visit E. Davis, a servant-girl, aged 22. Previous history.—Her mistress says she has had good health till lately; within the last week or two she has occasionally complained of pain in the head. Thinking the patient has not menstruated very regularly, but believes she was several about three weeks since. Does not know what brought on her servant's illness; she is comparatively a stranger, and so can give no information about her relatives, but thinks her mother died in a fit. She is engaged, but there has been no misunderstanding with the person she is to be married to, as she learns from him. There has been no exposure to cold. The girl is usually calm.

Present attack.—Davis was taken ill about 11 o'clock yesterday morning. She went to the pump, and came back into the house with her hair wet and dishevelled. Could not explain how it came so. She looked strange and embarrassed. Her mistress, considering her ill, and her to bed, and gave her some castor-oil. She got cramped, and when the oil had freely acted several times; passed a tolerable night, and made an abundance of water of a pale character. Early this morning (18th), she was visited by her mistress, and in her presence Davis swallowed some coffee, after which her eyes seemed suddenly fixed, and she fell back in bed unconscious. Her appearance was so strange, that death was feared, and a Surgeon was summoned.

Present state (19th inst.).—Patient, a fresh-coloured girl, lies in bed on back; arms crossed; eyes closed; surface cool; feet warm; pulse irregular, about 100, not full; occasionally slight shiver. On separating eyelids eyes well above horizontal line; pupils rather dilated, and not very sluggish in reacting a light before them; she protrudes tongue after my speaking loudly several times, saying her to do so; it is large, moist, and hot coated; does not deviate from middle line; no diaphoresis of the face. Respiration tranquil; no peculiar smell about breath. On pinching deeply various parts of the surface with a needle, manifests no sign of feeling whatever; shaking water on the face produces no effect. No evidence of chest disease detectable on auscultatory examination. Has been in an insensible state similar to the present for two hours.

Treatment.—The patient smiling some distance from my house, I placed two large mustard cataplasms on the calves of her legs, and returned home for medicine.

On visiting her again, in an hour, no change had taken place; the plaster had been kept on half-an-hour, but the patient did not seem to feel them. She still lies in a fixed, rigid state, from which nothing comes here. I proceeded to cup her on the nape, but did not procure more than 2 ounces of blood. She had a blister placed on the loins, and an anæsthetic screen administered. I also with difficulty suc-

resulted in giving her a dose of medicine, containing aconitine and valerian.

At two o'clock p.m., when I left the house, no change had taken place in the symptoms. The attendant was directed to flannel the lower part of the abdomen and pelvis diligently, with flannels wrung out of hot water, and to give two cathartic pills at bed-time, if possible.

March 19th.—Pain not evidently much better. Attendant says: Immediately after the glyster had operated (three o'clock, p.m.), Davis became conscious of what was going on, and said she felt greatly relieved; has not relapsed at all into her former state; has taken her medicine regularly; the bowels have not acted since the enema was given; slept tolerably; complains of slight giddiness about the forepart of the head; has no pain anywhere else, except from the labor, which runs well; tongue clean; pulse 100. Has no remembrance of what occurred yesterday.

To have an aperient draught, to keep on low diet, and take the following mixture:—

R. Tinct. Sassafras, ℥ss, ex. lavender, ℥ss, mist. enough, ℥ij. M. Ft. mist. exp. each 4i, sig. ter quibus.

March 21.—Still improving; bowels have been relieved; no further medicine, and take two compound cathartic pills *ad usum*.

March 22.—Dropsy subsides. The menstrual discharge made its appearance to-day, in every way better, but weak.

Remarks.—That immediate intervention was the first of any mark in the dropping attack caused for a moment to desist, stopping about a tendency to determination of blood to the head. The principle on which the case was treated was, as far as possible, to retard a return of the natural evacuation, not to provide a substitute for it; and with that view I refrained from sanguisugous and leeching measures, and fixed upon the lower part of the back and pelvis as the locality most proper to invade with bluing vesicles.

The diagnosis was not very difficult, but there was here a complete absence of that excitement commonly accompanying an hysterical seizure,—no tossing about of the limbs, no outcry, and the consciousness was stronger to the impossibility standing upright or making any exertion. The absence of puffing breathing, the way in which the attack came on, and the general appearance of the patient required the supposition that apoplexy was what we had to deal with. But the symptoms might have misled me had there been anything to create a suspicion of poison having been swallowed. Here was a girl engaged to be married, and of calm and cheerful temper as it chanced; though with her hysterical attacks before her attack, no general was known to exist, and they were on good terms when they parted; but had it been quite the reverse, (as it really might have been,) very grave suspicion would possibly have arisen that in a fit of superstitious dread had been taken; more especially if the long continued unconsciousness (eight hours) had occurred on the same, instead of the following day.

Even, nothing was detectable in the breath, and the pupils were not contracted; but the latter circumstances would not have spoken in sufficiently decided language, for at one time they were, or another not; and, on a cursory examination, they might have been found in a contracted state.

A girl, in the habit of taking stimulants, and smoking strongly of them, would have yielded even narrow scrutiny, and perhaps would have led a Medical man into an untenable, if not dangerous error, more especially where the patient's previous history would not be agreed at with certainty.

I have had another case, very similar in some respects to the foregoing, only the insensibility was not so complete, and considerable excitement was present at times,—the attack, upon the whole, being not so severe, and all the symptoms of local cerebral subsiding on the re-establishment of the customary discharge.

I have called this hysteria simulating cataplexy; but I only know that disease from the description of it in books. May not cataplexy proper result from febrile or checked menstruation? It is a state of insensibility, similar to that I have been describing, a frequent occurrence with females whose functions are irregular. Certainly, the state of being dumb (as was a corroboratory expression) which existed in this case, was most curious, and it surprised me to find an *Urtica* subsequent larva arising from the prolonged congested state of the brain.

The Upper Green, Tottenham, near Wolverhampton.

CASE OF DROPSY OF THE AMNION.

By HORACE K. DERESHAM, Esq.

Extreme accumulation of the liquor amnii, constituting what is termed by writers "dropsy of the amnion," cannot be looked upon as a common affection. Rutherford speaks of it as "a very rare case of dropping below," and Dr. Lee, who has paid special attention to this subject, has obtained particulars of but five cases of the disease.

Cases of this description, most of all those by attended with a considerable amount of edema previously to the rupture of the fluid, but in an instance which has lately presented itself to my notice, the diagnosis was so complicated, the symptoms manifested were so vague, and the jeopardy to the life of the patient so great, that you will perhaps think it deserving of notice in your pages.

I first saw M. G. while in labour with her first child in the month of May, 1854. She was 26 years of age, a fair-complexioned, delicate-looking woman, and the wife of a gentleman mechanic, living in Worcester. I was summoned by the midwife in attendance, who assured me that my patient had experienced some or two regular pains for sixty hours, but still the child made no advance, and the expelled effluvia had in a great measure subsided. Upon examination I found an evident narrowing of the pelvis in its transverse diameter; the head of the child was impacted at the brim, and the vaginal and external parts were hot, swollen, and covered with that peculiar blue-colored discharge so indicative of exhaustion, and which was confirmed by the state of the pulse and general condition of the patient. The os uteri being sufficiently dilated therefore, the child, which had been some time dead, was at once extracted with the long forceps. Most violent hemorrhage immediately followed, and the flooding continued for a considerable time after the removal of the placenta, so that a very large quantity of blood was lost before the uterus could be induced to contract. Although in a very exhausted and bleeding condition she progressed readily for the first week, when she was unfortunately seized with phlegmoseo edema which attacked the right leg, thigh, and hip, and confined her to her bed for another month; but she eventually made a good recovery.

Towards the latter end of the year she told me that she had again become pregnant in the month of September, and requested me to attend her in her confinement, the participation of which caused her to be very low-spirited and despondent, and she said, "quite different to what she had done with her first child." I saw nothing more of her until the month of February, at which time she was six months gone, when I was one morning hastily summoned to her. I found her upon her back, propped up in bed, quite unable to move, her countenance wearing an expression of great distress and anxiety, attributable apparently, in a great measure, to difficulty of breathing, the respiration being between 70 and 80 in the minute. She told me, that, from the very first, she appeared much larger than she ought to have been, and the swelling she described as having originated in a lump, which was at first entirely confined to the right side; it became gradually more diffuse, however, and the feet three or four days had increased in size immensely. Although only six months gone, upon examining the abdomen I found it much more distended than it ought to have been at the full time, in fact, I never before saw a case of either ascites or anasarca where the enlargement presented a more frightful appearance, and I much regret that I did not take the measurements at the time; the impingement of the abdomen from excessive ascitic fluid, almost insupportable, and fluctuation was singularly distinct at every point; she had passed no urine for thirty hours, and upon attempting to empty the catheter, I was unable to introduce it, the bladder being completely closed through over the pubis. An examination per vaginam found the os uteri dilated to about the size of a shilling, and as it was locally distended by a slight grinding pain which came on every five minutes, I felt an inclination to rupture the membranes, which gave exit to half-a-pint, or rather more, of liquor amnii, and the pain increasing steadily, a dead six-month child was extracted in a quarter of an hour or thereabouts.

Her breathing was now somewhat relieved, but still the size of the abdomen was not apparently diminished in the slightest.

Upon leaning the trunk upwards, I found a second bag of membrane protruding, which I promptly captured, the nature of the case being at once apparent enough. The rush of water I shall never forget; two chamber-pans were flung to overflowing, and the floor of the room was swamped in an instant, and I am satisfied that there could not have been less than from five to five gallons; and to show the force of the current,—when I proceeded to lift up the indolition, although there had not been the slightest evidence of anything like water-contraction, the second fetus had been washed out, and was lying a foot distant from the woman's anus.

The sudden removal of this large body of fluid caused the most alarming depression and faintness. I directed the nurse to kneel behind my patient, and make free pressure on the abdomen with both her hands, and I at once gave her a liberal supply of gin, which was immediately in the room. Before I had time to detach the fetus, however, I found that she was floundering in an alarming extent, so I at once lowered my arms, and with the greatest care pushed my hand up as high as the osseous cartilage, the uterus being perfectly flaccid, and it was so completely paralyzed by over-distension, that, kneeling the abdomen externally with my right hand, the application of cold water was failed to induce the slightest contraction, and almost succeeded in washing me rapidly by the side of my arm; my poor patient, too, had become exceedingly restless, and attempted to change her position every instant, so that altogether I neither looked for free protrusion, saving an osseous apparatus, however, as the manual staff I directed the nurse to put it together, and I passed the pipe by the side of my arm into the cavity of the uterus, into which the nurse pumped a large body of cold water; the effect was immediate; my hand, together with the two placenta, which I had grasped, was quickly expelled, and the uterus remained firmly and permanently contracted. From this time convulsions presented intermittently, although a week of months, from the immense amount of blood which she had lost.

Never having before met with a case of the kind, I must confess that I had not recognized its nature previous to the steps of the fluid, when, of course, it was at once apparent enough. At first sight I thought my patient was destined to die to the fact of her being pregnant at all,—but numerous times only six months after the cessation of menstruation, the remarkable distinctions with which distension could be recognized at every point of the abdomen; the great distension in the amount of the urinary secretion; the absence of the stroboscopic signs of pregnancy; but, above all, the fact of the swelling having commenced entirely on one side, which the patient herself particularly insisted upon without any leading question on my part, looked, I thought, very like ovarian dropsy. There was an evident development of the mammae, but that is not an infallible result of ovarian disease; however, on examination per vaginam at once proved she was with child; and I then concluded the case was one of ovarian dropsy, developing itself contemporaneously with pregnancy. The birth of the first child confirmed, as I thought, the opinion I had formed; but I had hardly time to congratulate myself upon my diagnosis, when the discovery of the second bag of membrane, and their speedy rupture, proved my mistake.

If my patient had gone to her full term before labour set in, and the uterus relaxed, in consequence, retained their full size, the case, as I believe, have inevitably ended in death; as it was, the amount of fluid lost was really frightful; and when, as in this case, the usual means fail in inducing contraction of the womb, I shall always maintain a very high opinion of the value of cold water injected into the uterine cavity.

Dropsy of the osseous box, by some authors, has been referred to a syphilitic taint, but here both the patient and her husband were entirely free from any suspicion of the kind; and the fact of her having become pregnant so shortly after a very severe labour, attended with great loss of blood, and followed by a profuse "giving-up," warrants me, I think, in supposing that the disease of the osseous was dependent upon this, in the absence of any other evident exciting cause. In this case, we may view it merely as a variety of dropsy consequent upon general debility. Or again,—during the attack of phlegmasia dolens in it, I think, not at all unlikely that the inflammation extended from the femoral vein to the vein of the crany, which would be the direct communication through that organ so to contract the osseous vessel set up in the crany; which supposition, I think, strengthened by the

fact, that the phlegmasia dolens attacked the right leg, thigh, and hip; the diseased osseous being apparently detached from the same osseous, as shown by the patient referring the swelling, and the osseous sensation which she experienced at the early part of her pregnancy, to that side.
Kensington-park Road.

THE LONDON
PRACTICE OF MEDICINE AND SURGERY.

GUY'S HOSPITAL.

TWO CASES OF SUPPURATION IN THE
ABDOMINAL PARIEtes.

(Communicated, with Remarks, by Dr. HARDENBERG.)

Suppuration in the parietes of the abdomen is frequently presented to the Physician attending deeper seated mischief, and for a short time considerable therapy may attend it—sometimes of a severe character, accompanied with considerable pain and febrile excitement, before inflammatory exudata of the skin have come on, and while the effused products are bound down by few fascial investments closely resembling local disease of local peritonitis; in fact, every region of the abdomen presents us with disease on the surface resembling dropsy in it. In the hypochondriac regions suppuration commences with the osseous cartilage or ribs, simulating disease of the liver, mammae, hydrothorax, diseased gall bladder, or corresponding disease of the spleen; the right or left iliac regions, affections of the caecum or sigmoid flexure; in the lumbar regions, renal or spinal disease; in the umbilical, stercoral or cancerous disease, and pelvic cellulitis, etc., may be mistaken for ovarian or uterine disease, etc. This simple suppuration in the parietes generally tends to the surface, is opened or discharged spontaneously, and in many cases does well, unless connected with pyæmia or its osseous subjects. The matter it is excreted the less likely in the past to become among the fat muscles and fascia of the abdomen; and even in abscesses, local or uterine, extending abundantly to the parietes, unnecessary delay is sometimes made in discharging their contents. The rule is, I believe, a correct one, to open them very early.

In the first case detailed the suppuration was exceedingly deep, not connected with the true pelvis, but behind the sigmoid flexure. It turned an opening into the sigmoid flexure of the rectum; but the deeply seated position of the disease prevented an opening being made from without till the extension to the anterior part rendered the character of the disease more manifest.

In the second, suppuration beneath the quadratus lumborum was followed by phlegmo-paranitis, local odour of expectoration, and local pain from the abscess; contact, if not communication, with the colon; typical symptoms, but gradual recovery with a sinus in the loins, perfectly connected with a diseased vertebra of its process. In this case a few evacuations of pus was instrumental to curing life. The diagnosis of each of these cases was obscure, but exceedingly interesting in its gradual development.

SUPPURATION EXTERNAL TO THE SIGMOID
FLEXURE OF COLON. COMMUNICATION WITH
THE INTRINSIC AND THE ANTERIOR ABDOMINAL FASCIES.

(Reported by Dr. STEAR.)

Elizabeth B., aged 50, a widow who had supported herself by dressmaking, was admitted into Guy's under Dr. Richardson's care, March, 1868. Till a fortnight before admission she had enjoyed good health, when she felt pain in the back, which extended to the shoulders and limbs. The greatest pain, however, was in the course of the 10th-11th-vertebræ parts. These symptoms were accompanied with considerable febrile excitement.

Saline medicines with colchicum, etc., were prescribed. In a few days the pain, which had diminished character, ceased, and she appeared in gain strength under the use of decoction of bark with carbonate of soda.

On March 28, three weeks after admission, she complained of pain in the left iliac fossa, and a firm tumour about the size of a hen's egg could be felt deeply in that part. There were

no tenderness in the spine, numbness in the legs, or other symptoms of disease of the spine. An examination per vaginam was made by my colleague, Dr. Colman, but did not give any evidence of disease of the ovary. The breasts were really acted on by hydroxyd, cast steel, by water-air, and by iodine; but this action did not affect the size of the tumour or alleviate the symptoms. The urine was normal, and there was no indication of renal disease. The pain gradually increased in severity, but was considerably relieved by the repeated application of leeches, by taking infuse of potassium, bicarbonate of mercury, and occasional doses of morphia. It was believed that the disease consisted in disease of the sigmoid flexure of the colon, with local peritonitis.

May 11.—The pain had returned with much severity, and leeches came on. The tumour increased in size; it could be felt extending to the quadratus lumborum; and also reached the anterior abdominal parietes, where, at the left iliac fossa, was red, indurated, and exceedingly tender.

11th.—The bowels were acted upon three times daily, and a considerable quantity of purulent mucus discharged. The examination of this discharge could detect no cancer cells. The pain and heat continued, the patient becoming pale and exhausted; the left thigh and leg became swollen and tender, afterwards the right; and there was excessive pain in the course of the femoral vein. Nightingale and stimulants were administered as the patient could take them. Quinine and opium, or morphia, were given.

June 8.—The inflammatory action of the anterior abdominal parietes had increased. My colleague, Mr. Callaway, made an incision at this part, and more than a pint of exceedingly offensive pus was evacuated. Every course was used to sustain the patient; but the discharge continued abundant, and healing took place slowly, and her strength gave way. Her tongue remained clean and moist; but her appetite ceased, so that she became quite unable to take food. There was no pain at the axilla, the cord, vomiting, or thirst; but emaciation and sense of exhaustion. Red scum formed on the surface; and, a few days before her death, cough, which aggravated her distress, she gradually took, and died June 14. Inspection was made twenty-four hours after death. The body was emaciated, and the lower cruralia indurated; the pleura was healthy, but the posterior lobe of the lungs was in a state of red hepatization; the heart and its valves were healthy. Abdomen.—The peritoneum was healthy, except in the left iliac region, where the omentum, and several coils of intestine, were adherent. In this region was an abscess, situated behind the peritoneum and falcis, and containing offensive, fetid pus; it extended to the anterior abdominal parietes in front, above to the diaphragm and kidney, and posteriorly nearly to the spine. Very careful examination could detect no disease of the lungs or vertebra, or pelvic cellular tissue. The abscess communicated with the sigmoid flexure by three small openings, in close contact the one with the other; the edges not thickened, but vascular. The small and large intestines were otherwise healthy; and the opening into the intestine was evidently secondary. The uterus, ovaries, and kidneys were normal. The stomach was of normal size; the mucous membrane pale, and had undergone degeneration. The liver was more than 1 lb. in weight, and extremely fatty. The lower portion of the vena cava, and of the common iliac and external iliac veins, were filled with very firm, white, adherent fibrin, and the coats of these veins were much thickened.

The review of this case showed that the pain in the course of the ilio-hypogastric nerve arose from direct pressure upon that nerve by inflammatory effusion, that the tumour felt in the iliac fossa consisted of this effusion pushing forward the peritoneum and sigmoid flexure; that the subsequent symptoms arose from suppuration, and by extension in various directions towards the colon, leading to some extravasation of blood and of pus into the alimentary canal and into the abscess forwards, so as to reach the anterior parietes, where it was opened,—opened to the diaphragm, and inwards in the cava and iliac vessels, which became involved and obstructed by fibrinous material. That it did not arise from disease here was proved by careful examination; and it appeared probable that some accidental blow had led to this suppuration, with its fatal results, or that irritation in the intestine had led to inflammation external to it, and subsequent suppuration.

After the tumour had been felt, evidence of suppuration

soon arose, and the discharge of purulent matter showed that it had formed near connecting link with the intestine, or that there was ulceration of the coats of the intestine itself. Head, vomiting, spinal, or parietal suppuration, or numerous disease of the sigmoid flexure, might give rise to many of these symptoms. The absence of all indication of diseased kidney was shown in the condition of the urine. Disease of the spine was exceedingly doubtful, from the want of tenderness, numbness, and the course of the suppuration. The position, which the tumour assumed and regular examination showed that the ovary was not involved. It appeared to arise from disease near to the sigmoid flexure, either communicating in that vessel and extending outwards, or beginning in the parietes and making its way into the intestine. It was in deciding as to which of these might be the case that the principal difficulty consisted. The discharge of purulent matter from the intestine, and the local character of the pus, indicated a connection between the abscess and the intestine; the inspection after death showed that the reverse was the case. Before death, I was led to believe that the disease commenced in the sigmoid flexure, and that the suppuration external to the intestine was secondary. It was clearly allied to cases of suppuration external to the colon, but so deeply was it situated, that any suppuratory incision would have been unjustifiable till there was more certain evidence of suppuration than was presented at the commencement of the disease.

ABSCESS IN THE LOINS—FREQUENT-SMELLING MUCRARIUM—PICTURES-PNEUMONIA, WITH FREQUENT-SMELLING SPUTUM—RECOVERY.

(Quoted by Dr. PROBYER.)

T. H., aged 48, was admitted into the Clinical Ward, under Dr. Haldenorth's care, June, 1855. He was a man of steady, industrious habits. His health was good till an attack of rheumatic fever, two years before; and at Christmas last, six months before admission, had a very severe fall while at work; he fell upon his head, and it was believed that the skull was fractured. He remained for some time in the Hospital, under the care of Mr. Parkes. His present illness commenced three weeks before admission, when, in the middle of the night, he awoke with great difficulty of breathing, respiration being accompanied with considerable distress and pain. These symptoms increased much in severity, and presented the signs of pleuro-pneumonia on the right side.

On admission he was exceedingly ill; his countenance pale, his eyes glaucous, lips and nostrils contracted, the teeth covered with scales, the tongue brown at the base and edges, the skin hot and clammy. In the chest, there was found to be increased resonance of the right side at the base, impaired mobility, increased dulness on percussion, loss of tactile vibration, and in front, below the nipple, was a pleuritic rub. On the left side, the respiration was purtic, and, at the apex, the respiratory murmur was prolonged and coarse. The position of the heart was normal, its sounds healthy, but the precordial dulness was somewhat increased; the respiration was 20 per minute; the pulse 94, feeble and compressible; the urine was high-coloured, acid, sp. gr. 1025. His position, on lying in bed, was midway between the right side and the back, with knees drawn up, and the head thrown forward.

The prostration and typhoid state increased till June 18th, when deep-seated fluctuation below the ribs on the right side could be detected, beneath the lumbar fascia above the quadratus lumborum muscle. An exploring needle was passed, and afterwards a diastole, and the wound enlarged, about a pint of pus, having a strong fœtid odour was discharged, the abscess continuing to discharge freely. After the opening of the abscess, the respiration became more free, and he coughed up a considerable quantity of fetid mucus, having the same odour as the pus. His strength was sustained by supporting food and stimulants by quinine and opium; diarrhoea was occasionally troublesome, and the offensive expectoration exceedingly increasing.

On July 1st he had so much improved as to be able to be carried out into the open air by half an hour. The offensive character of the breath and expiration gradually subsided; healthy respiration became audible nearly to the base of the lung, and he continued to gain flesh.

In October he returned to his work, and now appears a stout, hale man; but a fistulous opening remains up to the present time, which occasionally discharges freely. In this case deep-seated suppuration took place near the quadratus lumborum

muscle, acute pleuro-pneumonia on the right side, and the most severe constitutional symptoms followed. The pus which was evacuated, and the serum expectorated, were of a most offensive and fetid odor; but microscopic examination of the pus could not detect limited fixed elements. Discharge came on; the fetid character of the discharges slowly subsided; but the expectorated matter tried the patient much. Several facts render it probable, that the abscess was in close contact with the ascending colon; more constant with the intestine would probably be sufficient to explain the fecal odors; and it may be, that the contents of the abscess were partially discharged into the colon.

In the investigation of the case several modes of explanation were suggested—1. An abscess, the result of the blow; 2. Caries of the vertebrae, or its process; 3. Abscess of the liver; 4. Empyema; 5. Suppuration external to the kidney, from disease of that organ.

Although there was evidence of acute disease of the chest, the abscess was evidently below the diaphragm, and probably in contact with it; there was no evidence that the kidney was affected. The character of the pus, and the absence of the elements of life, indicate freedom from hepatic disease. It is probable that disease of the vertebrae or its process had been set on by the blow.

The treatment in both these cases appears sufficiently clear, as soon as tolerably certain evidence of suppuration is obtained, to make a free outlet for the pus, and to support the patient by every means in our power. Thus detaching the opening of the abscess tends to increase food consumption, where it communicates with the colon, and the abscess readily extends among the cellular tissue which concerns the layers of fascia and muscle.

The principal interest arises from the difficulty in forming a correct diagnosis, especially at the earlier stages of this deeply seated inflammatory disease.

Medical Times & Gazette.

SATURDAY, MAY 17.

THE TRIAL OF WILLIAM PALMER.

THE important Trial commenced on Wednesday morning last, and while we are going to press it still continues, and is likely to last some days. The great interest which this Trial excites it is impossible to exaggerate; and the Crown and the Prisoner have both called to their aid a host of Medical witnesses, whose evidence will bear most materially upon the question of Palmer's guilt or innocence. Our next Number will contain a full and accurate account of the evidence, more especially that of a scientific nature, especially reported; and we have no doubt, that the facts and opinions elicited will be ranked among the most interesting records which have appeared in the annals of Medical Jurisprudence.

THE UNIVERSITIES IN RELATION TO MEDICAL REFORM.

We are happy to find that the principles we advocated a fortnight since in our article entitled "A Scheme of Medical Reform," are likely to form the basis of legislation on this important subject. The Royal College of Physicians offers substantially to the same views, and we have no doubt that they will be acceptable to the generality of the Profession. The main points involved are, the necessity of preliminary knowledge as an introduction to Professional study; the attainment of Medical and Surgical qualifications by a successive course of study and examinations; the retention of the existing grade in the Profession; and the limitation of

the highest honours to those who have obtained the highest qualifications while pursuing the most lengthened and most various course of study. The proposed plan retains the rights of the Colleges as licensing bodies, and we conceive that no cause has yet been shown why these rights should be abrogated.

We are sorry to learn, however, that an opposition to this scheme has been threatened from a quarter from which we should, on the contrary, have expected the warmest support. We feel that the Universities are opposed to the power which is now held, and which will be held hereafter, by the Medical and Surgical Colleges, of granting honours to practice. As this opposition on the part of the Universities is founded upon a total misapprehension of the relative functions of the two kinds of corporation, we think it right to offer a few remarks upon the subject, with a view of clearing away some of the difficulties which seem now to exist.

The Universities are custodians of instruction in all branches of Art and Science, and their internal affairs are regulated by persons who are chosen from the number of their alumni in accord with their ecclesiastical distinctions. The wisdom of our constitution has sometimes localized these seats of learning in spots which are excluded from the busy haunts of men, and which are, therefore, favourable to abstract study and meditation. Medicine, although it forms a portion of the instruction given within these institutions, is by no means the principal or the prominent pursuit of the students; and it cannot be asserted, in the widest rights of imagination, that the Universities in any way represent the Medical Profession. The government of the Universities is intrusted to Clergymen, to Lawyers, to Mathematicians, to Philologists; and, although the Medical element may find its way into the Councils, it undoubtedly does not in general occupy a prominent place.

The Colleges, on the contrary, are devoted exclusively to the cultivation and promotion of Medical and Surgical science; they are situated in large towns or cities, where there exist abundant materials for the acquisition of practical knowledge; and those who regulate their internal affairs are the men who are actually engaged in ministering to the Medical wants of the community. It is perfectly clear, therefore, that the Colleges represent the actual wants of the Medical Profession, while the Universities represent only the abstract interests of learning generally. What would be thought of the Universities if they insisted upon the right of their alumni to practice at the Bar without the usual formalities at the Inns of Court? What would be thought of the Universities if they disputed the right of the Bishops to ordain for the Church? Nay, why should not the Universities give away commissions for the Army? Yet measures in any of these propositions would be considered, they are not a whit more absurd in reality than the claim of the Universities to grant licences to practice in Medicine and Surgery; a claim which would probably never have been made, had not some old statute or charter, given in certain cases, a colour to the pretension.

In a few of the Universities it undoubtedly happens that at certain periods, and under the influence of some distinguished Professors, the Medical section occupies a prominent place, as in some time has been the case with the University of Edinburgh; but in the English Universities of Oxford and Cambridge, the number of Medical Students is exceedingly small. The Universities of London and of St. Andrew's, in Scotland, have each a medical examination, but no medical school, and the University of Durham has no medical element at all. Even the University of the University of London, the medical graduates of which hold a very high rank, are composed chiefly of lawyers and dissenting Clergymen; and in any trial of strength among the different Faculties, that of Medicine would certainly be out-voted. It cannot, therefore, be imagined, that the Universities reflect the opinions, or

uphold the rights, or represent the wants of our Profession; nor can it generally be assumed, that even the examiners at their seats of learning are always men of large practice and experience. The government of the Medical Colleges, on the other hand, is conducted by men in actual practice, and who are, therefore, the best qualified to grant licenses for pursuing the Profession which they themselves are in the daily habit of exercising.

While, therefore, we feel that men will always resort to the Universities for the degrees and honours which those institutions are capable of bestowing, and while we think that every encouragement should be offered for their doing so, we are equally convinced, that the licenses to practice should be granted by those bodies to which the power has long been legally confided. As we have urged on former occasions, the Medical practitioners should pass through a full course of study, both theoretical and practical; but we reiterate that the final examinations which are to launch him upon the public as a fully qualified Physician or Surgeon, should be conducted by men who see themselves in actual position. The Universities ought not to be the schools, but the headquarters of the Colleges.

We should very much regret to find that the University of London is opposed to the present plan of Medical Reform, which we believe has the sanction of the Government. While we cheerfully concede to that University the very high merit of having proposed and carried out the most devoted course of Medical Education yet devised, we cannot forget that this successful issue has been in great measure achieved by the liberal annual grant of £2000 accorded to it by the nation. If any rivalry should be attempted between this University and the Colleges, it would be only just to put them all upon the same footing, either by withdrawing the annual grant, or by giving the same amount to each of the Colleges, especially to the College of Physicians, which, without any Parliamentary grant at all, has for many years upheld the dignity of the Profession, and promoted the best interests of Medical Science.

We fully admit the principle of an subdividing all the Colleges and Universities that the license of the Corporation and the salaries of the Examiners shall be in no way dependent upon the number of the successful candidates; and in any new scheme of Medical Reform, we hope that some such arrangement will be made; but we cannot help remarking upon the monstrous anomaly of awarding to one favoured Institution a perfect degree of independence at the expense of the nation, while all other similar establishments are either left to depend for their maintenance upon the license which are granted, or are doomed to dignified poverty as the result of their unscrupulous honesty.

On the whole, we feel assured that, on reflection, the Universities will view this question in its true light, and that, reserving to themselves the privilege of educating and educating highly, the members of the Profession, they will forgo the right, which it is doubtful whether they ever legally possessed, of granting licenses of practice. The latter prerogative justly belongs to the different Colleges of Physicians and Surgeons; and they cannot relinquish it without perpetrating the diabolical system, or rather want of system, of which we now universally and very justly complain.

REVIEWS.

An Inquiry into the Nature of the Simple Bodies of Chemistry. By DAVID LEW, Esq., F.R.S.E., &c. Third Edition. Fvo. Pp. 624. Edinburgh: 1866.
This announcement, within a few weeks, of the publication of a third edition of a work of so purely speculative a character

as this by Mr. Lew may of itself be regarded as a sufficiently recommendatory notice. Nevertheless, however, the illustrious Berzelius having considered Mr. Lew's views as deserving of serious consideration, is consistent as to their claim to regard. These we may run up in a few words. Mr. Lew argues, that we have no proof that the bodies which we now regard as simple or elementary bodies are such, beyond the fact that they have not yet been decomposed; that the same has been said of bodies formerly regarded as simple, but now proved to be compound, that we ought rather to assume a body to be compound until it has been proved to be simple. "Chemists," Mr. Lew observes, "have been led to suspect the compound nature of several substances then considered among elementary bodies."

Mr. Lew maintains the proposition, that all other bodies which are termed simple are derived from two of three orders, hydrogens and carbons, or from elements of which three are formed. In elaborating the proof of his proposition, he examines the theories of chemical affinities and formulae, gives the leading characters of each of the sixty alleged simple bodies, and dwells at great length upon the products of separated bodies.

How the these opinions may ultimately come to be received among Chemists, must be shown in the course of events; it is, however, an telling cause of satisfaction to the author, that they have been favourably received by the French Chemists, headed by M. Dumas, and that Dr. Faraday has "increased the list of bodies requiring experiments for the purpose of discovering, if possible, the composition of some of these seemingly intractable substances."—Preface, p. viii.

We may add, that Mr. Lew's work is full of interest to the lovers of philosophic research, and must prove attractive to all who care to watch the progress of science towards simplicity,—a striking force, which characterises this rapidly progressive age, in its physical investigations.

A Manual of Photographic Chemistry, including the Practice of the Collodion Process. By FRANCIS W. HARRIS, late Demonstrator of Chemistry in King's College, London. Second Edition, small 8vo, pp. 244. London, 1866.

THE first edition of this work was published in March, 1862, the second in September of the same year. So rapid a sale proves the want of a manual of this kind, and shows also, that the want is herein supplied. After such a successful further communication would seem superfluous. We may, however, add, that we have been much pleased with the very lucid and simple manner in which the processes of photographic art are explained, and their chemistry rendered intelligible. To all who cultivate the fascinating art of photography with any higher than merely fashionable motives, Mr. Harris's Manual will be found a truly valuable assistance.

FOREIGN CORRESPONDENCE.

FRANCE.

[From our Paris Correspondent.]

Paris, May 4, 1866.

An interesting paper, from the pen of Professor Miller-Edwards, has been presented to the Académie des Sciences. Many Surgeons had already proposed to give some mineral salts in patients labouring under a slow Consumption, or fractured bones. M. Gosselin, Surgeon to the Civil Hospital, in the case of fractures of the arm employed phosphates of lime with decided advantage. M. Alphonse Miller-Edwards has made many experiments, on dogs and rabbits, to ascertain positively the degree of influence of phosphates of lime upon the speed of the formation of callus. In all these experiments it has been found, that callus is formed quicker in animals which have taken phosphates of lime than in others which have not taken this salt. Therefore, it seems that it might be useful to add a certain quantity of phosphates of lime to the food of patients with Fractured bones.

M. Moutonville, a very bold Surgeon,—perhaps, rather too bold,—proposes to take away the secondary bones when these are deeply-seated tumours, which cannot be reached otherwise. In a second paper presented to the Académie des

Exposure, in relation to successful cases of operations for such tumours, in one of which he took away a part of the inferior maxillary bone, although this bone was healthy. In the other case he diseased this bone on one side. His conclusions are, 1st. That the disarticulation of the infra-maxillary bone renders possible the extirpation of certain deep-seated tumours in the pharynx, the tongue, and the palate, which could not be reached otherwise; 2. That surgeons are authorized to perform such an operation, even in cases where this bone is not at all altered, as soon as the life of the patient is in danger in consequence of the presence of the tumour.

In a very interesting paper, read at the Académie de Médecine, M. Michon points out, as a common cause of congenital deafness and dumbness, intercommunications between sinuses. His attention as the Physician of the Hospital for the Deaf and Dumb has given him ample opportunity to ascertain this law. He states also, that out of 100 deaf and dumb, between ten and fifteen years of age, there are about 60 who have lost the power of hearing for a certain number of years; 30 are born deaf or less deaf and dumb.

Professor Collin, in a paper read at the Académie de Médecine, states, that there is always a small quantity of glucose in the chyle of animals, at the time of digestion. He tries to prove, that this glucose is absorbed in the bowels, in which it is formed from some elements of the food, and even from animal food.

In a recent communication to the Société de Biologie, Dr. Brown-Olgaard points out as a symptom of ataxias limited to one lateral half of either the spinal cord, the inequality of the degree of warmth of the two sides of the body, and particularly of the hands and feet. On the side of the ataxias the temperature is more elevated by many degrees than on the other. In animals, after a section of a lateral half of the spinal cord, the difference may be very considerable between the two sides of the body. In one case, where he had divided, with the assistance of Dr. Cornoni, the left lateral half of the spinal cord near the medulla oblongata, the temperature between the toes of the left posterior limb of the animal, was found, a few hours after the operation, to be 36 or 37 degrees Fahrenheit's scale above the temperature of the toes of the other posterior limb. The rest an enormous difference has been observed only once out of many experiments. Usually the difference is from 1 to 1.5 degree Fahrenheit's.

A case of disease of the supra-renal capsule, with browned skin, has been communicated to the Société de Biologie by M. Forest. The skin, a part of which was shown to the Society, was quite dark, resembling that of a mule. The capsule had entirely lost its structure. In them there was almost nothing but fat and many small abscesses. The prominent symptoms, which Dr. Addison has recorded as existing usually in cases of disease of the supra-renal capsule, existed also in the case of M. Forest.

PROVINCIAL CORRESPONDENCE.

IRELAND.

(From our Dublin Correspondent.)

DUBLIN, May 6, 1886.

I write to-day somewhat from regular chronological order in my reports of the proceedings of the Pathological Society, to give a brief account of the awarding of the third Medal of the Society, at its final meeting for the past session, to the writer of the last essay on the subject I announced in a former letter—the "Chronic Disease of the Liver." On this occasion four essays were read in with, following signatures. The successful essay was that signed "Hepatitis," the accompanying sealed envelope containing the real name, having been opened in the presence of the Society, the Author, Mr. Charles James Ryan, was called forward by the President, to receive the honour, before a very large meeting of the members. The President then announced that, in consequence of the death of another of the essayists, bearing the signature of "Siphilitis,"

the Council had determined on conferring a Silver Medal on the writer, who was surprised, in like manner, to be Mr. Thomas Fitzpatrick. The competition for the medal is restricted to those Students who are, under the rules of the Society, admitted to attend the meetings. The President may only speak in high terms of the scientific character and the research which both these essays displayed, but complimented the authors on their excellent as specimens of literary composition. It will be remembered that last year no medal was conferred, and the President, in alluding to the observations of his predecessors in the chair, Dr. Collins, on that occasion, expressed the gratification of the Council that the advice then given had been followed by such good results. The proceedings of the day excited great interest, and the conferring of these honours on two Students in the presence of so many distinguished members of our Profession, cannot but have the best effect on their future career. The Society then adjourned until the commencement of the next winter session.

A meeting of the Obstetrical Society was held on the evening of Friday, April 4, Dr. McClenahan, Master of the Lying-in Hospital, in the chair. Dr. George Montgomery, Assistant to the Hospital, communicated the history of a case of eclampsia which had recently occurred in that Institution. The principal points of interest in this case were, that the three children presented distendedly the first with the head, the second with the arm, and the third with the breast; and that the second underwent "spontaneous expulsion" in the manner described by the late Dr. Douglas, in contradistinction to Dr. Denman's "spontaneous evulsion," the presenting part not to the least degree receding during the time occupied by the descent of the breast. The three children combined up to the present time alive and well; their aggregate weight at birth was 14 lbs. 15 ozs. avoirdupois. Dr. McClenahan narrated the particulars of a case of complete coarctation of the vagina that had recently presented itself in the Hospital in a primiparous woman. The vagina appeared to terminate in a cul-de-sac about 1½ inch from its orifice. After the labour had continued the same hour, a crucial incision was judiciously made with a graduated bistoury through the obstructing part, to allow the passage of the head. The woman made a good recovery. There was a very small tubercle-like speckling in the membrane which occluded the vagina; but this was of so small a caliber as not to impede the passage of an ordinary probe without creating some slight laceration.

On Friday, the 23rd, Professor Davy brought under the consideration of the scientific meeting of the Royal Dublin Society some simple methods of detecting arsenic and its compounds, whether in the solid or fluid state, or when mixed with organic substances, &c. He referred to the common modes of detection, the methods of Fresenius and Stas, of Böttcher, Marsh, &c.; and then made some very simple experiments (which were performed in a few minutes), illustrative of a simple electro-chemical method of detecting arsenic, &c., which consists in placing it, in either a solid or fluid form, on a surface of platinum, adding a drop or two of strong hydrochloric acid, and bringing a small slip of litmus or starch test paper in contact with the materials, when the arsenic will be precipitated on the platinum in the metallic state, and will strongly adhere to it, exhibiting colours from peroxidation. The traces observed on heated steel. After washing and wiping the platinum, the heat of a candle is sufficient to remove the arsenic which then as arsenious acid while the characteristic garlic odour is produced. In this way, with the greatest facility, arsenic may be detected from a solution of arsenious acid in cold water or other fluid in quantity so minute as to be wholly imperceptible by the most delicate balance. In cases where the quantity of arsenious acid in solution is mixed fluids may be extremely minute, the latter should be concentrated by boiling before the hydrochloric acid is added. The presence of sulphuric acid does not interfere with the results, and it may be employed to decompose animal and vegetable matters previously to the application of the method, which renders unnecessary the tedious mode of separating the arsenic by sulphuretted hydrogen and subsequent reduction, &c. The acids and oils employed should, of course, be free from arsenic.

At the same meeting Dr. J. S. Kitchin read a most interesting paper on Specimens of Australian Crustacea, presented by him to the Society.

I have had an opportunity of perusing Mr. Scott's "Plan

for the Consolidation of the Dublin Hospitals," contained in an appendix to the "Report of the Commissioners appointed to Enquire into the Hospitals of Dublin." I do not think it necessary to bring the details of Mr. Heath's project before your readers, inasmuch as it comes from this gentleman alone, and has not received the sanction of the Commissioners of which he was a member. As an example, however, of the wholesale and complete reversion which he would make in the existing state of things here, I may mention that he suggests the possibility of converting the Dublin Lying-in Hospital into a General Hospital, and of supplying its place by appropriating a few beds in each of the General Hospitals to the diseases peculiar to women, while the lying-in patients, he recommends, should be attended at their own homes; thus depriving the public of the advantages they at present enjoy,—of attending a large number of midwifery cases in a suitable hospital, under the immediate superintendance of competent teachers, and of witnessing, under clinical instruction, the daily progress of so many puerperal women, in every stage of convalescence, and of observing every variety of puerperal disease. It is needless to say, that such opportunities as these for the acquisition of extensive knowledge could never be supplied were the patients confined at their own homes. But for what purpose is this change to be made? Is it that the details of good cases may be set before them, not serve as lessons to posterity, that the name of Mathematics should be to be thus limited from remembrance, and the noble institution founded by his humanity and his beneficence, is to be diverted from its purpose? This great man's activities, and the benefits he has conferred upon his fellow-citizens, have been well described by the writer of the " Irish Medical Directory " in the following words:—" Struck by the misery and wretchedness that met his eye in his charitable visits to poor puerperal women, this distinguished philanthropist conceived the noble idea of founding an Institution capable of freely receiving within its ample walls all who might apply, having poverty for their plea, and the pangs of approaching childbed as the ground of their request. With an ardour of benevolence rarely to be met with, and a spirit of generous philanthropy seldom exceeded, this Christian benefactor devoted to this favorite object his time, his talents, his labors, his private fortune, even to the neglect of a competency for himself and his children; and, finally, his life. Of him it may be truly said, in the beautiful language of Quinlan, "in finding the lamp of charity, he had exhausted the lamp of life." The inscription that records his goodness is proud record of the benevolence of the Medical Profession is concluded in these simple words—

Wm. Mathews, Founder 1757.

This good man's public labors, as far as giving shelter to destitute women in Nature's most trying hour, are unexceptionably referred to, both as regards the letter and spirit of his instructions. In an Institution in the world in thousands of substantial number, and ever tenacious, considering the previous circumstances of its inmates, there is this. Its origin is a noble instance of goodness, that puts to shame the crowded benevolence of ordinary men, although a satisfactory example of the effects of self-devotion to the public weal. In a Kingdom distinguished for its benevolent institutions, and where every manly mind "feels it his duty" to have its appropriate system, this distinctly stands pre-eminent and alone. Like the Nile, it pours health and vigor over a district the population of which would otherwise droop and die beneath the indolence of Nature (a). A reference to the evidence taken before the Committee of the House of Commons upon the Dublin Hospitals, (p. 125 of seq.) will show that these arguments, as to the efficiency of the Institution, have not been overdone. Since its foundation upwards of one hundred and eighty thousand women have been treated within its walls. Is it because its beneficial efforts are felt, in every quarter of the globe, in the swelling forth of sound and well-educated obstetricians, that it is to be doomed to destruction? But sure I am, that the voice of public opinion will never allow the obstetric head of reckless ignorance to commit such a sacrilege, and I trust that, should the world last long enough, the memory which this Hospital has just completed shall be but an item in the period of its useful career.

GENERAL CORRESPONDENCE.

EMBOIT OF EYE IN MIDWIFERY.

From the Editor of the Medical Times and Gazette.

SIR,—After the general opinion I gave of the Emboit of Eye in my last communication to your Journal, it will not seem strange that I should consider it appropriate in a limited range of cases only. Indeed, my conviction is, and has long been, that the midwifery Practitioner who sees it must certainly will have been regretted and anxious to suffer, than he who involuntarily gives it, in every case of slow labor, merely because his patient is exhausted, or his patient may be otherwise to have something done for her. My experience of the right leads me to lay down as salutary rules for its exhibition the following conditions, viz. —

1st. That the os uteri be largely dilated and the soft parts in general be well relaxed.

2nd. That the membranes be whole, and the liquor amnii not escaped. And

3rd. That the capacity of the maternal pelvis be complete and without deformity.

In short, the labor in which the organ is to be employed should have nothing to render it all that can be desired; but some effective contractions of the uterus may be obtained by various means besides the administration of the medicine.

If anything else be required, the organ of eye is not the appropriate remedy; and so it has certain great drawbacks connected with it, the case ought to be carefully considered in all its circumstances before the organ be administered. For, if given before the os uteri is dilated to at least the size of a crown, and in a dilatable state, the great probability is, that the fibres of the os, and the adjacent lower portion of the uterus, will become contracted in a transverse direction, and so the labour be delayed rather than accelerated; the membranes will become permanently ruptured, the liquor amnii escape, and the life of the child be endangered. If given in a rigid state of the soft parts, the same will be likely to follow; and if used when the pelvis does not afford free room for the easy passage of the child, you will only induce pain-indebtedness to force that passage, and render the rupture of the uterus probable. The frequent appearance of still-born children after the organ has been used, is a fact I believe admitted by all men of experience upon the subject, and is, I think, easily accounted for by the fact of the unassisted and severe pressure which is made upon the child by the uterus, especially after the escape of the liquor amnii, while contracting under the influence of the organ. The os uteri rigidly bent while the uterus is thrown, must interrupt, and frequently altogether stop, the circulation of the blood through the placenta, and hence, as proved also by the blue color of the children born under such circumstances, the necessary purification of the blood through that organ during fetal life is suspended, and the death of the child occurs as the result. It seems entirely unnecessary to attribute the fatality of the life, or the entire destruction of the life of such children, in any particular instance of the organ, as we have such clear proof, both from the well known anatomy of the uterine pressure, and the blue color of the children, that the obstructed circulation of the blood alone will account for all the phenomena. That many infants, therefore, have been sacrificed by this means, I have no doubt whatever, and hence I appeal the more ardently to the Profession, to ponder this point of practice, and to do it without delay. For my part, were I able to renounce Prohibition I say, which I cannot expect to do, I should be very sorry of this drug in all, except most decidedly such cases as those I have already indicated, believing that a safe and efficient substitute can easily be found free from this serious drawback.

As to the use of the organ in post partum hemorrhage, I have little experience. I will only say, that, finding it to exert so partial and uncertain an influence in contracting the uterus, I have not been in the habit of resorting to it in such hemorrhage to it, but have employed the other well-known agents, upon which more trust might be placed, as such cases do not admit of more temporary expedients, but require prompt and efficient intervention.

I am, &c.

Colchester, March 8, 1864.

Darius Moxam.

P.S. These views will, doubtless, not receive the concurrence

(a) Irish Medical Directory for 1864, by Henry Gray, M.D. Dublin: Clery and Co. 1864.

of many gentlemen with whom I know the eye is a favorite, and who show their attachment to it in a similar way to the late Dr. Leaver with his horse, who always carried it about with him in a pocket made for the purpose, like the carpenter with his rule, and who was an ardent and expert in his use of his favorite instrument, that he often slipped it from his pocket and applied it, before he was known to be using any medicine; but I give my conscientious opinion of this drug, without any conscious prejudice against it, believing that neither the Profession, nor the public will suffer any real loss from its entire disuse.

BANTONIN AS AN ANTHELMINTIC.

[To the Editor of the Medical Times and Gazette.]

Sir,—Having had several cases during the last six months (among the great) of children suffering from worms, I was induced to try the effect of bantonin, and from the very satisfactory results which have arisen from its use, I think it may be interesting to your readers if I give publicity to the same.

Among the first cases treated, was that of a child of two years of age, to whom I gave three grains of bantonin, followed in two hours by an aperient powder; this child voided the next morning, at one time, thirty-seven worms, most of them a foot in length, of the lambricoid tenacis kind. Two children in another family were similarly treated, and between forty and fifty worms came from each; again, in a family of five, 124 worms at one time, and many more afterwards, followed the aperient, each child having taken one dose of bantonin. I could instance many more cases which have been relieved by this medicine. After the expulsion of the worms, I give a tonic-stomach, containing the purified tincture of iron and quinine with, and change the diet from a vegetable one to that of meat and bread. My cases all do very well.

I should state that bantonin is a medicine that may be administered with perfect safety. I give it in its crystallized form, between bread and butter, and two hours after it a dose of calomel and jalap; in some cases an interval of twenty-four hours occurs before the worms are voided.

The persons who reside in the locality in which I have met with these cases, on very poor, and, from the high price of bread this winter, have had recourse to preparation of the moment description, as an article of food, which will account for the presence of worms in the alimentary canal.

I am, Sir, Yours &c.,
GEOFFREY G. FRANK, M.R.C.S. Eng., L.S.A.
Dorchester, Dorset, May 3, 1885.

OPERATIONS IN CONVERGENT STRABISMUS.

[To the Editor of the Medical Times and Gazette.]

Sir,—Shortly before my departure for the East, I was consulted by a gentleman who had been operated on some time previously for convergent strabismus, but who now was affected with a slight divergence of the eye operated on; this, together with the retraction of the nasacorn, gave to this eye an appearance of rotundity and fulness not possessed by the fellow, and the asymmetry of the two was thus heightened. The patient could bring the corners into a position equivalent to the two nasacorns, and could even lessen it slightly; and the covering appeared to be due rather to the new insertion of the internal rectus having taken place too far backwards, than to any hypertrophy, or over-action of its antagonist. Under these circumstances I was unwilling to run the risk of increasing the fulness of the eye by dividing its abductor muscle, and was even doubtful how far such an operation would modify the strabismus. I accordingly picked up a field of conjunctiva with the conjunctival force, inserted it in the corner, and slipped it off with a pair of scissors, trusting that the contraction which would ensue from the healing of the wound might be sufficient to verify the slight divergence. In this hope I was not disappointed, the greater fulness of the eye disappeared, the nasacornic lachrymalis was drawn more towards the corner, and the power of inserting the eye was increased. A small granulation made its appearance in the course of treatment, which required brushing three or four times with the nitrate of silver. A month after the operation some but an ophthalmologist would have discovered any difference between the two eyes, and the patient took leave of me highly gratified with the result.

It is seldom one is called upon to remedy so slight a defect

as that for which this patient consulted me. It is more marked cases of strabismus, following a too free division of the contracted parts in convergent strabismus, some such operation as that so ingeniously devised by Mr. Graham may be performed; but I am of opinion that many cases, even of primary strabismus, where slight, might be remedied by such an operation as that described in this paper. I am, Sir,

Yours &c.,
A. STONEY-GRIVE, St. James's park. G. HARRINGTON.

THE VACCINATION TRADE.

[To the Editor of the Medical Times and Gazette.]

Sir,—Gentlemen,—if you can, will you—suggest some means of preventing a very gross impropriety. Many of the Poor Law Medical Officers in this neighbourhood are in the habit of calling on the houses of people, except those of the highest rank where they dare not intrude, and demanding as a right, leave to vaccinate their children.

I have written to the Board of Guardians, and they have issued instructions to their vaccinators not to call at private houses, and I have addressed the Poor Law Board, who say that it is no business of theirs.

If desirable, I will send you my correspondence with them two to-day. I am, Sir,

May 15, 1885

I enclose my name and address.

EPIDEMIOLOGICAL HOSPITAL.

[To the Editor of the Medical Times and Gazette.]

Sir,—As I have ceased to be officially connected with Bethlem Hospital, I hope I may have credit for speaking disinterestedly of its management. I am impelled to ask your permission to say a few words on this subject, on public grounds, in answer to a leading article which appeared in the last number of your Journal. I have no pretence of any own to serve, and, personally, have no reason to regret the consequences of the revolution which, four years ago, swept away that ancient foundation. I cannot but feel a deep interest in an Institution in which I spent so many of the best years of my life as its principal Resident Officer, and to which I am indebted for my experience. I would gladly endeavor to dissipate the public mind of an erroneous prejudice, which, to my own knowledge, deprives many of the great blessings which it is in the power of that Hospital to dispense. It has occurred to me, in the course of my practice, to recommend the friends of patients whose means were limited, to avail themselves of the advantages which are there offered; but I have found a repugnance which I could not overcome, and which, it is to be feared, will for some time yet continue to operate in keeping away a considerable number of most deserving persons, who could nowhere else be so well cared for. The old adage, "Give a dog an II name," etc., has been painfully illustrated in the case of Bethlem, which, whatever its old defects, must now be admitted to be one of the best, if not the first Institution of the kind in the world. The confidence of the public was no shaken by the reports of insanity to patients, that, although the whole staff has been re-organized, although thousands have been liberated upon the building, to furnish it with every means of comfort and convenience, and it has become, as you truly remark, so unclean in the marketplace; it has not recovered its good name, and the advantages are scarcely half utilized; and this, not from any dissipation in the numbers of those eligible for admission, for the County Asylums are full to overflowing, and many seek in vain for admission into them. Surely, then, it will be considered a service to humanity to remove a prejudice which so seriously interferes with the usefulness of this excellent charity, and deterre hundreds from seeking its hospitable shelter. It is said that the presentation of will is not so much to be depended on; and now that the names, which were unscrupulously raised, as to the alleged mal-practices in Bethlem, has subsided, and people are able to look calmly into the facts, the question may perhaps be asked without provoking a hasty and angry reply. Was Bethlem really so bad as was represented? Was the management was in many respects bad, and the building defective, and that both have been very greatly improved under Dr. Hood's superintendence? Will most acknowledge; but Bethlem was not the abode of

object which has been represented, nor was it to be taken as exaggerated, much less exaggerated, the value of the old appliances. In support of this position I may remark, that many of the principal improvements to which you refer as novelties, were made some more than ten years ago, and others commenced in the days of the old Medical Staff. For instance,—the same bellied-tub which now affords ventilation for the patients, has been in use three twelve years. Pipes were not confined to the women's side of the Hospital, even in that supposed dark period of its history; and in regard to the new windows, if anybody desires any credit for them it is myself, for they are my own invention. The drainage ways made at my own expense, and above a hundred of the windows were fixed while I remained in office. A description of this window was published in the *Psychological Journal* for January, 1851, and it has since been adopted at St. Luke's, and also on the Continent. Again, so far from the value of the old appliances having been diminished in Edinburgh, it is but an act of simple justice to the late Medical Staff including my illustrious friend, Dr. Monro, and my friend, Sir A. Monro, to record the fact that, during the last few years of their connection with the Hospital, in addition to many material improvements, mechanical novelties were entirely abolished, and what is more important than all, a larger number of patients were discharged cured than at any other period in the history of that Institution, or of any similar Institution, throughout the world. Showing, then, that change existed, that the work of improvement was slow, and that individual instances of misadventure on the part of novelties were less rare than now, I hope I have succeeded in showing that Edinburgh was not so bad as was generally supposed, and that it has never been so far behind similar Institutions that it should be abandoned. The dark side only of the picture was presented to the public, but nothing was said or known of the more acknowledgments of many a grateful heart, which it was the happiness of the Medical Officers so commonly to receive from those who could appreciate the services now which had been bestowed upon them in the time of their greatest need. Even now I frequently meet with kind remembrances from former patients of Edinburgh who chance to fall in my way; and it is a remarkable fact that, in no one instance, have I found the contrary feeling on the part of those who were resident there during my tenure of office.

In conclusion, I would repeat that the object of these remarks is in the interests of humanity, to restore an unreasonable distrust of a valuable Charity, in which the sphere of usefulness is so nobly restricted, and which is peculiarly related to the wants of a large class of respectable patients with very limited means, for whom no other provision is made.

I am, Sir, Yours faithfully,
WILLIAM WOOD.
14, Upper Harley-street, Grosvenor-square,
May 12, 1888.

WASHING THE STREETS versus WATERING.

(To the Editor of the Medical Times and Gazette.)

Sir,—In the *Medical Times and Gazette* of last week you published a letter from a Medical Practitioner residing in a important town, in which he states that the use of sea-water for the purpose of watering the streets had been found unwholesome during the cholera year, and that consequently the commissioners had determined henceforth to use fresh water for that purpose.

I can readily believe that sea-water used to water the streets might be unwholesome. Look at the condition of the streets of most towns; their surface is very impurely cleaned, and is loaded with horse-dung and other animal and vegetable refuse; and when this becomes dry and dusty in the summer months, it is stirred and converted into mud. The talk of laying dust, but never dust will not be laid. Certainly by the present watering process we do not inhibit fermenting in the shape of dust; but it causes us, as it has nothing on the pavement, with sticky odours, that are probably much more unwholesome.

Now, so long as water is used for this purpose, by all means let it be fresh. Sea-water may introduce some pure element of unwholesomeness, especially if taken from a sluggish pool or stream.

But I remember that the use of water administered in your paper is of a far different and more liberal sort. You will

readily contemplate that the streets shall first of all be swept as often as possible, and then that the surface shall be coated with a copious steam, sufficient to carry off any remaining impurities into the sewers, and to leave the streets as sweet and clean as after a heavy shower.

The use of water in these two modes is absolutely different. In the present mode, the water is used to remove dry dirt into wet dirt, and is left to evaporate till the stinking mud again becomes stinking dust. In the other mode, the water, with any residual impurity, is immediately drained off.

I am, Sir,
GERRARD STREET, LONDON. ROBERT DUFFY.
May 12, 1888.

REPORTS OF SOCIETIES.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

THURSDAY, APRIL 12, 1888.

CAROL HARRISON, Esq., President, in the Chair.

ON THE STRUCTURE AND NATURE OF THE SO-CALLED COLLOID CANCER.

By HERTFORD W. HENLEY.

Medical Surgeon to the Westminster Hospital.
(Communicated by J. H. ARNOTT, Esq.)

This paper was accompanied with many illustrations, and an analysis of nine cases of colloid cancer observed by the author, giving an account of the age, sex, history, progress, result, and post-mortem examination in each. It gave a very accurate description of the structure and nature of the disease, more especially of the characters and development of the membranous stroma and its contents, both of which had been indicated, but not fully described, by previous authors. Having given a minute account of the mode of origin and development of colloid, with an examination of the question as to its relation to and association with cancer and tubercle, the author drew the conclusion, that, so far as could be judged from the cases detailed by him, colloid was a disease primarily not general, neither of a cancerous nature, nor frequently associated with cancer, and concluded with discussing the propriety of its early removal of the disease when practicable, inasmuch as, if not ultimately cured by operation, there was abundant evidence that colloid was slow to return after excision.

The President asked the author whether he had examined the difference between the solid materials of the ordinary cystic disease of the breast and those of the so-called colloid disease, in the later stage.

Dr. Henley said he had frequently made the examination, and he could see no resemblance in the two structures.

The President said he had a patient under his care in whom, during the last eighteen years, he had operated twelve or fourteen times for disease of the breast. The disease was at first of the ordinary cystic kind; year after year tumours continued to form in the cellular tissue, varying considerably in size, and presenting no difference in texture from those which were first detected. It could hardly be called colloid disease, nor could it, appearing time after time, well be regarded as cystic.

CASE OF FRACTURE OF FOUR CERVICAL VERTEBRÆ, WITH DISLOCATION, PRODUCED BY SLIGHT AND UNUSUAL CAUSE, AND RESULTING IN IMMEDIATE DEATH: WITH NOTES OF A CASE OF FRACTURE OF THE OS SACRUM.

By GEORGE JAMES SAKERTY, M.B.A.S.
Medical Surgeon to St. Mary's Hospital.

(Communicated by GEORGE WHITE, Esq., Sec.)

This paper was accompanied with the pathological preparation of the parts. The interest of the case lay in the great amount of injury produced by a slight cause. There was fracture of the posterior arch of the axis, through the lamina of the second, third, and fourth cervical vertebra, directly behind the articulating process, completely separating them from their respective bodies, in addition to which the lamina of the third and fourth on the left side were comminuted.

There was partial dislocation of the third vertebra forwardly; the posterior atlas-axis ligament was broken, and in part disengaged; the ligamentum subatlans was torn away from the second vertebra. There was effusion of blood into the space between the bones and the membranes of the cord from the first to the fifth vertebra inclusive; the posterior common ligament was much stretched with a longitudinal rupture of an inch in length, opposite the second and third vertebrae; while the cause producing all this amount of injury was the forcible twisting of the head a few times from side to side, the sufferer holding his head in a bending position, with his hat on, while his friend, who raised the subject, bodily rotated it by the aid of the belt. The author, who had taken great pains to convince himself that this account of the accident was the true one, gave a minute description of the relations of the bones of the spine when placed in the position described, and of his view of the cause and progressive stages of the injury, pointing in conclusion many sources of information, the case, however, being in its details quite a solitary one. The notes of the fractured vertebra the author stated he was inclined to lay before the Society, in consequence of the statements of various authorities, (Malpighi and others,) to the effect that the substance, when broken by direct violence, is always crushed, and that the fracture is always situated behind the intervertebral; whereas, from the view of the vertebra, and the aspect of vertebra after the injury, it was evident in this case that the anterior third of the bone was separated obliquely from above downwards, from the posterior two-thirds—One is, in front of the larger extending from the intervertebral.

Mr. Tye bore testimony to the accuracy of the details related by the author.

Mr. Moore said he had met with a case of fracture of the vertebra similar to that related in the paper. It presented, but little difficulty, and healed readily. As in the other case he would ask the author what was the condition of the bone after death—whether there was any unusual thickness or other defect which would account for the great amount of injury caused to have been produced.

The Author said the bone were not all examined, but the body was that of a stout grown man, presenting no external signs of any unusual thickening of the bone.

The President mentioned a case of fracture of the os calcis, attended with much laceration and subsequent suppuration. The patient recovered, and had very good use of his ankle, so as to be able to walk with considerable freedom.

The Society then adjourned.

EPIDEMIOLOGICAL SOCIETY.

Monday, May 5, 1884.

Dr. BASTROW, President, in the Chair.

Dr. McWilliam read a most interesting and elaborate paper ON THE GEOGRAPHICAL DISTRIBUTION OF HEALTH AND DISEASE, IN CONNECTION CHIEFLY WITH NATURAL PHENOMENA.

By ARTHUR KEITH JOHNSTON, F.R.S., &c.

The subjects of this important communication were illustrated by a large and beautifully coloured map, upon which were delineated the various groups of diseases prevailing in the different portions of the globe, the region of each group being marked by its particular colouring. The map also exhibited equal annual summer and winter isothermal lines; lines pointing out the march of cholera from east to west; lines indicating the foreign stations of the British Navy; the zones of fatal diagnosis showing the proportions of deaths from consumption in different quarters of the globe; the attacks of cholera among the troops on different stations; and the comparative value of human life in different countries, and in cities and towns. [The map, and the paper in a more extended form, will appear in a forthcoming edition of Mr. Keith Johnston's "Physical Atlas."] The author commenced by observing, that in the investigation of the extent to which the human family is affected in the enjoyment of health and the preservation of life, by physical or natural causes, statistics form the safest guide, or the accumulated store of carefully observed and accurately recorded

facts, regarding the occurrence of disease in its different forms, its extension or limitation in space, and the probability of its recurrence. But reliable tables of sickness and mortality do not exist, except for very limited and widely separated portions of the globe. In the absence of positive data, however, a knowledge of the physical conformation of the earth's surface, and the meteorological agencies to which it is exposed, afford, through comparison of well known phenomena in long settled countries, a means of arriving at certain probable conclusions regarding others of which little or nothing is known. After writing briefly the object of Medical Geography the author shows, that similarity of geological formation indicates a similarity in the diseases of a country, and that a certain amount of heat and a sufficient time for its manifestation is necessary for the development of certain maladies. In the West Indies, for instance, the period of disease follows the course of the sun, the malarial season occurring at opposite sides of the equator. As the sun proceeds northwards in the spring, so the malarial season advances from the southern to the northern islands. In the Mediterranean the malarial is local in the hot season, between July and October; and in the Southern States of North America, the pests of the Army are regularly abandoned at the hot or malarial season approach. But in the temperate regions the malarial is reversed. Throughout Europe, generally, the maximum mortality occurs at the end of winter, and the minimum at the middle of summer. After dwelling for some time upon the influence of which elevation above the sea level, temperature, moisture, electricity, &c., upon health, the author proceeds to illustrate the great object of his paper by the aid of a map upon an extended scale, upon which the distribution of disease over the various regions of the globe is clearly and intelligibly laid down. With the view to demonstrate that regions of disease correspond with seasons and zones of climate, Mr. Keith Johnston divides the surface of the globe into belts or zones, distinguished by great leading characteristics, as, lat. the torrid zone, or belt of greatest annual mean temperature, characterized by the zone of disease, which includes dysentery, yellow fever, cholera, malarial fever, and disease of the liver. This class of diseases depends essentially on heat and moisture in the cooling season, and therefore prevails in greatest intensity in the countries situated under the line of the greatest annual mean temperature. Its northern limit is probably the Amazona, lat. 37° North, in the Atlantic; and California, 36° on the Pacific Coast, in America. In Asia it extends to near Peikin, lat. 36° North, and to Europe to the north of Spain. Its southern limit runs in America, through Ayacucho, lat. 36° South, in the Atlantic; and Lima, 17° South, on the Pacific. In Asia the southern limit includes Amoy, Amu, Ceylon, Sumatra, and the islands of the Asiatic Archipelago, and thence to the northern shore of Australia. In Africa it includes the island of Madagascar. Within these limits, the principal centres of the disease, are, in America—the shores of the Gulf of Mexico, the West India Islands, and the northern portions of South America. In Asia—India, China, and Ceylon. In Africa—the countries around the Gulf of Guinea on the west; Madagascar and Mozambique on the east; Algeria and the shores and islands of the Mediterranean on the north. In the East, or sub-tropical and temperate zone, inflammatory diseases, represented by typhoid fever, are the characteristic maladies. In North America and Europe, the southern boundary of this group of diseases, coincides generally with the northern boundary of the hot zone. In South America it probably includes Patagonia. In Africa it includes the Cape Colony; and it embraces the south of Australia, Tasmania, and New Zealand. Its northern limit in America includes Nova Scotia and Newfoundland; and in Europe the northern boundary includes the British Islands, Norway, and Sweden to 60° North, whence it follows a north-easterly direction till it gradually declines towards the borders of Asiatic Russia. The third zone, or the sub-temperate, sub-arctic, and arctic zone, characterized by cholera and colds, includes the whole of Europe to the north of the preceding zone. In America, it extends south to Europe and New York, including the district of the Canadian Lakes; thence it continues northward, nearly to the line of 41° mean annual temperature. Included in the best known locality of this zone, and may, therefore, be taken as its representative. This island is attacked by cholera every year in spring, or in early summer. Influenza, which seasonally visits this is-

head, has also a great influence over mortality, attacking the whole of the inhabitants, and spreading, in an incredibly short time, over the whole island. Fuller says, that the majority of the inhabitants die before the age of 50, from arthritic and vascular affections; and Crues, that scurvy is very prevalent in Greenland. At Okotok, in Siberia, it is accompanied with difficulty of breathing; and a cough called "Ho" is endemic among the Scandinavians. Mr. Johnson then refers, in a comprehensive manner, upon the subject of the etiology and influence of the different quarters of the globe, commencing with great skill the malarial fever which abounds in the valleys, the malarious districts, and the islands of such of its great divisions. He next gives a rapid but vivid sketch of the main epidemics by which mankind have from time to time been afflicted, tracing them from the regions of their birth to other countries, into which they sometimes make incursions, and showing the modifications which they undergo in their progress. The author concludes by an interesting examination of the question, embracing the sickness and mortality among our soldiers and sailors, taking as his ground-work the valuable statistical returns presented to Parliament by Colonel Fildes and Dr. Ballou for the Army, and by Dr. John Wilson, and Dr. Dwyer for the Navy.

A vote of thanks was unanimously accorded to Mr. Johnson for his paper, and for the valuable map presented by him to the Society. Some observations were then made by Dr. Burns, Dr. Ford, Dr. Greenhow, Dr. Camps, Dr. McWilliam, and Dr. Lewis, who united in praising the efforts of the author, and thanking him for having brought them before the notice of the members.

WESTERN MEDICAL AND SURGICAL SOCIETY OF LONDON.

April 4, 1910.

Dr. Burns, V.P., in the Chair.

Mr. Burns read a case of PERFORATING ULCER OF THE RECTUM.

The patient had been at times ill in various states of the bowels, sometimes diarrhea sometimes constipation existing. After a recent confinement there was much pain, diarrhoea, and tympanitis. The last illness commenced on February 19, with stiffness and pain in the right side of the abdomen; the bowels were constipated, and there were no signs of peritonitis inflammation, the symptoms apparently dependent upon impaction alone. There was no fever, but an evident tumor existed in the region of the sigmoid flexure of the colon. Pus, purpura, hemorrhages, and sloughs were noticed, and produced sufficient excruciation from the bowels. The symptoms continued much the same for the next day or so; the sickness then abated, and though the pain was lessened, there existed extreme tenderness. On the morning of the third day the sickness ceased with all the symptoms of collapse, and the abdomen became enormously distended with tympanitis, but was free from pain on pressure. She gradually sank, and a post-mortem examination was instituted five hours after death. The peritonium was everywhere glaucous and free from reflux; near the sigmoid flexure there was a mass of yellowish fluid was observed in the stomach, and intestines were healthy, except at about seven or eight inches from the rectum, where a thickened, hardened mass of three inches, involving the entire circumference of the gut. This piece of bowel was removed, and, upon being opened, exhibited a thickened state of the submucous tissue, the surface of the canal being somewhat redened. The diseased surface extended over about four inches. The mucous membrane was softened and thinned in three places; one of the thinned had perforated another had nearly done so, and the third had only ragged the mucous coat; there was some yellowish tubercular matter between the sheets; the mucous membrane was generally inflamed in the diseased portion of the bowel. The specimen was exhibited.

The points of interest in the case were the situation of the abscess, it being so high up, and so contradicting the opinion that abscess of the colon is never beyond the reach of the finger. Another point to be noticed was the slight degree of

the symptoms during life, and of the absence of all peritoneal inflammatory appearances after death.

Mr. Burns also introduced a specimen of

CANCER OF THE PYLORUS.

The patient had not complained of any symptoms except for a few weeks before death. During which time her consciousness had remained the previous cheerful expression so pathognomonic of organic mischief. Her chief symptoms were heart-burn vomiting often (about half an hour) every meal, the vomited matter being dark coloured; some constipation, and reddish bowels; there was no severe pain, nor was any fever discovered by any of those who saw her during this illness; there was no tenderness. Notwithstanding these negative symptoms, the author diagnosed cancer, as opinionated at various times with that of two other gentlemen who were called in consultation. The treatment consisted of rigid rules in diet and mild aperients; the vomiting resisting strychnine, iron, venous, bismuth, and prussic acid; also locally such free exhibition. After death the body was found much emaciated; there was no hardness in the region of the pylorus, but in the splenic region a hard mass was distinctly felt. Upon opening the abdominal cavity this hardened feeling was proved to be the pylorus, the cul-de-sac of the stomach being pushed up under the ribs, and the stomach assuming an horizontal position in its new situation; the diaphragm was flattened across the vertebral column to the stomach. Upon opening the stomach it was found to contain a large quantity of dark-coloured fluid, and the pyloric end was occupied by this cancerous growth; in this latter the mucous membrane was ulcerated and bleeding. A remarkable fact in this case was, that the sickness which had so exhausted her ceased entirely just before death, and the bowels, which had generally been constipated, acted regularly. The situation of the stomach, not to be accounted for by any inflammatory affection as it was free and loose in its abnormal locality, accounted for the non-detection of the tumour during life.

The Society then adjourned.

MILITARY MEDICAL AND SURGICAL SOCIETY.

FIRST DIVISION, BRITISH ARMY, GERMANY.

February 23, 1910.

Dr. Williams in the Chair.

(Presided over by the Vice-Chairman.)

Dr. Williams mentioned that Mr. John Hall was on his way to the meeting, but had met with a slight accident which obliged him to return; but he had sent a letter which he received that day from Dr. Smith, Director-General, acknowledging the receipt of the proceedings of the first two meetings, and promising all assistance in his power to further their object.

Dr. John Hall also sent a numerical return of the wounds received in action from the commencement of the war to the 1st of December, 1909.

The general rules that had been drawn up by the Council were then read.

Dr. Keeler read some remarks on

AMPUTATIONS.

Although the works of our most distinguished civil and military Surgeons would appear to embrace and elucidate every point of question or difficulty connected with the subject, the matter he had selected for the Society was one of interest at the present time, and, without venturing to suggest any novelty or theory of practice, he felt it a duty to elicit every possible information which might hereafter tend to preserve other life or limb. These questions suggested themselves:—1st. In any given case, why should we amputate? 2nd. When should we amputate? and 3rd. How, or in what manner should the amputation be performed? The first and second questions involved the nature and extent of the injury, the condition of the patient, and the circumstances of locality, both present and eventual. They comprised what was called Conservative Surgery, and, if he might say the expression, the sympathetic reflection of Surgery. He would therefore ask in the first place, What extent of lesion of soft parts without detriment to a principal artery or fracture of bone can

justify amputation? Most of us have seen a fatal shock to the system by a large shell or fragment of shell traversing the sole of a foot, or passing through its soft parts. He remembered a soldier of the 11th Highlanders wounded in the foot by a large fragment of shell passing transversely through the middle of both digits, but without injuring the bone, which case terminated fatally in 4 hours. This case proved fatal, in consequence of not applying a tourniquet, as the track of the large branch of the limb was not injured. He would, therefore, advise his younger brethren against neglecting to apply a tourniquet, as many cases may tend to produce hemorrhages during the transit of the patient to the hospital. In such a case he considered one duty was to assist nature in the subsequent extensive suppuration, for it is astonishing to what an extent injury of the soft parts may be repaired. He then mentioned a case in which the arm and leg were both extensively injured.—The arm was amputated on the field, but in the leg the femoral artery had been laid bare, (just below Poupart's ligament) two inches of the tibia had been exposed; still it gradually covered over. Everything was applied this time, from the nature and extent of the injury, the protection from his wounds and the suppuration, and the circumstances which prevented his being treated in the hospital. He inquired, therefore, from this and similar cases, that in the majority of uncomplicated lesions of soft parts, if the system suffers from the first shock, the chances are in favor of recovery without amputation. He then referred to the valuable properties of the compound fracture of humerus, or tibia or femur, in extensive lacerated wounds; it would be of advantage more especially in a long passage by one to the hospital, after an action, as had already occurred in the Crimea. Where strength had actually recovered, the application of pure nitric acid (not not beyond the dead surface as in Hospital gangrene) speedily converts an offensive source of irritation and fever into an innocuous, innocuous healthy substance, and greatly expedites its removal. The infliction of a wound on the principal artery of a limb, or even one of its large branches, brings a most serious complication in the laceration of the soft parts involved in action; laceration is not frequent, as arteries, from their elasticity and peculiar structure, often escape; still it does occur, and the question is, what instances it should serve as our practice. A man of the 11th Highlanders was wounded by a ball in the axillary space, and the artery opened. The wound was skilfully tied by Dr. Logan, above and below. Mortification ensued, and amputation was performed as a desperate resource, and the man died. Now, although there can be little doubt that had amputation been performed in the first instance, this man's life would have been saved, it does not follow that this would have been the correct practice. He trusted that we might have some results of the experience of Allen, Haldane, and Ingham on this point. His own opinion was, that, unless under very peculiar circumstances, the primary consideration should be the immediate security of the patient's life by detaching of the artery, leaving amputation to follow as a possible but not probable contingency. Our next consideration was regarding fractures of some received in battle or connected with amputation. The solution of continuity will of course depend much on the nature, etc. Limbs have not much chance in the track of a round shot or shell, and have an little chance of action. He believed that as regarded the upper extremity and lower the limb an ordinary bullet will wound, and a third calibres cause such extensive comminution as to justify amputation. The old belief was easily turned in its sense, but the British produced longitudinal fracture and sometimes comminuted it in an extraordinary manner; still the reparative process of fracture was often equally extraordinary. He then mentioned a case in point. The stresses that had attended the operation of resection of joints proved it was not absolutely necessary to amputate because a ball had not penetrated any articulation of the upper extremity, or a bullet entered into it. Wounds of the torso and arms were also amenable to the principles of conservative surgery, of which he had seen several admirable results. He would now refer to compound fractures of the thigh—though last, the most important, and embracing the two questions, Why should we amputate? It was a most serious and fatal duty of the Surgeon to weigh well this question. All personal feelings of pity or vanity must be quelled. At the Cavalry charge of Balaklava General Durbachet exclaimed, "Who's a' no' gae la, gae!" and although it may be equally applicable to a Professional eye to see

Waller's light steel flashing through wounded limbs in great numbers, it was not always surgery. There was no operation that he would not have as honest pilots in performing; but he maintained that it was not always necessary to amputate in compound fractures of the femur. Can life be insured when amputation of the thigh was performed—certainly not. Must it be modified without a hope of saving the limb?—certainly not. There is a living proof in the ordinary this occurred in the camp. Under what more unfavorable circumstances could the wounded have been placed than after Allen, Haldane, and Ingham? Still the cases proved remarkably successful. He then referred to the modes of preserving the limbs from the motion during very rough travel, to which military men, under such circumstances, were subject, and recommended the parts per se splint, and also observed on the best mode of applying it. The French Surgeons said they never attempted to save a compound fracture of the femur; no doubt many English Surgeons hold the same opinion. He was aware that these cases required extreme vigilance; but what had happened might happen again, and he trusted that attempts would be made to preserve the limb in such cases, should we have another campaign. The rifle bullet generally split the femur in the direction of its fibres. His experience of wounds of large joints led him to the conviction that either amputation or resection must be performed to give the patient a chance of his life. He was in favour of the resection of joints. The next question was, When is it to be performed? Is it to be primary or secondary? Primary operations he considered to be within thirty-six hours, or before sufficient inflammation had fully set in. The consequences of secondary operations during that period were very fatal when the operations were delayed to the true secondary period. When the comminution had become to some degree accustomed to the denudation of the system, the result became very favourable. He then gave some tables of the results of secondary operations at Plevna, but the returns were not very complete; however, the conclusion naturally was, that if amputation were to be performed, the sooner it was done the better after the receipt of the injury, and if delayed, no operation should be performed until local and constitutional circumstances were favourable. He would continue the subject on another day.

Dr. Williams said that as the practice of some was very different from what had been so fully stated by Dr. Mearns, he hoped that those who were those from the commencement of the war would give their experience. With reference to the danger of laceration of wounds, he had not used it himself, but had found copious use in lacerated wounds.

Dr. Mackenzie told some of the cases he had had considerable experience in gun-shot wounds. He could bear his testimony to the admirable effects of the fracture of humerus. He thought it a valuable remedy, and had used it in cases of hemorrhage from the surface of acetabular union with the greatest benefit.

Dr. Charfield differed somewhat from Dr. Mackenzie, but agreed with him in some of wounds of the humerus. He considered wounds of the large joints as cases for resection; however they were not always hopeless cases, and he mentioned the case of an officer of the 11th Regiment who was wounded in the knee-joint, treated by Dr. Ryan, 11th Regiment, by cut, and whose limb recovered without an operation. Compound fractures of the femur were also not without such success as to leave hope of saving the limb. He also mentioned some cases of compound fracture of the tibia that afterwards required operations; still he is general agreed with Dr. Mackenzie, that many cases would still require operations.

Dr. Trotter mentioned a case of fracture of a wound of the knee-joint, where an attempt was made to save the limb, but amputation was subsequently required.

Dr. Charfield, in reply to Dr. Mackenzie, said the speech occupied from the wound of the knee-joint.

Dr. Robinson could not corroborate Dr. Mackenzie's statement of the advisability of preserving the limb, where the injury was below the knee; the amount of injury almost always required amputation, and if not done primarily, would require to be subsequently performed with more risk to the patient.

Dr. Gordon after a long experience here said elsewhere never had reason to regret not having saved the limb when the joint had been injured; he had never seen a case in which the head of the tibia was injured that had recovered without an operation.

Sherrin Magnus; and Mr. C. Smith, Highways.—The following Resolutions were passed:—1. That this meeting regard the movement set on foot by Mr. Griffin as the natural and necessary result of the increased demand made upon the Medical Profession for education and its representative, skilled labour; and while, therefore, it offers Mr. Griffin its cordial thanks for his exertions in originating the movement, it also would recognize the claim which rests on the whole Profession for its support. 2. That this meeting is of opinion that the present rate of payment of the Medical Officers of Public Health inadequate to the labour and skill required at their hands. It considers that a general increase of salary is demanded, and that that increase should be rightly apportioned to the number of cases requiring attendance, with a due regard to the number and length of the journeys. 3. That this meeting regards with satisfaction the proposed meeting of the Profession in London, as proposed by Mr. Griffin, and will be happy to appoint such gentlemen to represent this meeting on that occasion as would volunteer so to do. (Three gentlemen present then offered their professional services, if not prevented by urgent business.) 4. That a subscription be entered into for the furtherance of this object, of 5s. per quarter, to be continued so long as considered necessary; and which, after defraying the expenses attending on this and similar meetings should be handed over to Mr. Griffin. 5. That Mr. Thomas B. Austin be requested to act as Secretary and Treasurer. The foregoing Resolutions were carried unanimously, so also that a report of the meeting be forwarded for insertion in the Medical Times and Gazette, Lancet, and the Association Journal; and vote of thanks to the Chairman and Mr. T. B. Austin for their services.

MEETING OF THE METROPOLITAN MEDICAL OFFICERS OF HEALTH.

On Tuesday evening, the 19th of May, a meeting of the newly-appointed Medical Officers of Health for the various metropolitan districts was held at the house of the Medical Society of London, in George-street, Bloomsbury-square. About fifty gentlemen were present; including Dr. B. Dundas Thompson, who was called to the chair; and Dr. Miller, who acted as Hon. Secretary.

The gentlemen present were unanimously of opinion that the interests of the public would be promoted if something like a uniform and regular plan of operations were enacted all over the metropolis. Their duties were in many respects unvaried and ill-defined in their nature and extent; and whether for the purpose of getting rid of material causes of disease, or of arriving at broad statistical results, unity was wanted. It was agreed, therefore, to form an association for mutual assistance and information, and for the advancement of sanitary science; and it was resolved to invite Mr. Simon to be President. It was agreed on all sides that it is Mr. Simon who has given sanitary science its present status and popularity; and that the creation of Offices of Health for the various districts of the metropolis was throughout of his example set by Mr. Simon, and of the beneficial effects of his labours in the City. At the same time it was most clearly ascertained that the choice of the meeting fell on Mr. Simon solely from his personal character, and not in any way because of his office which he holds under Government. It was considered most desirable to avoid even the appearance of anything that might seem like the introduction of Government division into parish affairs. A small Committee was appointed to confer on rules and regulations.

The following is a list of the Medical Officers of Health for the Metropolis; we give them in the order in which the parishes and districts are enumerated in the Act:—

St. Marylebone, Dr. B. Dundas Thompson; St. Pancras, Dr. Miller; Lambeth, Dr. Collins; St. George, Hanover-square, Dr. Aldis and Dr. Druitt; Edgware, St. Mary, Dr. Richard; Shoreditch, St. Leonard, Dr. Thomas; Finsbury, St. Dunstons; St. Matthew, Bethnal-green, Mr. Fraser; St. Mary, Newington (Green), Mr. Hill; Canterbury, Dr. Robinson; St. James, Westminster, Dr. Leakester; St. James and St. John, Clarendon, Dr. Griffith; Chelsea, Dr. Davidge; Kensington, Mr. Gedrick, junior; St. Luke, Westminster, Dr. Perry; St. George the Martyr, Southwark, Mr. Rendell; St. Pancras, Dr. Chadler; St. George-in-the-East, Dr. Fitzard;

St. Martin-in-the-Fields, Mr. East; Hamlet of Mile End Old Town, Mr. Freeman; Woodwick, —; Rotherhithe, Dr. Marshall; St. John, Mansfield, Mr. Lord; City of London, Dr. Leakey; Whitechapel District, Mr. Litchell; Westminster, Mr. Bernard Hall; Greenwich, Mr. Fish; Wandsworth, Mr. Whitman; Hackney, Dr. Tope; St. Giles, Mr. Hunt; Hammersmith, Dr. Gillman; Strand, Dr. George Evans; Fulham, Mr. Burgess; Hammersmith, Mr. Chisham; Poplar, Mr. Gillman and Dr. Ansell; St. Saviour's, Mr. Woodall; Finsbury, Mr. King, (Gillman); Mr. Finch, (Chisham); St. Martin, (Law); Lewisham and Pease, Mr. Whitman.

HEALTH OF THE ARMY IN THE CHINA.

The Inspector-General of Hospitals serving with the Army in the China, in transmitting the returns of sick for the period ending 15th March, states:—

"The health of the army continues very satisfactory; there has been a decrease both in the mortality and number of sick during the week. Even the health of the Land Transport Corps has been steadily improving for the last three weeks, and this week there has been a more decided change for the better.

The admissions from fever have fallen from 85 to 55 in the course of the week, and the cases that have presented have been of a milder character.

During the early part of the week, the weather, though cold, was clear and dry; but on the 27th snow fell, and since then we have had perfect winter again. These frequent changes have produced a species of influenza which has been very prevalent of late, but not of a severe character.

The troops at Kweichow and the cavalry divisions in the Szechwan are equally healthy with the army near Soongcepo, and the rate of sick to well, including those in General Hospital at Soongcepo and Kweichow as well as in the China, is only 2.7 per cent., and the mortality during the last week in the whole army has only been 0.81 per cent.

The sick in well before Soongcepo is only 4.18 per cent., and the mortality has only been 0.22 per cent.

Feverish deaths have taken place out of an estimated force of 55,325, and of this number 5 occurred in the Land Transport Corps.

In the Artillery, Third, and Highland Divisions, no casualties occurred; and in the Second, Fourth, and Light only one each, which arose as usual from various diseases that is very satisfactory.

MEDICAL REVENUE COLLEGE.—On Tuesday, the third annual meeting of the governors of this Institution was held at their Office, Finsbury-square, Earl Marley in the chair. The report mentioned that the promotion of the College now the undertaking enjoying continued success and receiving increased subscriptions; the building was now completed; the students were in operation, the pensioners were in their homes, and the Institution incorporated by act of Parliament. On the 12th of June last, Prince Albert opened the College, and on the 15th of July 21 pupils and 10 pensioners were admitted into it. On the 19th of August there were also admitted 125 apprentices, which, with 20 pensioners' children, made the entire number for which the College was designed. It is now desirable to build a chapel for the accommodation of the inmates, and, to secure funds for that purpose, the fee of 10s. membership has been in the case of ladies reduced from 21s to 15. There was received at the last annual general subscription to the amount of 42000, and the late Mr. Thomas Wain bequeathed 2500 to the corporation, the interest to be paid in prizes to the pupils. The total receipts for the year, including 1550 balance from the former year, 20000 donations, 20000 subscriptions, 20000 realized by the sale of 500000 stock, amounting to 420,000; and the expenditure, including 20000 paid on building account, and 21000 the repayment of a debt, and other items, to 215,000; leaving in hand a balance of 20500. The report was unanimously adopted, and some routine business having been disposed of, a vote of thanks was passed to the chairman, and the meeting adjourned for a week, when an election of pupils and pensioners will take place.

THE RUGELEY POISONING CASES.

TRIAL OF WILLIAM PALMER.

Wednesday morning having been appointed for the trial of William Palmer for the Rugeley poisonings, the most intense interest was exhibited by the public to hear the proceedings; and for the careful and excellent arrangements made by the authorities of the court, under the direction of the Under-Sheriff, it would almost have been impossible to carry on the proceedings with anything like decorum. The first day's proceedings, in fact, opened in a singularly quiet manner. The sheriff, apprehensive of pressure, had so limited the issue of tickets, as wholly to preclude the probability of a rush either outside or inside. The court was soon comfortably filled. At five o'clock on the 10th, the order announced the entrance of the Judge, and immediately after Lord Chief Justice Campbell, with Baron Alderson and Mr. Justice Cresswell, took their seats on the bench. The prisoner walked rather quickly to the front of the dock, but without haste or uncertainty, and looked all round with a seemingly composed air. He seemed older than 31, the age stated in the indictment, and had evidently grown much stouter during his confinement. He is a man rather under than over the middle height, of fair build complexion, and sanguine temperance, and with nothing in his count, ordinary face to indicate criminal inclinations or dark and deep designs. A casual observer would set him down as a respectable, good-humoured farmer; and a physiognomist would be more inclined to give him credit for social and convivial habits, than for those elaborately-planned crimes which the indictment lays to his charge. His forehead is high and open, and altogether the expression of his countenance is the reverse of diabolical. His manner during the day was entirely free from nervousness, and was respectful and attentive, and was calculated to create a favourable impression; and, although on the jury being called he scrutinised the face of each man attentively as he came up, he declined his sight of challenge. It was mentioned that on the side of the prosecution some confusion had arisen in the carriage of the proceedings, in consequence of the change of solicitors that had more than once taken place. In the last place, a gentleman from Rugeley was employed; then the case was referred to Mr. Inghelby; but that gentleman becoming suddenly afflicted at once with illness and a severe rheumatic ailment, the case was handed back to the Rugeley solicitor. Seeing that the most trivial details of the great criminal trials of former days are read with the deepest interest whenever they become matters of history, it may not be amiss to notice that in this, one of the most remarkable of the present time, the Chief Justice himself took special charge of the case from the commencement, and indicated an almost nervous anxiety that full and impartial justice should be done.

THE CASE OF JOHN PARSONS COOK.

The indictment, which charged the prisoner with the wilful murder of John Parsons Cook, having been read.

The prisoner pleaded Not Guilty.

He was then assigned upon the coroner's inquisition for the like offence, and to this he also pleaded Not Guilty.

A great number of Medical witnesses were subpoenaed on both sides, and among those present in the body of the Court we observed Dr. Park, President of the Royal College of Physicians, Mr. Benjamin Beadle, Dr. Alfred Taylor, Dr. Christison, of Edinburgh, Dr. Terrell, Dr. Owen Ross, Mr. Charles, Dr. Lethley, Mr. Nunnally, of Leeds, Dr. Todd, Mr. Lawrence, Mr. Brande, Mr. Lolly, and many others.

The Attorney-General, Mr. H. James, G.C., Mr. Balfour, Mr. Walsby, and Mr. Hollington appeared for the Crown; Mr. Serjeant Stow, Mr. Grove, G.C., who were specially retained, with Mr. Gray and Mr. Kennedy, were counsel for the prisoner. All the witnesses, with the exception of the Medical men, were ordered out of court.

The Attorney-General then rose to open the case for the

prosecution. After the usual address to the jury, and remarks on the necessity of this inquiry, the learned Attorney briefly stated the early history of the prisoner, his professional status, and his abandonment of the practice of medicine for the more congenial (so Management of the turf. This history having already appeared in our columns, (see Medical Times and Gazette, Jan. 18, p. 84.) we need not further allude to this part of the learned gentleman's address, with the exception of mentioning in connection with our remarks at the above date. He then went on—Mr. Cook was a young man of diverse talents. He had originally been brought up as intended for the profession of the law. He was admitted to a solicitor's hall, after a time, he inherited some property, to the extent of some £12,000 or £13,000, he became distinguished as a literary professional, and devoted himself also to the turf. He kept racehorses, and he betted considerably; and, in the course of his pursuits, he was connected with, and intimate with, the prisoner. It is for the murder of this John Parsons Cook that the prisoner stands indicted on the present occasion. The charge against him is that he took away that man's life by poison. It will be necessary to follow up the circumstances in which the prisoner Palmer was then placed, and the position in which he stands relatively to the deceased man Cook. The case that I have, on the part of the prosecution, to put to you is, that the prisoner, being in desperate circumstances, with ruin, distress, and great probability of ending him in the face, which could alone be averted by means of money, took advantage of his intimacy with Cook, when Cook had become the owner of a considerable sum of money, and persuaded him in order to avert himself of this money. [The money transactions between the prisoner and Cook, and with Walter Palmer, the death of the latter, the various life insurance effected, and the alleged legacy of £10,000 of acceptance, were then successively referred to, for the purpose of showing motive on the part of the prisoner.] The learned gentleman then proceeded—I shall show that at Rugeley, besides the stake and the man he was entitled to take, Cook had to his pocket a sum of between £700 and £800. The stake he was to receive through the Messrs. Wootterby, the racing agents in London, and which would be sent up in the ordinary course of things, to Wootterby's. He was also entitled to receive money on his lots at Tattersall's, amounting to £1200. Within a week of that time Cook died; and the important inquiry is, how he came by his death—whether by natural causes, or whether by the hand of man; and if the latter, by whose hand? I must tell you, first, the state of mind in which he was. It may be important in this inquiry. He was a young man of 31 when he died, slightly disposed to pulmonary complaint, delicate in that respect, but otherwise a very hale, hearty young man. He had been in the habit of consulting a physician, Dr. Savage, for four years. Dr. Savage saw him in May, 1886. Cook at that time was anxious about his throat. He was suffering from his throat. There were one or two slight symptoms about his mouth; and it seemed that, respecting the complaint, he had been talking necessary. Dr. Savage put him under a course of tonics, and an improvement immediately took place, and these improvements disappeared; but, inasmuch as the mode of treatment in such instances depended with him, he came and saw Dr. Savage from time to time; and within a fortnight of his death, Dr. Savage examined him thoroughly; and he will be prepared to tell you that at the time he had nothing the matter with him, except that a part of the throat was a little thickened; and he strongly advised him to go abroad for two years, thinking that that possibly might break off his connection with the turf. Well, having seen Dr. Savage, he went to Strawberry, and he was in great delight at leaving the race, and got excited, as a man naturally would do who had been at a low life in predatory matters, and who had made a fortune for himself. He and Palmer met together at the hotel where they were stopping, and they had, I think, two or three bottles of champagne, but the deceased did not indulge in excess of any sort. It is said he was a man not often given to excess. On the contrary, he was a abstemious man at all times, and on this occasion he did not more than partake of a glass or two to celebrate his success. He went to bed at night, and got up the next day and went upon Strawberry. That night, the night of Wednesday, the 14th of November, a remarkable incident happened, to which I beg to call your attention. A friend of his, a Mr. Fisher, happened to call upon him. Fisher, in addition to being a

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LONDON, SATURDAY, MAY 17, 1886.

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form, a multitude of separate forms, these again giving rise to others in the same way, until at last the biological individual may be represented by thousands or even millions of distinct entities. Now, between these self-maintaining, independent existences, on the one hand, and more distanced organs or stages of development on the other, you will find that no line of demarcation can be drawn. In whatever relation the latter, therefore, stand to the individual, in the like category must the former be ranged; but as their independent existence involves a distinct name for them convenient, I shall use the term "sporadic," some time since proposed, and now frequently adopted, to distinguish each part of an individual animal as being an independent existence.

The phenomena of mould development have, however, been viewed in a very different manner. When first Chaminé drew attention to them as they occur in the Salpæ, he imagined that the two mould forms proceeded from one mother by corresponding processes of generation, and he drew the conclusion that there was a case of what he called the "alteration of generations," the progeny succeeding, not in parent, but by the grand-parent, and giving rise to an offspring resembling its parent, and not itself.

The confusion of two entirely distinct modes of propagation was perpetuated by Huxley, who extended the views and the terminology of Chaminé to a great number of other cases; at the same time fastening a subject, already difficult enough, with new terms and views not infrequently based upon erroneous beautiful analogies.

Now can I find that much light was thrown upon the subject by Professor Owen's work on "Parthogenesis," whereby science has indeed gained an hypothesis, but, as far as I can discern, no other advantage.

The learned Professor, in fact, while perceiving and admitting the distinction between true generation and the process of mould development, which he calls "parthogenesis," or virgin procreation, seems unable to conceive the possibility of such development without the exertion of some latent influence. In no case of the so-called "alteration of generations," however, witness any such direct influence; it is the very essence of the process that it takes place without the intervention of spermatozoa—that it is budding, or fission, and not sexual generation. But very frequently the part from which the budding or fission takes place retains the simplest histological structure, having undergone no further differentiation, but remaining in the condition of very young part, or in that for the terms are equivalent of the primary mass of the germ. Professor Owen, as I understand him rightly, proposes to derive the difficulty arising from the acknowledged absence of any direct or immediate action of the male, by supposing that each part really is a portion of the primary mass of the germ, and that it gives rise to a new being—simply because it retains the "spermatic force" imparted to it, in common with the rest of the germ, in the formation of the original egg.

As a matter of fact, it is absolutely indemonstrable that the parthogenesis of the viviparous, or "Parthogenetic" aphidæ, contains more of the "principle of generation" than does any other of the glands of the insect, or than does the dry layer of the epidermis of the human skin. The assumption that any of the primitive germ mass of the first aphid developed by sexual generation is retained unchanged in the parthogenesis of its mould successors is gratuitous; the assumption that the parthogenesis of even any one of these successors are entirely composed of such unchanged germ-mass involves, I imagine, a physical impossibility,—the parthogenesis forming a much larger mass than the whole of the primitive germ-substance. It is to be noted, on the other hand, that the "cells" of the parthogenesis of the viviparous Aphidæ are merely the descendants of the primitive germ-mass retaining the simple histological condition of their predecessors,—the proposition is as just as it is true; but, in this case, how do they differ from any other young tissue? and why does not "Parthogenesis" take place every day; our Mithras springing full grown, not, indeed, from the basin, but from the very mucous of the body, whose thence ought to retain at least as much "spermatic virtue" as that contained in the parthogenesis of the strobilous series of moths, developed from an aphid germ.

How much of the primitive germ-substance again remains in the colony of *Lybia* tubæ, which has, perhaps, extended over a square foot of surface before the process of development of its median-axial nerves? And, even suppos-

ing the "spermatic force" were retained in the "Parthogenetic" tissue, how far is the statement, that "parthogenesis" takes place in consequence of the "spermatic force," to be taken as in any way helping us to a clearer view of the phenomena?

I confess it appears to me, that the phenomena of mould development are in exactly the same footing as the most ordinary phenomena of generation; and that the latter are precisely as much, or as little, explained by a hypothetical retention of "spermatic virtue" as the former.

The biological individual, then, is the sum of all the successive stages of development through which the product of a single fertilized ovum passes, whether those stages have an independent existence or not. Of each individual animal there are almost infinite multitudes; and they constitute the facts of that branch of Morphology which is known as Zoology. Now, the first object of the zoologist is to become acquainted with these facts; the second, to classify his knowledge into general propositions, whereby it becomes, not only readily retainable in the memory, but serves as an instrument for further investigation.

A classification which is constructed as an end, or chiefly, to serve a mechanical purpose is not only useful but necessary; the history of science, where the primary object is the attainment of exact knowledge; but, where a gross heap of such information has been obtained, the persistent adherence to an artificial classification may be not only useless but positively injurious, to its progress.

The period when an artificial classification of animals could serve any useful purpose has long since passed away; and, from the time of Cuvier, classification has been in interest, if not in fact, natural; it has ceased to be only the expression of the generalizations of Morphology. What are these generalizations? An attentive consideration of the varieties of animal individuals at once shows that there are greater or smaller groups among them, whose members are so much like one another, and, at the same time, present so constant a difference from other forms, that they may all so readily take the individual name. Such groups are what are in unscientific English called "kinds." Mrs. horses, sheep are such "kinds," and so are eagles, bats, and mustangs; and, in my apprehension, the great majority of what are technically called "species" are groups of precisely the same character; that is to say, they are simply the smallest assemblages of individuals which can be distinguished from others by a common character. This is very the, however, from being all that is implied by the term "species," as commonly used, naturally ordinarily meaning that a species is something very different from a more definable "kind" or set of living beings,—that "species," in short, have physiological characters by which they can be distinguished from all other kinds. These characters are twofold,—1. The individuals of a species are supposed to be descended from a single parent, or pair of parents, originating independently of all other living beings; 2. Their fecundity is supposed to be limited.

The space of a lecture, or even of many lectures, would be wholly insufficient to discuss the arguments in favour of and against these propositions, or, in other words, the important but most difficult question of the existence of physiological species; and I will, therefore, merely state, briefly, what appears to me to be the chief conclusions from the evidence hitherto brought forward.

As regards the first part of the accepted definition of species, I am not aware, that we have demonstrative evidence of the unity of parentage of any one species whatsoever, although the balance of probabilities appears to be strongly in favour of the correctness of this view. Assuming single parentage, however, the question arises, how did the first ancestor or ancestors originate? The ordinary reply is, that they were independently created. In this case the question passes out of the domain of science altogether, and is consequently given up as a matter of inquiry; for we can only inquire into the conditions of a phenomenon; and, by assuming a special creative act, we admit it to be unconditional. On the other hand it is to be remembered, that we have not the slightest scientific evidence of such unconditional creative acts; not, indeed, could we have such evidence; for, if a species were to originate under one's very eyes, I know of no amount of evidence which would justify me in admitting it to be a special creative act independent of the whole vast chain of causes and effects in the universe. On the other hand, if the ori-

glial parents of species did not come into existence in this manner, but in some comparatively way—in the ordinary course of things, as we phrase it—then there can be no doubt that some form or other of that hypothesis—not less founded by its supporters than by its opponents—called the "Theory of Progressive Development" will present by far the most satisfactory solution of the difficulty.

The hypothesis of progressive development maintains that the successions of species were not themselves independently and specially created, but were the result of the modification of individuals of pre-existing species, and that these, in the course of long ages, a gradual development was effected from simple viable matter up to the highest forms of life, corresponding with the analogous changes now occurring in the course of the embryonic development of the highest animals.

That such an hypothesis is fair and scientific, that it may have some chance of the possibility of such a gradual development, and that it is very difficult to imagine the origin of species in any other way, are propositions which will, I think, involve the assent of candid thinkers; but, on the other hand, it must equally be admitted, that those in looking which are for a moment he called demonstrative evidence in its favour, and that the facts of Palæontology, though by no means incompatible with the hypothesis, afford it not even a shadow of positive support.

Of course the theory of progressive development would necessarily fall to the ground, were the proposition which forms the second part of the received definition of species, viz., that the modifiability of species is limited, inapplicable. Unhappily it is very far indeed from being so.

The individuals of every species are on all hands admitted to be modifiable by conditions, the principal of which may be said to be parental, climatal, and educational. Any individual may be made to deviate to a certain extent from the typical form of its species by a modification of the light, heat, etc., which it receives, and by training, and it will tend to transmit the deviation thus produced to its offspring. It is conceivable that this offspring may be further modified in the same way, and may transmit its further deviation from the original type to its offspring, and so on until any imaginable amount of divergence results. Among our domestic animals it is known that very great changes have been thus effected upon the type of the species, and the "breeds" or "races" thus produced may differ as widely from one another as do many species, while among plants this is still more remarkably the case. The amount of difference between any two allied forms with whose history we are unacquainted is not in itself, therefore, conclusive, either for or against their specific distinctness.

There is no evidence, so far as I am aware, to show the existence of a limit to the modifications which may be produced by climate and training, although there is no doubt that the process of modification is extremely slow, and that more time are often necessarily requisite.

The evidence relating to the limits of parental modification, on the other hand, appears to be conflicting. Very widely distinct kinds necessarily will not breed together. Even among those which are more closely allied and will interbreed, the hybrids are, among animals, rarely fertile, though this rule would by no means appear to hold good so generally in plants. On the other hand, there is evidence to show that well-known hybrid varieties of a species often interbreed with great facility. Even were physiological species distinguishable by their want of power to form fertile hybrids, as is commonly assumed, the test is almost useless in practice, from the impossibility of applying it in any but a very few cases; and when we consider that there are numerous instances among plants, in which species A siring on a male will fertilize it, while B siring on a male will not fertilize A; and others, such as that of the primrose and cowslip, in which, in one country hybridism never occurs naturally, while in another it is common and the hybrids are fertile; I think the only conclusion to be drawn is, that the test of hybridism is almost useless.

Such are, so far as I am aware, the main points in the evidence which has been adduced for and against the doctrine of the existence of physiological species; and I think our conclusion from them must be, that the positive evidence is wholly insufficient to establish that doctrine; and that it is most inexpedient to allow such a doctrine, based on it, to stand upon unproved assumptions, to form one of the fundamental positions of natural history. Henceforth, therefore, I shall use the word "species" only in two senses: either it

will mean the smallest group of individuals which can be defined by a common character, and absolutely separated from all other groups by that character, and this might be termed a *morphological species*; or, it will denote simply the smallest conventional groups into which a mass of individuals can be arranged, quite irrespective of any absolute lines of demarcation; of which latter merely conventional species there are unfortunately too many.

Groups are groups which stand in the same relation to species as the latter to individuals, and Families are like groups of Orders; Orders of Families; Classes of Orders; Sub-kingdoms of Classes, and Kingdoms of Sub-kingdoms. Now are these Orders, Families, etc., mere conventional arrangements, or are they properly the expression of fixed Morphological Laws? I am inclined to the latter opinion, chiefly because I can find no evidence that any transitional form exists or ever has existed between the larger of these groups, such as sub-kingdoms; and because the increase of our information has hitherto invariably shown that supposed cases of transition from one great group to another are no real transitions at all.

It was once supposed that the Amphibians connected the Vertebrata with the Annelids; that the Crustaceans connected the Annelids with the Molluscs; that the Polypus connected the Molluscs with the Polypus; and that the Radiata were the link between the latter and the Annelids. In all these cases, however, careful investigation has ended in throwing the supposed transitional forms completely into one of the groups which they were supposed to connect, and separating them from the other. I am inclined to believe that the same result will occur from a similar scrutiny of the supposed transitions between Classes, Orders, Families, and Genera; and that thus we shall at length obtain a series of fixed and absolutely limited groups, whose definitions, taken together with those of the morphological species, will constitute the expression of the Laws of Vertebrate Continuation (if I may so term them) of Animal Form. At present, however, I am bound to confess that this belief is no better than what the Dogue Murrey was wont to call a "desert imagination."

It remains only that, before proceeding to the general study of the different divisions of the Natural Kingdom, I should explain to you shortly the nature of the classification followed, and the reasons which have led me to its adoption. Linnaeus, after giving the great divisions of the vertebrata pretty nearly the form which they now retain, left the whole mass of invertebrate animals, except the insects, under one head, that of Vermes, roughly subdivided into various sections, molluscs, testacea, helminths, and zoophyta. One of the earliest, and, at the same time, one of the greatest services rendered by Cuvier to natural history, consisted in the analysis of this great heterogeneous mass, which he commenced in 1795; and ended in 1817, by its re-arrangement into the subkingdoms of the arthropods, molluscs, and rotifers, parallel with and equal to the vertebrata. This was an immense step; but no one who has ever seriously studied Cuvier's *Revue* can have imagined that it was final. As our knowledge of the lower forms of animal life has increased, in fact, the conclusion has forced itself upon the mind, that the outline of Cuvier, like the vermes of Linnaeus, is far too thin and slender a screen for the storage of those forms with which Cuvier and his contemporaries were necessarily very imperfectly acquainted, and every great improvement which has of late years been made in the general classification of animals has consisted in the detachment of a group from the "Reptiles" and its transference into its proper place elsewhere.

Thus Miles Edwards long since demonstrated that the polypus properly belong to the molluscan subkingdom. Nine years ago MM. Frey and Leuckart clearly proved the necessity of uniting together the other "Polypus," the zoophytes, and the bryozoa, under the title of "Coelenterata," a circumstance of which I was ignorant, when, in 1859, I ventured to propose the term "Nematophora," for a group with identical limits. The term *Protista* has been used since Cuvier first propounded it, in various senses. I employ it here to denote that very natural and most distinct group which contains what have been termed the "animalcules animals." The *Protozoa*, the Foraminifera or Nematopoda; the Organitellida; the Spongillida; and the peculiar forms *Chlorellinella* and *Stentorina*. I regard the protozoa and the coelenterata as subkingdoms equal to the arthropods, vertebrata, and molluscs; and I consider that the rotifer subkingdom must be given up altogether, and its place supplied by these two. If these

idea to correct, therefore, there will be five, instead of four, subdivisions of Animals.

But the "Radian" of Cuvier contains, besides the Polypus, the Ctenostoma, and the Protozoa, a great number of other forms—the Trematoda (including the Cestoda and Cysticoda), the Nemertea and Nemertea, and the Echinodermata. I imagine that the position among the Animals assigned to the former three groups in the following table is one which will not be questioned by those who have recently made them their study.

Of the whole group of Radian, then, the Echinodermata alone remain undivided. The position which I have given them among the Animals is as yet, I am sorry to say, unassisted by no longer authority than my own. The position assigned in favour of the place which I have assigned to them will hold before you when the class comes under discussion; but I may point out, in the meanwhile, the strong negative evidence in favour of my view, viz., that the Echinodermata scarcely have anything to do with either the Protozoa, the Ctenostoma, the Nemertea, or the Trematoda; and that the only obvious alternative, if my view is rejected, is to make them, like a sub-kingdom by themselves—a step which, I conceive, no naturalist would be inclined to take.

I shall speak of the entire subdivisions upon the basis of each sub-division; and here I might leave the subject, were it not improper to ignore a different arrangement, which has been put forth within the last year by an eminent contemporary, and which will be found to differ very widely indeed from that here proposed. Professor Owen divides the animal Kingdom into four "provinces," the Vertebrata, the Mollusca, the Annelida, and the Radia, divided in their extent with the divisions of the same name instituted by Cuvier. His arrangement of the sub-divisions, however, is, I believe, almost entirely peculiar to himself. The student of the Annelida, the Infusoria, is astonished to find the Elytra and the Chrysoidea removed from the Crustacea altogether, and, instead, occupying the position of classes equivalent to the Crustacea, the Insecta and the Arachnida. The arrangement of the previous Radian is, I confess, to me even less intelligible; it is divided into three "sub-provinces," Radia, Nemertea, and Infusoria. The first of these is made to comprise the Echinodermata, the Polypus, the Annelida, the Arachnida, and the Hydrozoa,—groups of animals which differ from one another in organization as much as the Vertebrata, the Annelida, and the Mollusca do. In the second division of the "Infusoria," I find the Ctenostoma, Turbellaria, and Heterobranchia (the last a term which should be erased from science, as it is based upon an anatomical error); in the last division, "Infusoria," are the Nemertea, Kinostoma, and Polygasteria, of which three groups no single affection could be made in common. At the same time, the efforts which have been made to improve the classification of the Radia on this and the other side of the channel are, so far as I can observe, entirely ignored. It is my duty to express my belief that the general adoption of such a classification as this would be one of the most thoroughly successful steps ever taken since Zoology has been a science, and would give impetus to a most successful career in advance in this country.

Arrangement of the Animal Kingdom.

VERTEBRATA. (MAMMALIA.) Mammalia. Aves. Reptilia. (PISCIFORMES.) Amphibia. Pisces.		ANNULOSA. ANNULATA. Insecta. Arachnida. Myriapoda. Crustacea.	
MOLLUSCA. Cephalopoda. Hydrozoa. } Gastropoda. } Mollusca. }		(Pelecypoda. } Gastropoda. } Pteropoda. } monozoa. } Lamellibranchiata.	

MOUSCIFORMES.		ANNULOSA.	
Hydrozoa. Scapiformes.	Annelida.	Reptilia.	
*Polypus.	*Echinodermata.	*Thomozoa.	
	*Nemertea.	*Turbellaria.	
		*Vertebrata.	
		*Nemertea.	
*CELESTERRATA.			
Hydrozoa.		Actinosa.	
*PROTOZOA.			
Infusoria.	Spongaria.	Heterobranchia.	
Nemertea.	Foraminifera.	Echinodermata.	

The groups marked * formed the "Radian" of Cuvier.

ORIGINAL COMMUNICATIONS.

CASE OF HYSTERIA SIMULATING CATALEPSY.

By HENRY GRAMSHAW, M.D.C.B., Esq., and L.S.S.A.

As I have lately met with two cases somewhat alike in character, and as I have by me the notes taken when in attendance on the last, I shall not hesitate to transmit them for publication, in the hope that, if they possess no feature of unusual interest, they may, at all events, be added to the experience of those who have not come in contact with disease taking precisely this form.

On the morning of March 18, 1884, I was sent to the house in visit E. Davis, a servant-girl, aged 14, previous history.—Her mistress says she has had good health till lately; within the last week or two she has unconsciously complained of pain in the head. Thinks the patient has not unconsciously very regularly, but believes she was awoken about three weeks since. Does not know what brought on her present illness; she is comparatively a stranger, and so can give no information about her relatives, but thinks her mother died in a fit. She is engaged, but there has been no misunderstanding with the person she is to be married to, as she comes from him. There has been no exposure to cold. The girl is nearly well.

Present attack.—Davis was taken ill about 11 o'clock yesterday morning. She went to the pump, and came back into the house with her hair wet and disordered. Could not explain how it came so. She looked strange and embarrassed. Her mistress, considering her ill, sent her to bed, and gave her some castor-oil. She got composed, and when she got up had freely voided several times; passed a tolerable night, and made an abundance of water of a pale character. Early this morning (18th), she was visited by her mistress, and in her presence Davis swallowed some coffee, after which her eyes seemed suddenly fixed, and she fell back in bed unconscious. Her appearance was so strange, that death was feared, and a Surgeon was summoned.

Present state (19 AM).—Patient, a fresh-colored girl, lies in bed on back; arms crossed; eyes closed; cardiac dull; feet warm; pulse irregular, about 100, not full; occasionally rigid and. On separating eyelids eye not above expressionless; pupils rather dilated, and not very sluggishly on moving a light before them; she protrudes tongue after she speaking loudly several times, urging her to do so; it is large, moist, and not coated; does not deviate from middle line; no distortion of the face. Respiration tranquil; no peculiar smell about breath. On pinching sharply various parts of the surface with a needle, manifests no sign of feeling whatever; dashing water on the face produces no effect. No evidence of these disease detectable on ophthalmoscopic examination. This form is an immediate state similar to the present for two hours.

Treatment.—The patient residing some distance from my house, I placed two large mustard cataplasms on the calves of her legs, and returned home for medicine.

On visiting her again, in an hour, no change had taken place; the phlebotomy had been kept on half-an-hour, but the patient did not seem to feel them. The still lay in a fixed, rigid state, from which nothing comes her. I proceeded to cup her on the neck, but did not prevent more than 8 ounces of blood. She had a blister placed on the lobe, and an ammonia vapor administered. I also with difficulty man-

As I have met with two cases somewhat alike in character, and as I have by me the notes taken when in attendance on the last, I shall not hesitate to transmit them for publication, in the hope that, if they possess no feature of unusual interest, they may, at all events, be added to the experience of those who have not come in contact with disease taking precisely this form.

cooled in giving her a dose of medicine, containing antifebrile and calamine.

At ten o'clock p.m., when I left the house, no change had taken place in the symptoms. The attendant was desired to empty the lower part of the abdomen and perineum thoroughly, with flannel wrung out of hot water, and to give two cathartic pills at bed-time, if possible.

March 18th.—Patient evidently much better. Attended six: Immediately after the physician had operated (three o'clock p.m.), stools became copious of what was going on, and told the fit greatly relieved; has not relapsed at all into her former state; has taken her medicine regularly; the bowels have not acted since the evening was spent; slight tenderness; complains of slight pain about the forepart of the head; has no pain anywhere else, except from the uterus, which rose well; tongue clean; pulse 100. Has no remembrance of what occurred yesterday.

To have an aperient draught; to keep on low diet, and take the following mixture:—

R. Tinct. hyoscyami. ℥ss. op. brewed, or ℥ij. mist. camph. ℥ij. M. Ft. mist. cap. coch. q. liq. ut optinetur.

March 19th.—Still improving; bowels have been relieved; in continue medicine, and take two compound cathartic pills six times.

March 21.—Down stairs. The menstrual discharge made its appearance to-day; is every way better, but weak.

Remarks.—This abnormal menstruation was the first of wife made in the foregoing attack, unless for a moment to be doubted, hanging about a tendency to determination of blood to the head. The principles on which the case was treated were, as far as possible, to resist a return of the natural excretion, not to provide a substitute for it; and with that view I retained her energetic depletion measures, and fixed upon the lower part of the back and pelvis as the locality most proper to invade with firing remedies.

The diagnosis was not very difficult, but there was here a complex character of that excitement commonly accompanying an hysterical attack,—the tossing about of the limbs, the restlessness, and the convulsions were stronger to the immobility attending apoplexy or narcotic poisoning. The absence of puffing breathing, the way in which the attack came on, and the general appearance of the patient required the supposition that apoplexy was what we had to deal with. But the symptoms might have misled one had there been anything to excite a suspicion of poison having been swallowed. Here was a girl engaged to be married, and of calm and cheerful temper as is shown; though with her betrothed shortly before her attack, no quarrel was known to exist, and they were on good terms when they parted; but had it been upon the reverse, (as it easily might have been,) my grave suspicion would possibly have arisen that in a fit of rage some drug had been taken; more especially if the long continued unconsciousness (eight hours) had occurred on the same, instead of the following day.

True, nothing was detectable in the breath, and the pupils were not contracted; but the latter circumstances would not have spoken in sufficiently decided language, for at one time they were, at another not; and on a contrary examination, they might have been found in a contracted state.

A girl, in the habit of taking stimulants, and smelling strongly of them, would have had her own narrow nostrils, and perhaps would have had a Medical man take an unobtainable, if not dangerous case, more especially where the patient's previous history could not be relied on with certainty.

I have had another case, very similar in some respects to the foregoing, only the immobility was not so complete, and considerable stiffness was present in places,—the attack, upon the whole, being not so severe, and all the symptoms of blood ejected subsiding on the re-establishment of the customary discharge.

I have called this hysterical claudicating cataplexy; but I only know that disease from the description of it in books. May not cataplexy proper result from faulty or checked menstruation? In a state of immobility, similar to that I have been describing, a frequent occurrence with females whose functions are irregular? Certainly, the state of being dumb (or, in a constitutional expression) which existed in this case, was most curious, and I surprised me to find an little subsequent hours arising from the prolonged suggested state of the brain.

The Upper Green, Tottenham, near Watlington.

CASE OF DROOPY OF THE AMNION.

By HORACE E. DEBENHAM, Esq.

EXCESSIVE accumulation of the liquor amnii, constituting what is termed by writers "droopy of the amnion," cannot be looked upon as a common affection. Knechtelmann speaks of it as "a rare cause of hanging labour," and Dr. Lee, who has paid especial attention to this subject, has obtained post-mortem of but five cases of the disease.

Cases of this description meet at all times to be attended with a considerable amount of difficulty previously to the evacuation of the fluid, but in an instance which has lately presented itself to my notice, the diagnosis was so complicated, the symptoms simulated were so vague, and the prognosis to the life of the patient so grave, that you will perhaps think it deserving of notice in your pages.

I first saw M. G. when in labour with her first child in the month of May, 1841. She was 28 years of age, a fair-complexioned, delicate-looking woman, and the wife of a gentleman musician, living in Westminster. I was summoned by the midwife in attendance, who assured me that my patient had experienced more or less regular pains for thirty hours, after the escape of about a usual proportion of liquor amnii; but still the child made no advance, and the expelled effluvia had in a great measure subsided. Upon examination I found an evident narrowing of the pelvis in its antero-posterior diameter; the head of the child was impacted at the brim, and the vagina and external parts were hot, swollen, and covered with that peculiar olive-coloured discharge so indicative of exhaustion, and which was confirmed by the state of the pulse and general condition of the patient. The os uteri being sufficiently dilated therefore, the child, which had been some time dead, was at once extracted with the long forceps. Most violent hæmorrhage immediately followed, and the flooding continued for a considerable time after the removal of the placenta, so that a very large quantity of blood was lost before the uterus could be induced to contract. Although in a very exhausted and bloodless condition she progressed steadily for the first week, when she was unfortunately seized with phlegmasia dolens which attacked the right leg, thigh, and hip, and confined her to her bed for another month; but she eventually made a good recovery.

Towards the latter end of the year she told me that she had again become pregnant in the month of September, and requested me to attend her in her confinement, the satisfaction of which caused her to be very ill-satisfied and depending, as she felt, she said, "quite different to what she had done with her first child." I saw nothing more of her until the month of February, at which time she was six months gone, when I was one morning hastily summoned to her. I found her upon her back, propped up in bed, quite unable to move, her countenance wearing an expression of great distress and anxiety, attributable apparently, in a great measure, to difficulty of breathing, the respirations being between 70 and 80 in the minute. She told me, that, from the very first, she appeared much larger than she ought to have been, and the swelling she described as having originated in a lump, which was at first entirely confined to the right side; it became gradually more diffused, however, and the last three or four days had increased in size immensely. Although only six months gone, upon examining the abdomen I found it much more distended than it ought to have been at the full time, so that I never before saw a case of either ascites or ovarian disease where the enlargement presented a more singular appearance, and I much regret that I did not take the measurements at the time; the enlargements of the abdomen from excessive stretching looked almost transparent, and fluctuation was completely deficient at every point; she had passed no urine for thirty hours, and upon attempting to empty the catheter, I was unable to introduce it, the bladder being completely distended upwards over the pubis. An examination per vaginam found the os uteri dilated to about the size of a shilling, and as it was decidedly influenced by a slight pricking pain which came on every few minutes, I felt no hesitation in evacuating the membranes, which gave exit to half-a-pint, or rather more, of liquor amnii, and the pains increasing steadily, a dead six-months' child was extracted in a quarter of an hour or thereabouts.

The breathing was now somewhat relieved, but still the distention of the abdomen was not apparently influenced in the slightest.

Upon treating the female appendix, I found a second bag of membrane protruding, which I promptly captured, the entire of the mass being at once apparent enough. The rest of water I shall never forget; two chamber-vessels were filled to overflowing, and the floor of the room was swamped in an instant, and I am satisfied that there could not have been less than four, five to five gallons; and to show the force of the current—where I proceeded to sit up the bedclothes, although there had not been the slightest evidence of anything like vertice contraction, the second fetus had been washed out, and was lying a foot distant from the woman's sides.

The sudden removal of this large body of fluid caused the most alarming depression and fibrations. I directed the nurse to kneel behind my patient, and make free pressure on the abdomen with both her hands, and I at once gave her a liberal supply of gin, which was fortunately in the room. Before I had time to detach the fetus, however, I found that she was flooding to an alarming extent, so I at once leaved my arm, and with the greatest care pushed my hand up as high as the costal cartilages, the uterus being perfectly flaccid, and it was so completely paralyzed by over-distension, that, kneeling the abdomen externally with my right hand, the application of cold water etc., failed to induce the slightest contraction, and blood continued to flow out rapidly by the side of my arm; my poor patient, too, had become excessively restless, and attempted to change her position every instant, so that slightest motion looked to her from proceeding, using an osseous apparatus, however, in the manner that I directed the nurse to put it together, and I passed the pipe by the side of my arm into the cavity of the uterus, into which the nurse pumped a large body of cold water; the effect was immediate; my hand, together with the two placenta, which I had pumped, was quickly expelled, and the uterus remained firmly and permanently contracted. From this time consciousness proceeded spontaneously, although a week of months, from the immense amount of blood which she had lost.

Never having before met with a case of the kind, I must confess that I had not recognized the nature previous to the escape of the fluid, when, of course, it was at once apparent enough. At five days I thought my patient was delivered as to the fact of her being pregnant at all,—but moreover she only six months after the cessation of menstruation; the remarkable characteristics with which distension could be recognized at every point of the abdomen; the great distension in the amount of the urinary secretion; the character of the epigastric signs of pregnancy; but above all, the fact of the swelling having commenced entirely on one side, which the patient herself particularly insisted upon without my having occasion on my part, looked, I thought, very like ovarian dropsy. There was no evident development of the mammae, but that is not an infrequent result of ovarian distension; however, an examination per vaginam at once proved she was with child; and I then concluded the case was one of ovarian dropsy, developing itself contemporaneously with pregnancy. The block of the liver which I formed, as I thought, the spleen I had formed; but I had hardly time to contemplate myself upon my diagnosis, when the discovery of the second bag of membrane, and their speedy capture, proved my mistake.

If my patient had gone to her full term before labour set in, and the uterus rather had, in consequence, expanded, their full size, the most, as I believe, have inevitably resulted to death; as it was, the amount of blood lost was really frightful; and when, as in this case, the usual means fail in inducing contraction of the womb, I shall always entertain a very high opinion of the value of cold water injected into the uterine cavity.

Dropsy of the umbilical vein, by some authors, has been referred to a syphilitic taint, but here both the patient and her husband were entirely free from any suspicion of the kind; and the fact of her having become pregnant so shortly after a very severe labour, attended with great loss of blood, and followed by a protracted "getting-up," warrants, as I think, in supposing that the disease of the organ was dependent upon this, in the absence of any other evident exciting cause. In this case, we may view it merely as a variety of dropsy consequent upon general debility. Or again,—during the attack of phlegmasia dolens it is, I think, not at all unlikely that the inflammation extended from the iliac vein to the vein of the ovary, which would so be drawn the distension through that organ as to originate the morbid action set up in the ovary; which supposition is, I think, strengthened by the

fact, that the phlegmasia dolens attacked the right leg, thigh, and hip; the iliac vein being apparently detached from the main vein, as shown by the patient referring the swelling, and the uterus contracted, which she experienced at the early part of her pregnancy, to that side.

Edinburgh-path Record.

THE LONDON

PRACTICE OF MEDICINE AND SURGERY.

GUY'S HOSPITAL.

TWO CASES OF SUFFURATION IN THE ABDOMINAL PARIEETS.

(Continued, with Remarks, by Dr. ELLIOTT.)

Suffuration in the parietes of the abdomen is frequently presented to the Physician simulating deeper seated mischief, and for a short time considerable obscurity may attend it—sometimes of an acute character, accompanied with considerable pain and fibrile excitement, before inflammatory action of the sero sero comes on, and while the effused products are bound down by firm fibril investments almost resembling cured disease or local peritonitis; in fact, every region of the abdomen presents to itself disease on the surface resembling deeper injury. In the hypochondriac regions suffuration connected with the costal cartilages or ribs, simulates disease of the liver, vesiculae, hydricid, dilated gall bladder, or corresponding disease of the spleen; the right or left iliac regions, affections of the caecum or sigmoid flexure; in the lumbar regions, renal or spinal disease; in the umbilical, stomacal or mesenteric disease, and pelvic cellulitis, etc., may be mistaken for ovarian or uterine disease, etc. This simple suffuration in the parietes generally leads to the surface, is opened or discharged spontaneously, and in many cases does well, unless connected with pyæmia or in tubercular subjects. The account it is presented the less likely in the past to become among the fatal accidents and lesions of the abdomen; and even in disease, fatal or otherwise, extending secondarily to the parietes, unnecessary delay in sometimes made in discharging their contents. The rule is, I believe, a correct one, to open them very early.

In the first case detailed the suffuration was exceedingly deep, and connected with the true pelvis, but behind the sigmoid flexure. It formed an opening into the sigmoid flexure of the colon; but the deeply seated position of the disease prevented an opening being made from without till the extension to the anterior part rendered the character of the disease more manifest.

In the second, suffuration beneath the quadratus lumborum was followed by phlegmo-purulent, fatal course of suppurative, and final gain from the abscess; contact, if not communication, with the colon a typhoid syndrome, but gradual recovery with a sinus in the loins, probably connected with a dilated vesicle or its prolegs. In this case a free evacuation of pus was instrumental in clearing life. The diagnosis of each of these cases was obscure, but exceedingly interesting in its gradual development.

SUFFURATION EXTERNAL TO THE SIGMOID FLEXURE OF COLON. COMMUNICATION WITH THE INTERINE AND THE ANTERIOR ABDOMINAL PARIEETS.

(Reported by Dr. DYER.)

Elizabeth B., aged 35, a widow who had supported herself by dressmaking, was admitted into Guy's under Dr. Richardson's care, March, 1883. Ten fortnights before admission she had enjoyed good health, when she felt pain in the loins, which extended to the shoulders and knees. The greatest pain, however, was in the course of the iliopsoas muscle. These symptoms were accompanied with considerable fibrile excitement.

Saline medicines with cathartics, etc., were prescribed. In a few days the pain, which had diminished character, ceased, and she appeared to gain strength under the use of decoction of bark with carbonates of soda.

On March 25, three weeks after admission, she complained of pain in the left iliac fossa, and a few hours after the day of a hen's egg could be felt deeply in that part. There were

no tenderness in the spine, weakness in the legs, or other symptoms of disease of the spine. An examination per vaginam was made by my colleague, Dr. Williams, but did not give any evidence of disease of the ovary. The breasts were nearly acted on by hyaline, run round, by carcinoma, and by granules; but this matter did not affect the size of the tumour or abridge the symptoms. The urine was normal, and there was no indication of renal disease. The pain gradually increased in severity, but was considerably relieved by the repeated application of leeches, by taking iodide of potassium, tincture of mercury, and occasional doses of morphine. It was believed that the disease consisted in disease of the sigmoid flexure of the colon, with local perforation.

May 18.—The pain had returned with much severity, and local cases on. The tumour increased in size; it could be felt extending to the quadratus lumborum; and also reached the anterior abdominal parietes, which, on the left side first, were red, indurated, and exceedingly tender.

1884.—The breasts were acted upon three times freely, and a considerable quantity of purulent matter discharged. The continuation of this discharge could depend no longer on the pain and hectic continued, the patient becoming pale and emaciated; the hair thick and long became swollen and broken, afterwards the right; and there was excessive pain in the course of the femoral vein. Nourishment and stimulants were administered as the patient could take them. Quinine and opium, or morphine, were given.

June 8.—The inflammatory action of the anterior abdominal parietes had increased. My colleague, Mr. Callaway, made an incision at this part, and more than a pint of exceedingly offensive pus was evacuated. Every means were used to sustain the patient; but the discharge continued abundant, and bearing freest odour, and her strength gave way. Her tongue remained clean and moist; but her appetite ceased, so that she became quite unable to take food. There was no pain at the cricoid cartilage, coughing, or expectoration, afterwards the right; and there was excessive pain in the course of the femoral vein. Nourishment and stimulants were administered as the patient could take them. Quinine and opium, or morphine, were given.

June 11.—The inflammatory action of the anterior abdominal parietes had increased. My colleague, Mr. Callaway, made an incision at this part, and more than a pint of exceedingly offensive pus was evacuated. Every means were used to sustain the patient; but the discharge continued abundant, and bearing freest odour, and her strength gave way. Her tongue remained clean and moist; but her appetite ceased, so that she became quite unable to take food. There was no pain at the cricoid cartilage, coughing, or expectoration, afterwards the right; and there was excessive pain in the course of the femoral vein. Nourishment and stimulants were administered as the patient could take them. Quinine and opium, or morphine, were given.

The review of this case showed that the pain in the course of the hypogastric nerve arose from direct pressure upon that nerve by inflammatory effusion, that the tumour felt in the iliac fossa consisted of this effusion pushing forward the peritoneum and sigmoid flexure; that the subsequent symptoms arose from suppuration, and its extension in various directions towards into the colon, leading to some extravasation of liquor and of pus into the alimentary canal and into the sheath forwards, as far as reach the anterior parietes, where it was opened,—apertures to the diaphragm, and forwards to the spine and ribs, which became involved and obstructed by fibrous material. That it did not arise from diseased bone was proved by careful examination; and it appeared probable that some accidental blow had led to this suppuration, with its local results, or that irritation in the intestine had led to inflammation external to it, and subsequent suppuration.

After the tumour had been felt, evidence of suppuration

soon arose, and the discharge of purulent matter showed that it had formed some connecting link with the intestine, or that there was absorption of the coats of the intestine itself. Renal, vesical, uterine, or parietal suppuration, or numerous disease of the sigmoid flexure, might give rise to many of these symptoms. The absence of all indication of diseased kidney was shown in the condition of the urine. Tenderness of the spine was exceedingly doubtful, from the want of tenderness, weakness, and the course of the suppuration. The position which the tumour assumed and vaginal examination showed that the ovary was not involved. It appeared to arise from disease near to the sigmoid flexure, either commencing in that disease and extending outwards, or beginning in the parietes and making its way into the intestine. It will be desirable as to which of these might be the case that the principal difficulty consisted. The discharge of purulent matter from the intestine, and the local character of the pus, indicated a connection between the disease and the intestine; the inspection after death showed that the reverse was the case. Before death, I was led to believe that the disease commenced in the sigmoid flexure, and that the suppuration external to the intestine was secondary. It was chiefly allied to cases of suppuration external to the stomach, but so deeply was it situated that any explanatory incision would have been unjustifiable till there was more certain evidence of suppuration than was presented at the commencement of the disease.

ABSCESS IN THE LOINS—FROULANT-SWELLING EMPHYSEMA—PNEUMO-PNEUMONIA, WITH FROULANT-SWELLING SPITTLE—RECOVERY.

(Reported by Dr. PROFFER.)

T. H., aged 34, was admitted into the Clinical Ward, under Dr. Mahomed's care, June, 1884. He was a man of steady, industrious habits. His health was good till an attack of rheumatic fever, two years before, and at Christmas last, six months before admission, had a very severe fall while at work, he fell upon his head, and it was believed that the skull was fractured. He remained for some time in the Hospital, under the care of Mr. Hinkley. His present illness commenced three weeks before admission, when, in the middle of the night, he awoke with great difficulty of breathing, coughing being accompanied with considerable distress and pain. These symptoms increased much in severity, and presented the signs of pneumo-pneumonia on the right side.

On admission he was exceedingly ill; his countenance pale, his eyes ghastly, lips and nostrils contracted, the teeth covered with mucus, the tongue brown at the base and edges, the skin hot and clammy. In the chest, there was found to be increased resonance on the right side of the base, imperfect mobility, increased dulness on percussion, loss of vocal vibration, and in front, below the nipple, was a pleuritic rub. On the left side, the respiration was painful, and at the apex, the expiratory murmur was prolonged and coarse. The position of the heart was normal; its sounds healthy, but the precordial dulness was somewhat increased; the respiration was 24 per minute; the pulse 84, full and compressible; the urine was high-coloured, acid, sp. gr. 1025. His position, on lying to bed, was midway between the right side and the back, with knees drawn up, and the head thrown forward.

The prostration and typical state increased till June 16th, when deep-seated fluctuation below the ribs on the right side could be detected, beneath the lumbar fascia above the quadratus lumborum muscle. An exploring needle was passed, and afterwards a diastem, and the wound enlarged; about a pint of pus, having a strong foetid odour, was discharged, the abscess continuing to discharge freely. After the opening of the abscess, the respiration became more free, and he coughed up a considerable quantity of frothy mucus, having the same odour as the pus. His strength was sustained by supplying food and stimulants by quinine and opium. Diarrhoea was occasionally troublesome, and the offensive expectoration exceedingly distressing.

On July 2nd he had so much improved as to be able to be carried out into the open air for half an hour. The offensive character of the breath and respiration gradually subsided; healthy expectation became visible nearly to the base of the lung, and he continued to gain flesh.

In October he returned to his work, and now appears a stout, hale man; but a fistulous opening remains up to the present time, which occasionally discharges freely. In this case deep-seated suppuration took place near the quadratus lumborum

muscle, acute pleuro-pneumonia on the right side, and the most severe obstructive symptoms followed. The pus which was evacuated, and the mucus expectorated, were of a most offensive and fetid odour; but microscopic examination of the pus could not detect decided focal elements. Discharge came on; the fetid character of the discharge slowly subsided; but the expectorated matter killed the patient soon. Several facts render it probable, that the abscess was in close contact with the ascending colon; more contact with the intestine would probably be sufficient to explain the fetid odour; and it may be, that the contents of the abscess were partially discharged into the colon.

In the investigation of the case several modes of explanation were suggested.—1. An abscess, the neck of the liver; 2. Cancer of the vesicles or its process; 3. Abscess of the liver; 4. Empyema; 5. Suppuration external to the kidney. None of these of that organ.

Although there was evidence of acute disease of the chest, the abscess was evidently below the diaphragm, and probably in contact with it; there was no evidence that the kidney was affected. The character of the pus, and the character of the discharges of bile, indicate freedom from hepatic disease. It is probable that disease of the vesicles or its process had been carried by the liver.

The treatment in both these cases appears sufficiently clear, as soon as a tolerably certain evidence of suppuration is obtained, to make a free incision for the pus, and to support the patient by every means in our power. The deterring of the opening of the abscess tends to increase focal suppuration where it communicates with the colon; and the abscess readily spreads among the cellular tissue which concerns the layers of fascia and muscle.

The principal hazard arises from the difficulty in drawing a correct diagnosis, especially at the earlier stages of this deeply seated inflammatory disease.

Medical Times & Gazette.

SATURDAY, MAY 11.

THE TRIAL OF WILLIAM PALMER.

Two important Trials commenced on Wednesday morning last, and while we are going to press it still continues, and is likely to last some days. The great interest which this Trial excites it is impossible to exaggerate; and the Crown and the Prisoner have both called to their aid a host of Medical witnesses, whose evidence will bear most materially upon the question of Palmer's guilt or innocence. Our next Number will contain a full and accurate account of the evidence, more especially that of a scientific nature, specially reported; and we have no doubt, that the facts and opinions stated will be ranked among the most instructive records which have appeared in the annals of Medical Jurisprudence.

THE UNIVERSITIES IN RELATION TO MEDICAL REFORM.

We are happy to find that the principles we advocated a fortnight since in our article entitled "A Scheme of Medical Reform," are likely to form the basis of legislation on this important subject. The Royal College of Physicians adheres substantially to the same views, and we have no doubt that they will be acceptable to the generality of the Profession. The main points involved are, the necessity of preliminary knowledge as an introduction to Professional study; the attainment of Medical and Surgical qualifications by a systematic course of study and examinations; the retention of the existing grades in the Profession; and the limitation of

the highest honours to those who have attained the highest qualifications while pursuing the most lengthened and most various course of study. The proposed plan retains the rights of the Colleges as licensing bodies, and we conceive that no one has yet been shown why these rights should be abridged.

We are sorry to learn, however, that an opposition to this scheme has been threatened from a quarter from which we should, on the contrary, have expected the warmest support. We find that the Universities are opposed to the power which is now held, and which will be held hereafter, by the Medical and Surgical Colleges, of granting licences to practise. As this opposition on the part of the Universities is founded upon a total misapprehension of the relative functions of the two kinds of corporation, we think it right to offer a few remarks upon the subject, with a view of clearing away some of the difficulties which seem now to exist.

The Universities are universities of instruction in all branches of Art and Science, and their internal affairs are regulated by persons who are chosen from the number of their alumni on account of their academic distinctions. The system of our academies has sometimes localized these seats of learning in spots which are secluded from the busy haunts of men, and which are, therefore, favourable to abstract study and meditation. Medicine, although it forms a portion of the instruction given within these institutions, is by no means the principal or the predominant pursuit of the students; and it cannot be asserted, in the widest range of imagination, that the Universities in any way impeded the Medical Profession. The government of the Universities is entrusted to Chancellors, to Lawyers, to Mathematicians, to Philologists; and, although the Medical element may find its way into the Councils, it undoubtedly does not in general occupy a prominent place.

The Colleges, on the contrary, are devoted exclusively to the cultivation and promotion of Medical and Surgical science; they are situated in large towns or cities, where there exist abundant materials for the acquisition of practical knowledge; and those who regulate their internal affairs are the men who are usually engaged in ministering to the Medical wants of the community. It is perfectly clear, therefore, that the Colleges represent the actual wants of the Medical Profession, while the Universities represent only the abstract interests of learning generally. What would be thought of the Universities if they insisted upon the right of their alumni to practise at the Bar without the usual formalities at the Inns of Court? What would be thought if the Universities disputed the right of the Bishops to retain the the Church? Nay, why should not the Universities give away commissions for the Army? Yet numerous as any of these propositions would be considered, they are not a whit more absurd in reality than the claim of the Universities to grant licences to practise in Medicine and Surgery; a claim which would probably never have been made, had not some old statute or charter, given, in certain cases, a colour to the pretension.

In a few of the Universities it undeniably happens that at certain periods, and under the influence of some distinguished Professor, the Medical section occupies a prominent place, as for some time has been the case with the University of Edinburgh; but in the English Universities of Oxford and Cambridge, the number of Medical Students is exceedingly small. The Universities of London and of St. Andrews, in Scotland, have each a medical establishment, but no medical school, and the University of Durham has no medical element at all. Even the lists of the University of London, the medical graduates of which held a very high rank, are composed chiefly of lawyers and dissenting clergymen; and in any trial of strength among the different Faculties, that of Medicine would certainly be overpowered. It cannot, therefore, be maintained, that the Universities reflect the opinions, or

upheld the rights, or represent the wants of our Profession; nor can it generally be asserted, that even the examiners at these seats of learning are always men of large practice and experience. The government of the Medical Colleges, on the other hand, is conducted by men in actual practice, and who are, therefore, the best qualified to grant licences for pursuing the Profession which they themselves are in the daily habit of exercising.

While, therefore, we feel that men will always resort to the Universities for the degrees and honours which these institutions are capable of bestowing, and while we think that every encouragement should be offered for their doing so, we are equally convinced that the licence to practice should be granted by those bodies to which the power has long been legally vested. As we have urged on former occasions, the Medical practitioners should pass through a full career of study, both theoretical and practical; but we conceive that the final examinations which are to launch him upon the public as a fully qualified Physician or Surgeon, should be conducted by men who are themselves in actual practice. The Universities ought not to be the rivals, but the hand-maids of the Colleges.

We should very much regret to find that the University of London is opposed to the present plan of Medical Reform, which we believe has the sanction of the Government. While we cheerfully concede to that University the very high merit of having proposed and carried out the most elevated course of Medical Education yet devised, we cannot forget that this successful issue has been in great measure achieved by the liberal annual grant of £2000 awarded to it by the nation. If any rivalry should be attempted between this University and the Colleges, it would be only just to put these all upon the same footing, either by withdrawing the annual grant, or by giving the same amount to each of the Colleges, especially to the College of Physicians, which, without any Parliamentary grant at all, has for many years upheld the dignity of the Profession, and promoted the best interests of Medical Science.

We fully admit the principle of so subsidizing all the Colleges and Universities that the income of the Corporations and the salaries of the Bachelors shall be in no way dependent upon the number of the successful candidates; and in any new measure of Medical Reform, we hope that some such arrangement will be made; but we cannot help remarking upon the monstrous anomaly of granting to one favoured Institution a perfect degree of independence at the expense of the nation, while all other similar establishments are obliged to depend for their emoluments upon the honours which are granted, or are deemed to be dispensed freely as the result of their scrupulous honesty.

On the whole, we feel assured that, on reflection, the Government will view this question in its true light, and that, reserving to themselves the privilege of electing, and electing wisely, the members of the Profession, they will through the right, which it is doubtful whether they ever legally possessed, of granting licences of practice. The latter prerogative justly belongs to the different Colleges of Physicians and Surgeons; and they cannot relinquish it without perpetuating the discordant system, or rather want of system, of which we now universally and very justly complain.

REVIEWS.

An Inquiry into the Nature of the Simple Bodies of Chemistry. By DAVID LEWIS, Esq., F.R.S.E., &c. Third Edition. 8vo. Pp. 186. Edinburgh, 1886.

THE announcement, within a few pages, of the publication of a third edition of a work of so purely speculative a character

as this by Mr. Lewis may of itself be regarded as a sufficiently commendatory notice. Furthermore, however, the illustrious Bachelors having considered Mr. Lewis's views on dissolving of various combinations, in conclusion as to their claim to regard. These we may sum up in a few words. Mr. Lewis argues, that we have no proof that the bodies which we now regard as simple or elementary bodies are such, beyond the fact that they have not yet been decomposed; that the same has been said of bodies formerly regarded as simple, but now proved to be compound; that we might rather assume a body to be compound until it has been proved to be simple. "Chemists," Mr. Lewis observes, "have been led to suspect the compound nature of several substances still enumerated among elementary bodies."

Mr. Lewis summarizes the proposition, that all other bodies which are termed simple are derived from one of the acids, hydrogen and carbon, or from elements of which these are formed. In elaborating the proof of his proposition, he examines the theories of chemical equivalents and formulae, gives the leading characters of each of the sixty alleged simple bodies, and dwells at great length upon the properties of oxygenated bodies.

How far these opinions may ultimately come to be received among Chemists, must be shown in the course of events; it is, however, an telling circumstance in relation to the author, that they have been favourably noticed by the French Chemists, headed by M. Trautmann, and that Mr. Faraday has "announced the intention of instituting experiments for the purpose of discovering, if possible, the composition of some of these seemingly irreducible substances."—*Prætor*, p. viii.

We may add, that Mr. Lewis's work is full of interest to the lovers of philosophic research, and must prove attractive to all who care to watch the progress of science towards simplicity,—a striking feature, which characterizes this rapidly progressive age, in the physical investigations.

A Manual of Photographic Chemistry, including the Practice of the Collodion Process. By FRANCIS H. MANLY, late Demonstrator of Chemistry in King's College, London. Second Edition, small 8vo, pp. 244. London, 1886.

THE first edition of this work was published in March, 1882, the second in September of the same year. Its rapid sale proves the want of a manual of this kind, and shows also that the want is being supplied. After such a warmly felt commendation would seem superfluous. We may, however, add, that we have been much pleased with the very lucid and simple manner in which the processes of photography are explained, and their chemistry rendered intelligible. To all who cultivate the fascinating art of photography with any higher than merely fashionable notions, Mr. Manly's Manual will be found a truly scientific assistance.

FOREIGN CORRESPONDENCE.

FRANCE.

[From our Paris Correspondent.]

PARIS, MAY 4, 1886.

AN interesting paper, from the pen of Professor Nikola Edwards, has been presented to the Académie des Sciences. Many Surgeons had already proposed to give some poisonous salts to patients labouring under a slow Leucæmia, (the so-called cancerous leucæmia). M. Gosselin, Surgeon to the Oculin Hospital, in six cases of treatment of the same employed phosphates of lime with decided advantage. M. Alphonse Maigne-Miranda has made many experiments, on dogs and rabbits, to ascertain positively the degree of influence of phosphates of lime upon the speed of the formation of uric acid. In all these experiments it has been found, that uric acid formed quicker in animals which have taken phosphates of lime than in others which have not taken this salt. Therefore, it seems that it might be useful to add a certain quantity of phosphate of lime to the food of patients with cancerous leucæmia.

M. Malinowicz, a very bold Surgeon,—perhaps, rather too bold,—proposes to take away the auxiliary leucæmia when there are deeply-extended tumours, which cannot be treated otherwise. In a second paper presented to the Académie the

Science, he relates two successful cases of operations for such tumors, in one of which he took away a part of the inferior maxillary bone, although this bone was healthy. In the other case he disconnected this bone on one side. His conclusions are, 1st. That the disarticulation of the inferior maxillary bone renders possible the excision of certain degenerated tumours in the pharynx, the larynx, and the palate, which could not be reached otherwise; 2. That surgeons are authorized to perform such an operation, even in cases where this bone is not at all diseased, as soon as the life of the patient is in danger in consequence of the presence of the tumour.

In a very interesting paper, read at the Académie de Médecine, M. Michérix points out, as a common cause of congenital deafness and dumbness, intermarriage between relatives. His attention as Physician of the Hospital for the Deaf and Dumb has given him ample opportunities to ascertain this law. He states also, that out of 100 deaf and dumb, between ten and fifteen years of age, there are about 40 who have had the power of hearing for a certain number of years; 10 are born more or less deaf and dumb.

Professor Colin, in a paper read at the Académie de Médecine, states, that there is always a small quantity of glassine in the urine of animals, at the time of parturition. He tried to prove, that this glassine is absorbed in the foetus, in which it is found from some elements of the food, and even from animal food.

In a recent communication to the Société de Biologie, Dr. Brown-Séquard points out as a symptom of alterations limited to one lateral half of either the spinal cord, the muscular atrophy, as in the pons Varolii, the existence of a notable difference in the degree of warmth of the two sides of the body, and particularly at the hands and feet. On the side of the alteration the temperature is more elevated by many degrees than on the other. In animals, after a section of a lateral half of the spinal cord, the difference may be very considerable between the two sides of the body. In one case, where he had divided, with the assistance of Dr. Carreau, the left lateral half of the spinal cord near the middle oblongata, the temperature between the toes of the left posterior limb of the animal, was found, a few hours after the operation, to be 30 or 37 degrees (Fahrenheit's scale) above the temperature of the toes of the other posterior limb. But such an enormous difference has been observed only once out of many experiments. Usually the difference is from 3 to 12 degrees Fahrenheit.

A case of disease of the supra-renal capsule, with brown skin, has been communicated to the Société de Biologie by M. Fournet. The skin, a part of which was shown to the Society, was quite dark, resembling that of a mule. The capsule had entirely lost their structure. In them there was almost nothing but fat and many small abscesses. The prominent symptoms, which Dr. Addison has recorded as existing usually in cases of disease of the supra-renal capsule, existed also in the case of M. Fournet.

The Council had determined on conferring a Silver Medal on the writer, who was mentioned, in like manner, by Mr. Thomas Fitzgerald. The competition for the medal is ascribed to those Students who are, under the rules of the Society, admitted to attend the meetings. The President not only speaks in high terms of the scientific character and the research which both these essays displayed, but complimented the authors on their excellence as specimens of literary composition. It will be remembered that last year no medal was conferred; and the President, in alluding to the observations of his predecessor in the chair, Dr. Adams, on that occasion, expressed the gratification of the Council that the advice then given had been followed by such good results. The proceedings of the day excited great interest, and the conferring of these honours on two Students in the presence of so many distinguished members of our Institution, cannot but have the best effect on their future career. The Society then adjourned until the commencement of the next winter session.

A meeting of the Obstetrical Society was held on the evening of Friday, April 1. Dr. McClenahan, Master of the Lying-in Hospital, in the chair. Dr. George Montgomery, Assistant to the Hospital, communicated the history of a case of rupture which had recently occurred in that institution. The principal points of interest in this case were, that the three children presented differently; the first with the head, the second with the arm, and the third with the breast; and that the second underwent "spontaneous evulsion" in the manner described by the late Dr. Douglas, in recognition to Dr. Denham's "spontaneous evulsion," the protruding arm not to the least degree receding during the time occupied by the descent of the breast. The three children came up to the present time alive and well; their aggregate weight at birth was 14 lbs. 13 oz. avoirdupois. Dr. McClenahan narrated the particulars of a case of complete occlusion of the vagina that had recently presented itself in the Hospital in a primiparous woman. The vagina appeared to terminate in a tubercle about 2½ inches in extent. After the labour had continued for some time, a cerebral lesion was cautiously made with a guarded bistoury through the obstructing part, to allow the passage of the head. The woman made a good recovery. There was a very small vulvular opening in the membrane which occluded the vagina; but this was of so small a calibre as not to admit of the passage of an ordinary probe without causing some slight laceration.

On Friday, the 25th, Professor Davy brought under the consideration of the scientific meeting of the Royal Dublin Society some simple methods of detecting arsenic and its compounds, whether in the solid or fluid state, or when mixed with organic substances, &c. He referred to the common modes of detection, the methods of Fresenius and Babo, of Beilstein, Marsh, &c.; and then made some very simple experiments (which were performed in a few minutes), illustrative of a simple electrochemical method of detecting arsenic, &c., which consists in placing it, in either a solid or fluid form, on a surface of platinum, adding a drop or two of strong hydrochloric acid, and bringing a small slip of foil or sheet zinc into contact with the materials, when the arsenic will be precipitated on the platinum in the metallic state, and will strongly adhere to it, exhibiting colours from purple to black like those observed on leaded steel. After washing and wiping the platinum, the heat of a candle is sufficient to remove the arsenic which then in arsenious acid while the characteristic garlic odour is produced. In this way, with the greatest facility, arsenic may be obtained from a solution of arsenious acid in cold water or other fluid in quantity as minute as so to be wholly imperceptible by the most delicate balance. In cases where the quantity of arsenious acid in solution is mixed fluids may be extremely minute, the latter should be concentrated by boiling before the hydrochloric acid is added. The presence of sulphuric acid does not interfere with the results, and it may be employed to decompose animal and vegetable matters previously to the application of the method, which renders unnecessary the tedious modes of separating the arsenic by sulphuretted hydrogen and subsequent reduction, &c. The acids and zinc employed should, of course, be free from arsenic.

At the same meeting Dr. J. R. Kinahan read a most interesting paper on Specimens of Australian Crustacea, presented by him to the Society.

Large had, on receipt of the proof, Mr. Smith's Plan of

PROVINCIAL CORRESPONDENCE.

IRELAND.

(From our Dublin Correspondent.)

DUBLIN, MAY 4, 1886.

I must depart somewhat from regular chronological order in my reports of the proceedings of the Pathological Society, to give a brief account of the awarding of the Gold Medal of the Society, at its final meeting for the past session, to the writer of the last essay on the subject I announced in a former letter—the "Chronic Disease of the Liver." On this occasion four essays were sent in with fictitious signatures. The successful essay was that signed "Euphorus," the accompanying sealed envelope containing the real name, having been opened in the presence of the Society, the Author, Mr. Charles James Egan, was called forward by the President to receive the honour, before a very large meeting of the members. The President then announced that, in consequence of the death of another of the essays, bearing the signature of "Euphorus,"

In the "Compendium of the Dublin Hospitals," contained in an appendix to the "Report of the Commissioners appointed to inquire into the Hospitals of Dublin." I do not think it necessary to bring the details of Mr. South's project before your readers, inasmuch as it emanates from this gentleman alone, and has not received the sanction of the Commission of which he was a member. As an example, however, of the wholesale and impetuous enterprise which he would make in the existing state of things here, I may mention that he suggests the possibility of converting the Dublin Lying-in Hospital into a General Hospital, and of supplying its place by appropriating a \$50,000 in each of the General Hospitals, the diseases peculiar to women, while the Lying-in patients, he recommends, should be attended at their own homes; thus depriving the pupils of the advantages they at present enjoy,—of attending a large number of midwifery cases in a well-adequated, under the immediate superintendance of respectable teachers, and of witnessing, under clinical instruction, the daily progress of so many parturient women, in every stage of convalescence, and of observing every variety of puerperal disease. It is needless to say, that such opportunities as those for the acquisition of scientific knowledge could never be supplied were the patients confined at their own homes. Has for whom purposes is this change to be made? Is it that the deeds of good men may not live after them, are men to become to posterity, that the name of Bartholomew Mason is to be thus blotted from remembrance, and the noble institution founded by his humanity and his benevolence, is to be diverted from its purpose? This great man's exertions, and the benefits he has conferred upon his fellow-countrymen, have been well described by the writer of the "Irish Medical Directory" in the following words:—"Struck by the misery and wretchedness that met his eye in his charitable visits to poor parturient women, this distinguished philanthropist conceived the noble idea of founding an Institution capable of fully receiving within its ample walls all who might apply, having poverty for their plea, and the pangs of approaching childbirth as the ground of their request. With an ardour of benevolence rarely to be met with, and a spirit of genuine philanthropy seldom exceeded, this Christian benefactor devoted to the favourite object his time, his talents, his labours, his private fortune, (even to the neglect of a competency for himself and his children,) and, finally, his life. Of him it may be truly said, in the beautiful language of Shakspeare, "in finding the lump of charity, he had exhausted the lump of life." The inscription that records his goodness (a grand record of the benevolence of the Medical Profession) is couched in these simple words:—

Wm. J. Gossett. Dublin 1787.

This good man's god-like intentions, so far as giving shelter to destitute women in Dublin's most trying hour, are unexceptionably allowed to, both as regards the *letter* and *spirit* of his instructions. In no institution in the world is there more of substantial comfort, and even luxury, considering the previous circumstances of its inmates, than in this. Its origin is a noble instance of goodness, that quite in this the standard benevolence of ordinary men, although a noteworthy example of the effects of self-denial in the public well. Is it kingdom distinguished by its benevolent institutions, and where every manly virtue—*both* is felt to be in its appropriate sphere, thus decidedly stands prominent and alone. Like the Nile, it pours health and vigour over a desert the population of which would otherwise droop and die beneath the insalubrious influence of Nature's (y). A reference to the evidence taken before the Committee of the House of Commons upon the Dublin Hospitals, (pp. 116 & seq.) will show that these statements, as to the efficiency of the Institution, have not been overdone. Since its foundation upwards of one hundred and eighty thousand women have received within its walls. Oh, it is because its beneficial effects are hit, in every quarter of the globe, in the smiling birth of sound and well-educated observations, that it is to be deemed a distraction! But now I am, that the voice of public opinion will never allow the alternative fund of reckless innovation to commit such a mistake, and I trust that, should the world last long enough, the century which this Hospital has just completed shall be but an hour in the period of its useful career.

GENERAL CORRESPONDENCE.

ESGOT OF THE IS MIDWIFERY.

[To the Editor of the Medical Times and Gazette.]

Sir,—After the general opinion I gave of the Esgot of Eye in my last communication to your Journal, it will not seem strange that I should consider it as applicable to a limited range of cases only. Indeed, my conviction is, and has long been, that the midwifery Practitioner who uses it most judiciously will have fewer regrets and cautions to write than he who indiscriminately gives it, in every case of slow labour, merely because his patient is retained, or his patient may be desirous to have something done for her. My experience of the esgot leads me to lay down an arbitrary rule for its exhibition the following conditions, viz. :—

- 1st. That the os uteri be largely dilated and the soft parts in general be well relaxed.
- 2nd. That the membranes be whole, and the liquor amnii not escaped. And
- 3rd. That the capacity of the maternal pelvis be complete and without deformity.

In short, the labour in which the esgot is to be employed should want nothing to render it all that can be desired; but some effective contractions of the uterus may be obtained by various means besides the administration of this medicine.

If anything else be required, the esgot of eye is not the appropriate remedy; and as it has certain grave drawbacks incurred with it, the case ought to be carefully considered in all its circumstances before the esgot be administered. For, if given before the os uteri is dilated, or at least the size of a crown, and in a distensible case, the great probability is, that the force of the os, and the adjacent lower portion of the uterus, will become contracted in a transverse direction, and as the labour be delayed rather than accelerated; the membranes will become prematurely ruptured, the liquor amnii escape, and the life of the child be endangered. If given in a rigid state of the soft parts, the same risks are likely to follow; and it need when the pelvis does not afford free room for the easy passage of the child, you will only induce pain insufficient to force that passage, and render the rupture of the uterus probable. The frequent appearance of still-born children after the esgot has been used, is a fact I believe obtained by all men of experience upon the subject, and is, I think, readily accounted for by the fact of the unassisted and uneven pressure which is made upon the child by the uterus, especially after the escape of the liquor amnii, while contracting under the influence of the esgot. The spasm rigidly holds which the uterus is thrown, most intercept, and frequently altogether stop, the circulation of the blood through the placenta, and hence, as proved also by the blue colour of the children born under such circumstances, the necessary purification of the blood through that organ during fetal life is suspended, and the death of the child occurs as the result. It seems entirely unnecessary to attribute the foolishness of the life, or the entire destruction of the life of such children, to any poisonous influence of the esgot, as we have seen, that good, both from the well known violence of the uterine pressure, and the blue colour of the children, that the obstructed circulation of the blood alone will account for all the phenomena. That many infants, therefore, have been sacrificed by this esgot, I have no doubt whatever, and hence I appeal the more ardently to the Profession, to consider this point of practice, and to do it without delay. For my part, were I able to create Philadelphia's which I cannot expect to do, I should be very sorry of this drug in all cases unless decidedly such cases as those I have already indicated, believing that a safe and efficient substitute can easily be found free from this serious drawback.

As to the use of the esgot in post partum hemorrhage, I have little experience. I will only say, that, finding it to exert so partial and uncertain an influence in contracting the uterus, I have not been in the habit of treating cases of such importance to it, but have employed the other well-known agents, upon which more trust could be placed, as such cases do not admit of more tempting expedients, but require prompt and efficient intervention.

Colchester, March 4, 1864. DAVEN MORRIS.
P.S. These views will, doubtless, not receive the concurrence

100 Irish Medical Directory for 1884, by Henry O'Grady, M.D. Dublin: O'Grady and Co. 1884.

of many gentlemen with whom I have the regret to be a favourite, and who show their attachment to it in a similar way to the late Dr. Fowler with his liver, who always carried it about with him in a pocket made for the purpose, like the carpenter with his rule, and who was so afraid and averse to his use of his favourite instrument, that he often slipped it from his pocket and applied it, before he was known to be using any instrument; but I give my conscientious opinion of this drug, without any conscious prejudice against it, believing that neither the Profession nor the public will suffer any real loss from its entire disuse.

SANTONIN AS AN ANTHELMINTIC.

[To the Editor of the Medical Times and Gazette.]

Sir,—Having had several cases during the last six months (among the poor) of children suffering from worms, I was induced to try the effect of santonin, and from the very satisfactory results which have arisen from its use, I think it may be interesting to your readers if I give publicity to the same.

Among the first cases treated, was that of a child of two years of age, to whom I gave three grains of santonin dissolved in two ounces by an aperient powder; this child voided the next morning, at one time, thirty-seven worms, some of them a foot in length, of the botanical variety kind. Two children in another family were similarly treated, and between thirty and fifty worms came from each; again, in a family of four, 124 worms at one time, and many more afterwards, followed the aperient, each child having taken one dose of santonin. I could instance many more cases which have been relieved by this medicine. After the expulsion of the worms, I give a tonic mixture, containing the oxidated extract of iron and succinic acid, and change the diet from a vegetable one to that of meat and bread. My cases all do very well.

I should state that santonin is a medicine that may be administered with perfect safety. I give it in its crystallized form, between bread and butter, and two hours after it a dose of calomel and jalap; in some cases an interval of twenty-four hours occurs before the worms are voided.

The persons who reside in the locality in which I have met with these cases, are very poor, and, from the high price of bread this winter, have had recourse to vegetable of the commoner description, so a article of food, which will account for the presence of worms in the alimentary canal.

I am, Sir, GUYARD ST. PIERRE, M.B.C.S. Eng., L.S.A.
Dorset, Dorset, May 1, 1898.

OPERATIONS IN CONVERGENT STRABISMUS.

[To the Editor of the Medical Times and Gazette.]

Sir,—Shortly before my departure for the East, I was consulted by a gentleman who had been operated on some time previously for convergent strabismus, but who now was affected with a slight divergence of the eye operated on; this, together with the relaxation of the coracoid, gave to this eye an appearance of strabismus and lachrymation possessed by its fellow, and the symmetry of the two was thus impaired. The patient would bring the cornea into a position equidistant from the two pupils, and could even lower it slightly; and the vision appeared to be day rather to the new insertion of the internal rectus having taken place to the backwards, than to any hypertrophy, or over-tension of its antagonist. Under these circumstances I was unwilling to run the risk of increasing the lachrymation of the eye by dividing its anterior muscle, and was even doubtful how far such an operation would rectify the vision. I accordingly pinched up a fold of conjunctiva with the sigmoid force, inserted to the corner, and slipped it off with a pair of scissors, trusting that the contraction which would occur from the healing of the wound might be sufficient to rectify the slight divergence. In this hope I was not disappointed, the greater lachrymation of the eye disappeared, the coracoid indurately was drawn more towards the cornea, and the power of inserting the eye was increased. A small granulation made its appearance in the course of treatment, which required touching three or four times with the nitrate of silver. A month after the operation none but an ophthalmologist would have discovered any difference between the two eyes, and the patient took leave of me highly gratified with the result.

It is seldom one is called upon to remedy so slight a defect

as that for which this patient consulted me. In more marked cases of strabismus, following a very free division of the contracted parts in convergent strabismus, some such operation as that so ingeniously devised by Mr. Mitchell would be performed; but I am of opinion that many cases, even of primary strabismus, when slight, might be remedied by such an operation as that described in this paper. I am, Sir,

J. STONEYGATE, St. James's-park. C. MANNEVILLE.

THE VACCINATION TRADE.

[To the Editor of the Medical Times and Gazette.]

Sir,—Can you,—if you can, will you suggest some means of preventing a very gross impropriety. Many of the Poor Law Medical Officers in this neighbourhood are in the habit of calling at the houses of people, except those of the highest rank where they dare not intrude, and demanding so a right, here to vaccinate their children.

I have written to the Board of Guardians, and they have issued instructions to their vaccinators not to call at private houses, and I have addressed the Poor Law Board, who say that it is no business of theirs.

It desirable, I will send you my correspondence with these two bodies.

May 12, 1898

I am, Sir,

I enclose my name and address.

NETHERLEIGH HOSPITAL.

[To the Editor of the Medical Times and Gazette.]

Sir,—As I have ceased to be officially connected with Netherleigh Hospital, I hope I may have credit for speaking disinterestedly of its management. I am tempted to ask your permission to say a few words on this subject, on public grounds, in answer to a leading article which appeared in the last number of your Journal. I have no purpose of my own to serve, and, personally, have no reasons to regret the continuance of the revolution which, four years ago, swept over that ancient Foundation. I cannot but feel a deep interest in an Institution in which I spent so many of the best years of my life as its principal Resident Officer, and to which I am indebted for my experience. I would gladly endeavour to discharge the public mind of an unreasonable prejudice, which, to my own knowledge, deprives many of the great blessings which it is in the power of that Hospital to dispense. It has occurred to me, in the course of my practice, to recommend the friends of patients whose means were limited, to avail themselves of the advantages which my duty offered; but I have found a repugnance which I could not overcome, and which, if it is to be heard, will the same time not continue to operate in keeping away a considerable number of more deserving persons, who could nowhere else be so well cared for. The old saying, "Give a dog an ill name," etc., has been painfully illustrated in the case of Netherleigh, which, whatever its old defects, must now be admitted to be one of the best, if not the first Institution of the kind in the world. The confidence of the public was so shaken by the reports of cruelty to patients, that, although the whole staff has been reorganised, although thousands have been benefited upon the building, to furnish it with every means of comfort and convenience, and it has become, as you truly remark, an ornament to the metropolis; it has not recovered its good name, and its noble work is scarcely half done; and this, not from any diminution in the number of those eligible for admission, for the County Hospitals are full to overflowing, and many seek in vain for admission into these. Surely, then, it will be rendering a service to humanity to remove a prejudice which so seriously interferes with the usefulness of this excellent charity, and drive hundreds from seeking its hospitable shelter. It is said that the presentation of well is not so black as he is painted; and now that the storm, which was unseasonably raised, as to the alleged malpractices in Netherleigh, has subsided, and people are able to look calmly into the facts, the question may perhaps be asked whether providing a hearty and sunny reply. Was Netherleigh really so bad as was represented? That the management was in many respects bad, and the building defective, and that both have been very greatly improved under Dr. Hood's superintendance all men acknowledge; but Netherleigh was not the abode of

slight morbidness which has been reproduced, nor can it be said to have continued, much less exaggerated, the character of the old syphilis. In support of this position I may remark, that many of the principal improvements to which you refer as novelties, were made some more than ten years ago, and others commenced in the days of the old Medical Staff. For instance,—the same billiard-table which now affords recreation for the patients, has been in use three twelve years. Plans were not confined to the women's side of the Hospital, even in that supposed dark period of the history; and as regards the new windows, if anybody deserves any credit for them it is myself, though they are my own invention. The drawings were made of my own expense, and above a hundred of the windows were fixed while I resided in office. A description of this window was published in the *Psychological Journal* for January, 1851, and it has since been adopted at St. Luke's, and also in the Continent. Again, as for the removal of the old syphilis having been continued in Bethlehem, it is but an act of simple justice to the late Medical Staff, including my lamented friend, Dr. Moore, and my friend, Sir A. Merriman, to record the fact that, during the last few years of their connection with the Hospital, in addition to many material improvements, mechanical restraint was entirely abolished, and, what is more important than all, a large number of patients were discharged cured than at any other period in the history of that Institution, or of any similar Institution, throughout the world. Granting, then, that those errors, that for months of improvement was shown, and that individual instances of misadventure on the part of servants were less rare than now, I hope I have succeeded in showing that Bethlehem was not so bad as was generally supposed, and that it has never been at the level of similar Institutions that it should be deemed. The dark side only of the picture was presented to the public, but nothing was said or known of the warm acknowledgments of many a grateful heart, which it was the happiness of the Medical Officers as commonly to receive from those who could appreciate the anxious care which had been bestowed upon them in the time of their greatest need. Even now I frequently meet with kind expressions from former patients of Bethlehem who choose to tell in my way, and it is a remarkable fact that, in no one instance, have I found the contrary feeling on the part of those who were resident there during my tenure of office.

In conclusion, I would repeat that the object of these remarks is in the interests of humanity, to remove an unnecessary stain from a valuable Charity, in which the sphere of usefulness is so carefully restricted, and which is peculiarly suited to the wants of a large class of susceptible patients with very limited means, for whom no other provision is made.

I am, &c.
WILLIAM WOOD.

44, Upper Harley street, Cavendish-square,
May 15, 1866.

WASHING THE STREETS—OR WATERING.

[To the Editor of the Medical Times and Gazette.]

Sir,—In the Medical Times and Gazette of last week you published a letter from a Medical Practitioner residing in a remote town, in which he states that the use of sea-water for the purpose of watering the streets had been found unwholesome during the summer season, and that consequently the commissioners had discontinued hitherto to use fresh water for that purpose.

I can readily believe that sea-water used to water the streets might be unwholesome. Look at the condition of the streets of most towns! Their surface is very impurely dressed, and is loaded with humus and other animal and vegetable refuse; and when this becomes dry and dusty in the summer months, it is carried and conveyed into wind. We talk of laying dust, but towns dust will not be laid. Certainly by the present watering process we do not include humus in the shape of dust; but it needs no, as it lies raking on the pavement, with sticky stones, that are probably much more unwholesome.

Now, so long as water is used for this purpose, by all means let it be fresh. Sea-water may introduce some new element of unwholesomeness, especially if taken from a sluggish pool or estuary.

But I conceive that the use of water advocated in your paper is of a far different and more liberal sort. You evi-

dently contemplate that the streets shall first of all be swept as often as possible, and then that the surface shall be covered with a copious stream, sufficient to carry off any remaining impurities into the sewers, and to leave the streets as sweet and clean as after a heavy shower.

The use of water in these two modes is absolutely different. In the present mode, the water is used to convert dry dirt into wet dirt, and is left to evaporate till the remaining mud again becomes walking dust. In the other mode, the water, with any residual impurity, is immediately drained off.

I am, &c.

Curzon street, London,
May 15, 1866.

ROBERT THOMAS.

REPORTS OF SOCIETIES.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

THURSDAY, APRIL 25, 1866.

CURRAN HARRISON, Esq., President, in the Chair.

ON THE STRUCTURE AND NATURE OF THE SO-CALLED COLLOID CANCER.

By SEYMOUR W. ANKLES.

Medical Registrar to the Middlesex Hospital.

(Communicated by J. M. ANKLES, F.R.S.)

This paper was accompanied with many illustrations, and an analysis of nine cases of colloid cancer observed by the author, giving an account of the age, sex, history, progress, seat, and post-mortem examination in each. It gives a very minute description of the structure and nature of the disease, more especially of the character and development of the interlobular stroma and its contents, both of which had been hitherto, but not fully described, by previous authors. Having given a minute account of the mode of origin and development of colloid, with an examination of the question as to its relation to and association with cancer and sarcoma, the author drew the conclusion, that, so far as could be judged from the cases detailed by him, colloid was a disease perfectly and generally, neither of a cancerous nature, nor frequently associated with cancer, and concluded with advocating the propriety of the early removal of the disease when practicable, inasmuch as, if not radically cured by operation, there was abundant evidence that colloid was slow to recede after excision.

The President asked the author whether he had examined the difference between the solid material of the ordinary cystic disease of the breast and those of the so-called colloid disease, in the later stage.

Dr. Bailey said he had frequently made the examination, and he could see no resemblance in the two structures.

The President said he had a patient under his care on whom, during the last eighteen years, he had operated twice or fourteen times for disease of the breast. The disease was at first of the ordinary cystic kind; year after year tumours continued to form in the cellular tissue, varying considerably in size, and presenting no difference in texture from those which were first detected. It could hardly be called colloid disease, nor could it, appearing time after time, well be regarded as cystic.

CASE OF FRACTURE OF FOUR CERVICAL VERTEBRÆ, WITH DISLOCATION, PRODUCED BY SLIGHT AND UNUSUAL CAUSE, AND RESULTING IN IMMEDIATE DEATH; WITH NOTES OF A CASE OF FRACTURE OF THE OS CALCIS.

By GEORGE GREEN GARDNER, M.B.C.S.

House-Surgeon to St. George's Hospital.

(Communicated by STURGEON GENERAL, Esq., &c.)

This paper was accompanied with the pathological preparation of the parts. The interest of the case lay in the great amount of injury produced by a slight cause. There was fracture of the posterior arch of the sixth, through the laminae of the second, third, and fourth cervical vertebrae, directly behind the articulating processes, completely separating them from their respective bodies, in addition to which the laminae of the third and fourth on the left side were comminuted.

There was partial dislocation of the third vertebra forwards; the posterior auto-axial ligament was broken, and in parts disorganized; the ligamentum subflavum was torn away from the second vertebra. There was effusion of blood into the spinal canal between the bones and the membranes of the cord from the first to the fifth vertebra inclusive; the posterior common ligament was much stretched with a longitudinal rupture of an inch in length, opposite the second and third vertebra; while the cause producing all this amount of injury was the dorsal resting of the head a few times from side to side, the sudden falling of his head in a bowing position, with his hat on, while his friend, who carried the load, had hardly started it by the fall of the horse. The author, who had taken great pains to examine himself that this account of the accident was the true one, gave a minute description of the relations of the bones of the spine when placed in the position described, and of his view of the cause and progressive stages of the injury, quoting in confirmation many sources of information, the case, however, being in its details quite a solitary one. The notes of the lecturer on this subject the author stated he was induced to lay before the Society, in consequence of the statement of eminent authorities, (Malpighi and others,) in the effect that the vertebrae, when broken by direct violence, is always crushed, and that the fracture is always situated behind the vertebra; whereas, from the rest of the description, and the deposit of matter after the injury, it was evident in this case that the anterior third of the bone was separated obliquely from above downwards, from the posterior two-thirds—that is, in front of the larger interlocking part of the vertebrae.

Mr. Ure here testimony to the accuracy of the details related by the author.

Mr. Moore said he had met with a case of fracture of the vertebra similar to that related in the paper. It presented but little disability, and healed readily. As to the other case he would ask the author what was the condition of the bones after death—whether there was any unusual thickness or other defect which would account for the great amount of injury stated to have been produced.

The Author said the bones were not all examined, but the body was that of a finely grown man, presenting no external signs of any unusual thickening of the bones.

The President mentioned a case of fracture of the sacra, attended with much laceration and subsequent exfoliation. The patient recovered, and had very good use of his limbs, so as to be able to walk with considerable firmness.

The Society then adjourned.

EPIDEMIOLOGICAL SOCIETY.

MEETING, MAY 8, 1886.

Dr. BARNES, President, in the Chair.

Dr. McWilliam read a most interesting and elaborate paper ON THE GEOGRAPHICAL DISTRIBUTION OF HEALTH AND DISEASE, IN CONNECTION CHIEFLY WITH NATURAL FREQUENCIES.

By ALEXANDER SMITH JOHNSTON, Esq., M.D.

The subjects of this important communication were illustrated by a large and beautifully coloured map, upon which were delineated the various groups of diseases prevailing in the different portions of the globe, the region of each group being marked by its particular colouring. The map also exhibited equal natural manner and wider horizontal lines; lines pointing out the march of cholera from east to west; lines indicating the foreign stations of the British Navy; the coast of Asia; diagrams showing the proportions of deaths from consumption in different quarters of the globe; the attacks of rheumatism among the troops on different stations; and the comparative value of human life in different countries, and in cities and towns. (The map, and the paper in a more extended form, will appear in a forthcoming edition of Mr. Keith Johnston's "Physical Atlas.") The author commences by observing that in the investigation of the extent to which the human family is affected in the enjoyment of health and the preservation of life, by physical or natural causes, statistics form the safest guide, or the accumulated stores of experience, and generally accepted

facts, regarding the occurrence of diseases in its different forms, its extension or limitation in space, and the probability of its recurrence. But reliable tables of sickness and mortality do not exist, except for very limited and widely separated portions of the globe. In the absence of positive data, however, a knowledge of the physical conformation of the earth's surface, and the meteorological agencies to which it is exposed, afford, through comparisons of well known phenomena in long settled countries, a means of arriving at certain probable conclusions regarding others of which little or nothing is known. After noticing briefly the object of Medical Geography the author shows, that similarity of geographical features indicates a similarity in the diseases of a country, and that a certain amount of heat and a sufficient time for its manifestation is necessary for the development of certain malarial. In the West India, for instance, the period of disease follows the course of the sun, the malarial season occurring at opposite sides of the equator. As the sun proceeds northwards in the tropics, so the malarial season advances from the southern to the northern islands. In the Mediterranean the mortality is double in the hot season, between July and October; and in the Southern States of North America, the pest of the Army are regularly abandoned at the hot or malarial season approaches. But in the temperate regions the order is reversed. Throughout Europe, generally, the malarial mortality ceases at the end of winter, and the minimum at the middle of summer. After dwelling for some time upon the influence of winds, elevation above the sea level, temperature, moisture, density, etc., upon health, the author proceeds to illustrate the great object of his paper by the aid of a map upon an extended scale, upon which the distribution of disease over the various regions of the globe is clearly and intelligibly laid down. With this view to demonstrate that regions of disease correspond with zones and zones of climate, Mr. Keith Johnston divides the surface of the globe into belts or zones, distinguished by great leading characteristics, as, 1st, The torrid zone, or belt of greatest annual mean temperature, characterized by the class of diseases, which includes dysentery, yellow fever, cholera, malarial fevers, and diseases of the liver. This class of diseases depends essentially on heat and moisture as the exciting cause, and therefore prevails in greatest intensity in the countries situated under the line of the greatest annual mean temperature. Its northern limit is probably the Bermuda, lat. 32° North, in the Atlantic; and Callao, 18° on the Pacific Coast, in America. In Asia it extends to near Peking, lat. 38° North, and in Europe to the north of Spain. Its southern limit are—in America, Buenos Ayres, lat. 34° South, in the Atlantic; and Lima, 17° South, on the Pacific. In Asia the southern limit includes Assam, Ava, Ceylon, Sumatra, and the islands of the Malay Archipelago, and thence to the northern shores of Australia. In Africa it includes the island of Madagascar. Within these limits, the principal centres of the diseases, are, in America—the shores of the Gulf of Mexico, the West India Islands, and the northern portions of South America. In Asia—India, China, and Ceylon. In Africa—the countries around the Gulf of Guinea on the west; Madagascar and Mozambique on the east; Algeria and the shores and islands of the Mediterranean on the north. In the hot, or sub-tropical and temperate zone, inflammatory diseases, represented by typhoid fever, are the characteristic maladies. In North America and Europe, the southern boundary of this group of diseases, coincides with the northern boundary of the torrid class. In South America it probably includes Patagonia. In Africa it includes the Cape Colony; and it embraces the south of Australia, Tasmania, and New Zealand. Its northern limit in America includes Nova Scotia and Newfoundland; and in Europe the northern boundary includes the British Islands, Norway, and Sweden to 58° North, whence it follows a westerly direction till it probably declines towards the borders of Asiatic Russia. The third zone, or the sub-temperate, sub-arctic, and arctic zone, characterized by catarrhs and colds, includes the whole of Europe to the north of the preceding class. In America, it extends south to Boston and New York, including the interior of the Canadian Lakes; thence it continues northward, nearly to the line of 47° mean annual temperature. Indeed in the best known locality of this zone, and may, therefore, be taken as its representative. This island is attacked by catarrhs every year in spring, or in the summer. In Japan, which occasionally visits this in-

head, has also a great influence over mortality, attacking the whole of the inhabitants, and spreading, in an insidious short time, over the whole island. Folio says, that the majority of the Icelanders die before the age of 30, from pulmonary and cerebral affections; and Crone, that cancer is very prevalent in Greenland. At Ootahok, in Siberia, it is accompanied with difficulty of breathing; and a cough called "Ho" is endemic among the Samoyeds. Mr. Johnson then enters, in a comprehensive manner, upon the subject of the etiology and treatment of the different quarters of the globe, commencing with great skill the malarial fever before the stomach, the yellow, the membranous dysentery, and the intestinal, each of its great divisions. He next gives a rapid but vivid sketch of the main epidemics by which mankind have from time to time been afflicted, tracing them from the regions of their birth to other countries, into which they sometimes make incursions, and showing the modifications which they undergo in their progress. The author concludes by an interesting examination of the question, concerning the sickness and mortality among our soldiers and sailors, looking as his ground-work, the valuable statistical returns presented to Parliament by Colonel Talbot and Dr. Bullen for the Army, and by Dr. John Wilson and Dr. Hayden for the Navy.

A vote of thanks was unanimously accorded to Mr. Johnson for his paper, and for the valuable map presented by him to the Society. Some observations were then made by Dr. Shaw, Dr. Hill, Dr. Greenhow, Dr. Camps, Dr. McWilliam, and Dr. Lamb, who acted in relaying the efforts of the author, and thanking him for having brought them before the notice of the members.

WESTERN MEDICAL AND SURGICAL SOCIETY OF LONDON.

APRIL 4, 1906.

Dr. SHAW, N.P., in the Chair.

Mr. Barnes read a case of FISTULATING ULCER OF THE RECTUM.

The patient had been at times subject to mucous discharges of the bowels, sometimes diarrhea sometimes constipation alternating. After a recent confinement there was much pain, diarrhea, and tympanitis. The last illness commenced on February 19, with sickness and pain in the right side of the abdomen; the bowels were constipated, and there was no sign of peritonitic inflammation, the symptoms apparently dependent upon impaction of stool. There was no fever, but an evident fulness existed in the region of the sigmoid flexure of the colon. Purgatives, demulcents, and enemata were ordered, and produced sufficient evacuations from the bowels. The symptoms continued much the same for the next day or so; the sickness then abated, and though the pain was increased, there existed extreme tenderness. On the morning of the third she was suddenly seized with all the symptoms of typhoid, and the sickness became continuously attended with tympanitis, but was free from pain or pressure. She gradually sank, and a post-mortem examination was instituted fifty hours after death. The peritonium was everywhere glistening and free from adhesions; near the sigmoid flexure about an ounce of yellowish fluid was effused; the stomach and intestines were healthy, except at about seven or eight inches from the rectum, where a thickened, hardened mass of indurated, involving the entire circumference of the gut. This piece of bowel was removed, and, upon being opened, exhibited a thickened state of the mucous membrane, the surface of the canal being somewhat reduced. The diseased surface extended over about four inches. The mucous membrane was softened and sloughed in three places; one of the ulcers had perforated, another had nearly done so, and the third had only engaged the mucous coat; there was some yellowish tubercular matter between the ulcers; the mucous membrane was generally softened in the diseased portion of the bowel. The appendix was solidified.

The points of interest in the case were the situation of the abscess, it being so high up, and as contradicting the opinion that abscess of the rectum is never beyond the reach of the finger. Another point to be noticed was the slight degree of

the symptoms during life, and of the absence of all peritoneal inflammatory appearances after death.

Mr. Barnes also introduced a specimen of

CANCER OF THE PYLORUS.

The patient had not complained of any symptoms except for a few weeks before death, during which she has occasionally had nausea the period of vomiting excessive, no pathognomonic signs of organic mischief. Her chief symptoms were incessant vomiting after (about half an hour) every meal, the vomited matter being dark-colored, some crustaceous, and reddish brown; there was no severe pain, nor was any fever discovered by any of those who saw her during this illness; there was no tenderness. Notwithstanding these negative symptoms, the author diagnosed cancer, an opinion at variance with that of two other gentlemen who were called in consultation. The treatment consisted of rigid rules as to diet and solid supports; the vomiting was treated with strychnine, castor-oil, bromide, and gastric acid; she finally sank from exhaustion. After death the body was found much emaciated; there was no hardness in the region of the pylorus, but in the eploic region a hard mass was distinctly felt. Upon opening the abdominal cavity the hardened feeling was proved to be the pylorus, the cardiac end of the stomach being pushed up under the ribs, and the stomach containing no horizontal portion in its new situation; the duodenum was stretched across the vertebral column to the stomach. Upon opening the stomach it was found to contain a large quantity of dark-colored fluid, and the pyloric end was occupied by this mucous growth; in this latter the mucous membrane was ulcerated and bleeding. A remarkable fact in this case was, that the stomach which had so exhausted her could entirely just before death, and the bowels, which had generally been constipated, acted regularly. The situation of the stomach, not to be accounted for by any inflammatory adhesions as it was free and loose in its abnormal locality, accounted for the non-detection of the tumour during life.

The Society then adjourned.

MILITARY MEDICAL AND SURGICAL SOCIETY.

FIRST DIVISION, BRITISH ARMY, CHINA.

February 23, 1906.

Dr. WILLIAMS in the Chair.

(Communicated by the Hon. Secretary.)

Dr. Williams mentioned that Sir John Hall was on his way to the meeting, but had met with a slight accident which obliged him to retire; but he had sent a letter which he received that day from Mr. Smith, Director-General, acknowledging the receipt of the proceedings of the last two meetings, and promising all assistance in his power to further their objects.

Dr. John Hall also sent a memorial return of the wounds received in action from the commencement of the war to the 31st of December, 1904.

The general rules that had been drawn up by the Council were then read.

Dr. Mearns read some remarks on

AMPUTATIONS.

Although the works of any most distinguished civil and military Surgeons would appear to embrace and elucidate every point of question or difficulty connected with the subject, the matter he had selected for the Society was one of interest at the present time, and, without venturing to suggest any novelty or theory of practice, he felt it a duty to elicit every possible information, which might hereafter tend to preserve either life or limb. Three questions suggested themselves; 1st, in any given case, why should we amputate? 2nd, When should we amputate? and 3rd, How, or in what manner should the amputation be performed? The first and second questions involved the nature and extent of the injury, the condition of the patient, and the circumstances of locality, both present and distant. They comprised what was called Conservative Surgery, and, if he might say the expression, the metaphysical rationalism of Surgery. He would therefore ask in the first place, What extent of laceration of soft parts without detriment to a principal artery or fracture of bone was

justify amputation? Most of us have seen a fatal shock to the system by a large shot or fragment of shell traversing the axis of a limb, or passing through its soft parts. He remembered a soldier of the 11th Highlanders wounded in the femur by a large fragment of shell passing transversely through the middle of both thighs, but without injuring the bone, which case terminated fatally in 4 hours. This case proved fatal, in consequence of not applying a tourniquet, and the track of the large vessel of the limb was not injured. He would, therefore, caution his younger brethren against neglecting as simple a precaution, as many cases may tend to produce hemorrhage during the transit of the patient to the Hospital. In such a case he considered our duty was to assist nature in the subsequent extensive suppuration, for it is astonishing to what an extent injury of the soft parts may be repaired. He then mentioned a case in which the arm and leg were both extensively injured.—The arm was amputated on the deltoid, but in the leg the femoral artery had been laid bare, just below Poyet's ligament. Two inches of the tibia had been exposed, still it gradually recovered over. Everything was against this man, from the nature and extent of the injury, the prostration from his wounds and the amputation, and the circumstances which prevented his being treated in the Crimea. He imagined, therefore, from this and similar cases, that in the majority of unaccompanied lesions of soft parts, if the system holds from the first shock, the chances are in favour of recovery without amputation. He then referred to the valuable properties of the compound tincture of benzoin, or Boin's balsam, in extensive lacerated wounds: it would be of advantage more especially in a long passage by sea in the Hospital, after an amputation, as had already occurred in the Crimea. Where sloughing had actually occurred, the application of pure nitric acid (not just beyond the dead surface as in Hospital gangrene) speedily converts an offensive mass of bristles and hair into an innocuous, innocuous healthy substance, and greatly expedites its removal. The infection of a wound on the principal artery of a limb, or even one of its large branches, forms a most serious complication in the lesions of the soft parts received in action; happily it is not frequent, as arteries, from their elasticity and peculiar structure, often escape still in these cases, and the question is, what influence it should have on our practice. A case of the 11th Highlanders was mentioned by a lad in the medical space, and the artery opened. The wound was skilfully tied by Dr. Logan, above and below. Amputation ensued, and amputation was performed as a dernier resort, and the man died. Now, although there can be little doubt that had amputation been performed in the first instance, this man's life would have been saved, it does not follow that this would have been the correct practice. He trusted that we might hear some results of the experience of Allen, Balchian, and Isherwood on this point. His own opinion was, that, unless under very peculiar circumstances, the primary consideration should be the immediate security of the patient's life by ligation of the artery, leaving amputation to follow as a possible but not probable consequence. Our next consideration was regarding fractures of bone received in battle or connected with amputation. The selection of corduroy will of course depend much on the climate, etc. Limbs have not much chance in the track of a round shot or shell, and have no little chance of action. He believed that as regarded the upper extremity and below the knee an ordinary bullet will wound, and a Minie bullet cause such extensive comminution as to justify amputation. The old ball was really tried in his opinion, but the Minie produced longitudinal fractures and sometimes comminuted it in an extraordinary manner; still the operative process of fracture was often greatly extraneous. He then mentioned a case in point. The success that had attended the operation of resection of joints proved it was not absolutely necessary to amputate because a ball had not penetrated any articulation of the upper extremity, or a fracture extended into it. Wounds of the tibia and femur were also amenable to the principles of conservative surgery, of which he had seen several admirable results. He would now refer to compound fractures of the thigh—though not, the most important, and embracing the final question, Why should we amputate? It was a most serious and sacred duty of the Surgeon to weigh well this question. All present feelings of duty or vanity must be repressed. At the Cavalry Hospital of Balaklava General Canclott remarked, "What is 'not' gas in point?" and although it may be equally applicable to a Professional eye to see

Weiss's bright steel flashing through wounded limbs in general cases, it was not always surgery. There was no operation that he would not have at least tried in performing; but he maintained that it was not always necessary to amputate in compound fractures of the femur. His life he saved when amputation of the thigh was performed—certainly not. Must it be sacrificed without a hope of saving the limb?—certainly not. There is a strong proof to the contrary this moment in the camp. Under what more unfavourable circumstances could the wounded have been placed than after Allen, Balchian, and Isherwood? Still the cases proved remarkably successful. He then referred to the mode of preparing the limbs from the action during very rough transit, in which military men, under such circumstances, were subject, and recommended the patin packs, &c., and also observed as the best mode of applying it. The French Surgeons said they now never attempted to save a compound fracture of the femur; no doubt many English Surgeons hold the same opinion. He was aware that these cases required extreme vigilance; but what had happened might happen again, and he trusted that attempts would be made to preserve the limb in such cases, should we have another campaign. The still better generally split the femur in the direction of its fibres. The separation of wounds of large joints led him to the conviction that either amputation or resection must be performed to give the patient a chance of his life. He was in favour of the resection of joints. The next question was, When is it to be performed? Is it in its primary or secondary? Primary operations he considered to be within thirty-six hours, or before adhesive inflammation had fully set in. The consequences of secondary operations during that period were very bad when the operations were delayed to the true secondary period. When the contraction had become to some degree accustomed to the state on the system, the results become very favourable. He then gave some tables of the results of secondary operations on the knee, but the returns were not very complete; however, the conclusion naturally was, that if amputation were to be performed, the sooner it was done the better after the receipt of the injury; and if delayed, no operation should be performed, until local and constitutional circumstances were favourable. He would continue the subject on another day.

Dr. Williams said that as the position of some was very different from what had been so ably stated by Dr. Morrison, he hoped that those who were there from the commencement of the war would give their experience. With reference to the fracture of femur by wounds, he had not used it himself, but had found reports of the greatest use in lacerated wounds.

Mr. Heskine felt sure the author must have had considerable experience in gun-shot wounds. He could bear his testimony to the admirable effects of the tincture of benzoin. He thought it a valuable remedy, and had used it in cases of hemorrhage from the surface of aneuristic aneurysms with the greatest benefit.

Dr. Crawford differed somewhat from Dr. Morrison, but agreed with him in cases of wounds of the humerus. He considered wounds of the large joints as cases for resection; however they would not always require amputation, and he mentioned the case of an officer of the 10th Regiment who was wounded in the knee-joint, treated by Dr. Ryan, 10th Regiment, by us, and whose limb was saved without an operation. Compound fractures of the femur were also not without such success as to leave hope of saving the limb. He also mentioned some cases of compound fractures of the tibia that afterwards required operations; still he in general agreed with Dr. Morrison, that many cases would still require operations.

Dr. Treves mentioned a case at Bristol of a wound of the knee-joint, when an attempt was made to save the limb, but amputation was subsequently required.

Dr. Crawford, in reply to Mr. Heskine, said the syringe escaped from the wound of the knee-joint.

Dr. Robinson could not corroborate Dr. Morrison's statement of the advisability of preserving the limb, when the injury was below the knee; the amount of injury almost always required amputation, and if not done primarily, would require to be subsequently performed with more risk to the patient.

Dr. Gordon after a long experience here and elsewhere never had reason to regret not having saved the limb when the joint had been injured; he had never seen a case in which the head of the tibia was injured that had recovered without an operation.

Dr. O'Leary read his successful case of excision of the head of the femur.

Dr. Shinton mentioned a case of compound fracture of the middle of the humerus which recovered without operation; he was an advocate for conservative surgery.

Mr. Skelton thought that Dr. O'Leary's case was a thoroughly new one for excision, and he had an opportunity of seeing the man while under treatment in the 66th Regiment Hospital, and was struck with the simplicity of the operation employed.

Dr. O'Leary said that an allusion had been made to the resection of the hip-joint, he had read the case that had proved so eminently successful.

Dr. Robinson had a case of gun-shot wound of the knee-joint; there was an splintering of the bone, and it was considered an apt case for an attempt at conservative surgery. The patient, however, subsequently died.

Dr. Gilbert had seen two excisions of the elbow and two of the knee both successful.

Dr. Burke said his experience during the Irish campaign was in favour of primary amputation.

Mr. Rodgers mentioned a case of wound of the knee-joint that proved fatal.

Dr. Williams considered the same amount of mortality would not have occurred had the cases happened under different circumstances. It is not, however, he considered that primary amputations should generally be preferred.

Dr. Gordon corroborated Dr. Burke, and said that he, out of twenty-two operations on the upper extremity, had only lost one.

Mr. Thurston was greatly in favour of early operations after injuries, and mentioned a case of a soldier whose arm he had amputated at the neck of the humerus, who was walking about the fifth day.

Dr. Burke in reply to Dr. Williams said, with reference to the head of femur, it was in the north-west position of India where the climate is considerably colder than it is here. The head of femur had nothing to do with the fatal result in the case he had mentioned.

Dr. Crawford thought, so far as he could gather the opinion of the Members, that amputation was considered necessary in cases of perforating wounds of the knee joint. Inflammation of the synovial membrane appeared to have been the cause of death; but he hoped that he might live to see the day when amputation would not be considered altogether necessary in these cases.

Dr. O'Leary mentioned a case of wound of the knee-joint in which he could introduce his little finger; there could be no mistake that the joint was injured, as the synovia was escaping from the wound. He was going to amputate, but was advised not by the principal Medical Officer; the man died in a few days of pyæmia. In another case the knee was wounded by a piece of glass, the synovia escaped from the wound, but was constantly applied, and water locally administered; on the seventh day inflammation set in and gangrene ran on; the joint gradually improved, the wound became chronic, and is now progressing favourably. He was of opinion that pyæmia may come out of a wound and yet the limb may be saved. This was not a clean wound.

Mr. Wyatt considered that we should not trust too much to the absence of any suppurative effusion immediately after an accident. He had an experience of the fracture of femur, but he did not approve of the doctrine of nature. He imagined that neither of these could be applied except in cases where hæmorrhage occurred only from the rupture of veins and where hæmorrhage occurred only from the rupture of veins and arteries here, in reference to the wounds of the middle and upper thirds of the thigh, had been somewhat in error, the fact being that they scarcely ever operate in such cases, but leave the patient in Nature; and they find it as successful as in cases where for similar injuries they had previously operated. He could bear testimony to the extraordinary course a Man's fall would sometimes take, and mentioned a case that occurred at Inverness.

Mr. Brown thought the question raised respecting the employment of primary or secondary amputation a most important one. He could speak most favourably of the employment of ampute as an anti-phlogistic remedy instead of water locally. He did not approve of the gutta serena opiate recommended by Dr. Messias, but preferred those made of this wire, which are light and clean.

Mr. Wyatt had seen the splints mentioned by Mr. Brown; they were constantly employed in the French ambulances, and were found very useful.

Dr. Scherren said the wire splints had been used in the Russian army in a few instances, and were highly approved of. Mr. Skelton had been struck by the allusion, and he proposed a vote of thanks to Mr. Skelton.

MR. GRIFFIN'S APPEAL TO THE POOR-LAW MEDICAL OFFICERS.

Nottingham.—At a meeting of Medical Officers of out-patients of Nottingham and the neighbourhood, held at the Dispensary, Nottingham, on May 16, George Blake Norman, Esq., of Boston, in the chair, the following Resolutions were unanimously passed:—1. That this meeting tender its best thanks to Mr. Griffin for his services in behalf of the Poor-Law Medical Officers, and without pledging itself in detail, approves generally of the principles advanced by him. 2. That a subscription of £s. for an issue paid and repeated quarterly as long as necessary. 3. That Mr. Norman be requested to act as secretary and treasurer, and to communicate with Mr. Griffin as to the further steps to be taken for the carrying out of his views. 4. That the foregoing Resolutions be sent for insertion to the leading medical Journals, signed by the Chairman in behalf of the meeting. 5. That the thanks of the meeting be given to Mr. Norman for his conduct in the chair.—*Geo. H. Norman.*

Nottingham.—At a meeting of the Poor-Law Medical Officers, held at the Northwick Union Workhouse, present,—S. Smith, T. M'Gee, Worcester; Thomas Hagley, Mid-derwich; James Doss, Northcote.—It was resolved, 1. That this meeting tender its best thanks to Mr. Griffin for his services in behalf of the Poor-Law Medical Officers. 2. That five shillings per quarter be paid for the next twelve months by each Medical Officer. 3. That all suggested cases should be paid by extra. 4. That Mr. Doss be appointed Local Secretary and Treasurer, and be requested to forward a copy of these Resolutions to the Journals.

Worcester.—A Meeting of the Medical Officers of the Worcester Union was convened by Mr. Small, a Medical Officer of the Union House, at the Town Hall, Worcester, on Thursday, the 14th of May, 1884, to take into consideration the proposition of Mr. Griffin as Poor-Law Medical Reform. Messrs. Ross, Turner, Small, Matthews (Worcester), Warren (Kilborough), Miles (Stoke-on-Avon), Smith (Barnwellfield), Hutchinson (Macclesfield), were present, when it was proposed that the Senior Officer present do take the Chair. Mr. Turner, on taking the Chair, made a few remarks on the subject of the meeting, when the following propositions were made, amended, and carried unanimously:—1. Proposed by Mr. Ross, and seconded by Mr. Small, That the thanks of this meeting be due to Mr. Griffin for his services and in carrying out the movement, and that this meeting fully expresses of the general principles advanced by Mr. Griffin. 2. Proposed by Mr. Ross, and seconded by Mr. Hutchinson, that a subscription be entered into for expenses incurred, and that Mr. Small be requested to forward the same, with a copy of these Resolutions, to Mr. Griffin. 3. Proposed by Mr. Miles, and seconded by Mr. Ross, That a subscription of £s. be entered into, and repeated as occasions may require. 4. Proposed by Mr. Hutchinson, and seconded by Mr. Warren, that this meeting, without pledging itself in detail, approves generally of the principles advanced by Mr. Griffin. 5. Proposed by Mr. Small, and seconded by Mr. Smith, that a copy of these Resolutions be forwarded to the Medical Press and Gazette, and Lancet. The sum of £1 1s. being collected in the room, and a vote of thanks being returned to the Chairman and Secretary, the meeting separated.

Widow.—At a meeting of the Medical Practitioners of the northern division of the county of Wilts, held at Chippenham on Wednesday, April 26, in support of Mr. Griffin's movement, present, Mr. Jennings, of Midbury in the Chair; Mr. F. Spencer, and Dr. W. H. Colburn, Chippenham; Mr. Montgomery and Mr. Thomas B. Austin, Devizes; Mr. T. H. King and Mr. Darvill, Colfax; Mr. Rowland and Mr. J. H. King, Melksham; Mr. Knappe, Swindon; Mr. H. Crisp, Lacock; Mr. Wingham, Avebury; Mr. Thomas Taylor, Ditchford; Dr. M. H. Smith, Chippenham; Mr. Edwin Smith,

Sherrin, Major; and Mr. C. Smith, Highworth.—The following Resolutions were passed.—1. That this meeting regards the movement set on foot by Mr. Griffin as the national and necessary result of the increased demand made upon the Medical Profession for education and its representative, skilled labour; and while, therefore, it offers Mr. Griffin its cordial thanks for his services in organizing the movement, it also would recognize the claim which rests on the whole Profession for its support. 2. That this meeting is of opinion, that the present rate of payment of the Medical Officers of the Army is quite inadequate in the labour and skill required at their hands. It considers that a general increase of salary is demanded, and that that increase should be rightly apportioned to the number of cases requiring attendance, with a due regard to the number and length of the journeys. 3. That this meeting regards with satisfaction the proposed meeting of the Profession in London, as proposed by Mr. Griffin, and will be happy to appoint such gentlemen to represent this meeting on that occasion as would volunteer to do so. (These gentlemen present then offered their names, and were not presented by agent business.) 4. That a subscription be entered into for the purchase of this object, of 2s. per quarter, to be continued as long as considered necessary; and which, after deducting the expenses attending on this and similar meetings should be handed over to Mr. Griffin. 5. That Mr. Thomas H. Austin be requested to act as Secretary and Treasurer. The foregoing Resolutions were carried unanimously, as also that a report of the meeting be forwarded for insertion in the Medical Times and Gazette, Lancet, and the Association Journal; and votes of thanks to the Chairman and Mr. T. H. Austin for their services.

MEETING OF THE METROPOLITAN MEDICAL OFFICERS OF HEALTH.

On Tuesday evening, the 16th of May, a meeting of the newly-appointed Medical Officers of Health for the various metropolitan districts was held at the house of the Medical Society of London, in George-street, Hanover-square. About thirty gentlemen were present; including Dr. R. Dundas Thompson, who was called to the chair; and Dr. HENRY, who acted as Hon. Secretary.

The gentlemen present were unanimously of opinion that the interests of the public would be promoted if something like a uniform and regular plan of operations were carried on all over the metropolis. Their duties were in many respects uncertain and ill-defined in their nature and extent; and whether for the purpose of getting rid of material causes of disease, or of striving to break chemical noxae, only was essential. It was agreed, therefore, to form an association for mutual assistance and information, and for the advancement of sanitary science; and it was resolved to invite Mr. Simon to be President. It was agreed on all sides that it is Mr. Simon who has given sanitary science its present status and popularity; and that the creation of Officers of Health for the various districts of the metropolis was the result of the example set by Mr. Simon, and of the beneficial effects of his labours in the City. At the same time it was most strongly recommended that the character of the meeting fell on Mr. Simon, solely from his personal character, and not in any way because of the office which he holds under Government. It was considered most desirable to avoid even the appearance of anything that might seem like the introduction of Government dissensions into parish affairs. A small Committee was appointed to confer on rules and regulations.

The following is a list of the Medical Officers of Health for the Metropolis: we give them in the order in which the parishes and districts are enumerated in the Act—

St. Marylebone, Dr. R. Dundas Thompson; St. Pancras, Dr. Milner; Lambeth, Dr. Collins; St. George, Hanover-square, Mr. Alfred and Dr. Evans; Aldington, Dr. May; St. Richard, St. Dunstons, Dr. Leonard; St. Martin, St. Paul, St. Pancras, Dr. Sanderson; St. Matthew, Notlam-green, Mr. Perry; St. Mary, Newington, (St. Mary, St. Hill) Cumberland, Dr. Brewster; St. James, Westminster, Dr. Leechman; St. James and St. John, Clerkenwell, Dr. Griffith; Chelsea, Dr. Murray; Kensington, Mr. Gaskell; Islington, St. Luke, Middlesex, Dr. Perry; St. George the Martyr, South-west, Mr. Beaufit; Dorset-square, Dr. Chalmers; St. George-in-the-East, Dr. Pittard;

St. Martin-in-the-Fields, Mr. Ford; Randle of Mile End Old Town, Dr. Freeman; Woodwich, —; Rotherhithe, Dr. Marshall; St. John, Hampstead, Mr. Lord; City of London, Dr. Leakey; Whitechapel, Dr. Lister; St. Andrew, Westminster, Mr. Samuel Hill; Greenwich, Mr. Fish; Wandsworth, Mr. Whitman; Ruislip, Dr. Taylor; St. Giles, Mr. Hunt; Hammersmith, Dr. Wilson; Strand, Dr. George Evans; Fulham, Mr. Innes; Limehouse, Mr. Gilbert; Poplar, Mr. Gilliam and Dr. Howell; St. Andrew's, Mr. Hinchell; Finsbury, Mr. King; (St. John) Dr. Finch; (Chelsea) Dr. Martin, (New) Lewisham and Pease, Mr. Wilkinson.

HEALTH OF THE ARMY IN THE CRIMEA.

The Inspector-General of Hospitals serving with the Army in the Crimea, in transmitting the return of sick for the period ending 26th March, states—

—The health of the army continues very satisfactory; there has been a decrease both in the mortality and number of sick during the week. Even the health of the Land Transport Corps has been slowly improving for the last three weeks, and this week there has been a more decided change for the better.

The admissions from fever have fallen from 62 to 60 in the course of the week, and the cases that have presented have been of a milder character.

During the early part of the week, the weather, though cold, was clear and dry; but on the 27th snow fell, and since then we have had perfect winter weather. These frequent changes have produced a species of influenza which has been very prevalent of late, but not of a severe character.

The troops at Kertch, and the cavalry divisions in the Taurines are equally healthy with the army near Sebastopol, and the bulk of sick is well, including those in Hospital at Sevastopol and Balaclava as well as in the Crimea, is only 57 per cent, and the mortality during the last week in the whole army has only been 0.93 per cent.

The sick to well below Sebastopol is only 4.18 per cent., and the mortality has only been 0.51 per cent.

Fourteen deaths have taken place out of an estimated force of 26,525, and of this number 5 occurred in the Land Transport Corps.

In the Artillery, Third, and Highland Divisions, no casualties occurred; and in the Second, Fourth, and Light only one each, which arises on occasion from various diseases that is very satisfactory.

MANUAL LABORATORY COLLEGE.—On Tuesday, the third annual meeting of the governors of this Institution was held at their Office, 8-10, square, Earl Marrow in the chair. The report mentioned that the promoters of the College saw the undertaking enjoying continued success and collecting increased subscriptions; the building was now completed; the schools were in operation, the playgrounds were in their home, and the Institution incorporated by act of Parliament. On the 18th of June last, Prince Albert opened the College, and on the 19th of July 20 pupils and 10 gentlemen were admitted here. On the 19th of August there was also admitted 235 school-boys, which, with 60 foundation scholars, made the entire number, for which the College was designed. It is now desirable to build a chapel for the accommodation of the inmates, and, to secure funds for that purpose, the fee of 10s. membership has been in the case of ladies reduced from £10 to £5. There was received at the last annual general subscription to the amount of £2800, and the late Mr. Thomas Watts bequeathed £200 to the corporation, the interest to be paid in prizes to the pupils. The total receipts for the year, including £2000 obtained from the former year, 20000 donations, 20000 subscriptions, 20000 realized by the sale of 20000 stock, amounting to £27,500; and the expenditure, including £2000 paid on building account, and £1400 the repayment of a debt, and other items, is £19,500; leaving in hand a balance of £8000. The report was unanimously adopted, and some routine business having been disposed of, a vote of thanks was passed to the chairman, and the meeting adjourned for a week, when a division of pupils and gentlemen will take place.

THE RUGELEY POISONING CASES.

TRIAL OF WILLIAM PALMER.

Wednesday morning having been appointed for the trial of William Palmer for the Rugeley poisonings, the most intense interest was aroused by the public to hear the proceedings; and but for the official and excellent arrangements made by the authorities of the court, under the direction of the Under-Sheriff, it would almost have been impossible to carry on the proceedings with anything like decorum. The first day's proceedings, in fact, opened in a singularly quiet manner. The sheriff, apprehensive of pressure, had so limited the hours of sittings, so wholly to preclude the probability of a rush either outside or inside. The court was soon comfortably filled. At five minutes to ten, the clerk announced the entrance of the Judge, and immediately after Lord Chief Justice Campbell, with Baron Alderson and Mr. Justice Cresswell, took their seats on the bench. The prisoner walked rather quietly to the front of the dock, but without haste or uncertainty, and looked all round with a seemingly composed air. He seemed older than 41, the age stated in the indictment, and had evidently grown much stouter during his confinement. He is a man rather under than over the middle height, of fair florid complexion, and sanguine temperament, and with nothing in his round, ordinary face to indicate retained indignation or dark and deep designs. A casual observer would see him down as a respectable, post-graduate lawyer; and a physiognomist would be more inclined to give him credit for social and cerebral status, than for those stately-styled crimes which the indictment lays to his charge. His forehead is high and open, and altogether the expression of his countenance is the reverse of diabolical. His manner during the day was entirely free from nervous, but was respectful and attentive, and was calculated to create a favourable impression; and, although on the jury being called he scrutinised the face of each man attentively as he came up, he declined his right of challenge. It was mentioned that on the side of the prosecution some confusion had arisen in the carriage of the proceedings, in consequence of the change of witnesses that had more than once taken place. In the first place, a gentleman from Rugeley was employed; then the case was entrusted to Mr. Kynwilde, but that gentleman becoming suddenly afflicted at once with illness and a severe domestic calamity, the case was handed back to the Rugeley solicitor. Seeing that the most trivial details of the great criminal trials of former days are read with the deepest interest whenever they become matters of history, it may not be amiss to notice that in this, one of the most remarkable of the present time, the Chief Justice himself took special charge of the case from the commencement, and indicated an almost nervous anxiety that full and impartial justice should be done.

THE CASE OF JOHN PARSONS COOK.

The indictment, which charged the prisoner with the willful murder of John Parsons Cook, having been read,

The prisoner pleaded Not Guilty.

He was then arraigned upon the coroner's inquisition for the like offence, and to this he also pleaded Not Guilty.

A great number of Medical witnesses were summoned on both sides, and among those present in the body of the Court we observed Dr. Paine, President of the Royal College of Physicians, Mr. Benjamin Brodie, Dr. Alfred Taylor, Dr. Christison, of Edinburgh, Dr. Tweedie, Dr. Owen Rees, Mr. Goring, Dr. Lethbridge, Mr. Nunnery, of Leeds, Dr. Todd, Mr. Lawrence, Mr. Brande, Mr. Boly, and many others.

The Attorney-General, Mr. E. James, Q.C., Mr. Shuttle, Mr. Waddy, and Mr. Haldimont appeared for the Crown; Mr. Benjamin Stone, Mr. Owen, Q.C., who were specially retained, with Mr. Gray and Mr. Kennedy, were counsel for the prisoner. All the witnesses, with the exception of the Medical men, were ordered out of court.

The Attorney-General then rose to open the case for the

prosecution. After the usual addresses to the jury, and remarks on the solemnity of the inquiry, the learned Attorney briefly stated the early history of the prisoner, his professional status, and his abandonment of the practice of medicine for the more congenial (in his) pursuit of the law. This history having already appeared in our columns, (see Medical Times and Gazette, Jan. 15, p. 54,) we need not further allude to this part of the learned gentleman's address, which statement was involuntarily mixed with our remarks at the above date. He then went on to—Mr. Cook was a young man of decent family. He had originally been brought up or intended for the profession of the law. He was destined to a scholar, but, after a time, he inherited some property, to the extent of some £12,000 or £15,000, he became disinclined to a literary profession, and turned himself over to the turf. He kept racecourses, and he lived considerably well, in the course of his pursuits, he was connected with, and intimate with, the prisoner. It is in the words of this John Parsons Cook that the prisoner stands indicted on the present occasion. The charge against him is that he took away that man's life by poison. It will be necessary to state a few circumstances in which the prisoner Palmer was then placed, and the position in which he stands relatively to the deceased man Cook. The case that I have, on the part of the prosecution, to put to you is, that the prisoner, being in desperate circumstances, with ruin, distress, and penal punishment staring him in the face, which would alone be averted by means of money, took advantage of his intimacy with Cook, when Cook had become the owner of a considerable sum of money, and mortgaged him in order to avail himself of that money. The money transactions between the prisoner and Cook, and with William Palmer, the death of the latter, the various life assurances effected, and the alleged supply of pills of acceptance, were then successively referred to, for the purpose of showing motive on the part of the prisoner. The learned gentleman then proceeded:—I shall show that at Shrewsbury, besides the stake and the sum he was entitled to take, Cook had in his pocket a sum of between £100 and £200. The stake he was to receive through the Messrs. Winstanley, the racing agents in London, and which would be sent up, in the ordinary course of things, to Winstanley's. He was also entitled to receive money on the late of Winstanley's, amounting to £1000. Within a week of that time Cook died; and the important inquiry is, how he came by his death—whether by natural causes, or whether by the hand of man; and if the latter, by whose hand? I must tell you, first, the state of mind in which he was. It may be important in this inquiry. He was a young man of 38 when he died, slightly disposed to pulmonary complaint, delicate in that respect, but otherwise a very hale, hearty young man. He had been in the habit of consulting a physician, Dr. Savage, for four years. Dr. Savage saw him in May, 1865. Cook at that time was anxious about his throat. He was suffering from his throat. There were one or two slight complaints about his mouth, and it seemed that, misreading the complaint, he had been taking mercury. Dr. Savage put him under a course of tonics, and an improvement immediately took place, and those mercurious complaints disappeared; but, inasmuch as the mode of treatment in some measure disagreed with him, he came and saw Dr. Savage from time to time; and within a fortnight of his death, Dr. Savage examined him thoroughly; and he will be prepared to tell you that at the time he last visited the man with him, except that a part of the throat was a little thickened; and he strongly advised him to go abroad for two years, thinking that that possibly might break off his connection with the turf. Well, having seen Dr. Savage, he went to Shrewsbury, and he was in great delight at having won the race, and got excited, as a man naturally would do who had been at a low ebb in pecuniary matters, and who had made a fortunate hit. He and Palmer went together at the hotel where they were stopping; and they had, I think, two or three bottles of champagne, but the deceased did not imbibe in excess of any sort. It is said he was a man not often given to excess. On the contrary, he was an abstemious man of all times, and on this occasion he did so more than perhaps get a glass extra to celebrate his success. He went to bed at night, and got up the next day and went upon the course. That night, the night of Wednesday, the 15th of November, a remarkable incident happened, in which I beg to call your attention. A friend of his, a Mr. Fisher, happened to call upon him. Fisher, in addition to being a

This same morning, between the hours of 10 and 12 o'clock, there occurred a very remarkable incident. About that time Palmer went to the shop of a certain Mr. Hawkins, a druggist, at Rugeley. He had not dealt with him for two years before, it being his practice during that period to purchase such drugs as he required from Mr. Whiffly, a former assistant of Mr. Hawkins, who had set up in business for himself. But on this day Palmer went to Mr. Hawkins's shop, and, producing a bottle, informed the assistant that he wanted two drachms of arsenic acid. While this was being prepared for him, Mr. Newton, the same man from whom he had on a former occasion obtained strychnine, came into the shop, whereupon Palmer seized him by the arm, and observing that he had something particular to say to him, hurried him into the street, where he kept talking to him on a number of the smallest possible incidents, relating to the precise period at which his employer's son used to visit him from his last visit to the country. They continued in converse on this trivial topic until a gentleman named Broadbent (or Broadbent) came up, whereupon Mr. Newton turned aside to say a few words to him. Palmer, relieved by this incident, went back into the shop, and asked, in addition, for six grains of strychnine and a certain quantity of Bailey's liquor of opium. He obtained these, paid for them, and went away. Presently Mr. Newton returned, and being struck with the fact of Palmer's dealing with Hawkins, gained out of passing curiosity, what he had come for, and was informed. Now here I find mention a list of some inquiries respecting Mr. Newton. When examined before the coroner, that gentleman only deposed to one purchase of strychnine by Palmer at Mr. Bell's surgery, and it was only as recently as yesterday that, with many expressions of regret for not having been more explicit, he communicated to the Crown the fact that Palmer had also bought strychnine on Monday night. It is in the year, furthermore, to decide the amount of credit to be attached to this evidence; but you will here be asked that whatever you may think of Mr. Newton's testimony, that of a Mr. Roberts, whom I shall not, on whom there is no hint or shadow of suspicion, is decidedly with respect to the purchases which the prisoner made on Tuesday at the shop of Mr. Hawkins. I now resume the story of Tuesday's proceedings with the observation that Cook was enabled to receive the station he had won at Rugeley. On that day Palmer sent for Mr. Christie, the postmaster at Rugeley. He owed Christie 27' 6d., and the latter, supposing that he was about to be paid, came with a stamped receipt in his hand. Palmer produced a paper, and remarked, "That Cook was too ill to write himself," said Christie to write a check on Westbury's in his (Palmer's) honor for 50s. Christie thereupon filled up a piece of paper purporting to be the body of a check, addressed in the manner indicated to the Messrs. Westbury, and concluding with the words, "and please the same to my account." Palmer then took the document away, for the purpose, as he avowed, of getting Cook's signature to it. What became of it I do not undertake to assert, but of this there is no question, that by the night of next Palmer sent up to Westbury's a check which was entirely dishonoured. Whether it was genuine, or like so many other papers with which Palmer had to do, forged, is a question which you will have to determine. But now, returning to Cook, it may be observed that in the course of that morning coffee and broth were sent him by Palmer, and, as usual, vomiting ceased and continued through the whole of the afternoon. Then a new person makes his appearance on the stage. You must know that on Monday, Palmer wrote to Mr. W. H. Jones, a Surgeon, of Lutterworth, desiring him to come over to see Cook. Cook was a personal friend of Mr. Jones, and had occasionally been in the habit of residing at his house. It is deserving of remark that Palmer, in his letter to Jones, described Cook as "suffering from a severe bilious attack, accompanied with diarrhoea," adding, "it is desirable for you to come and see him as soon as possible." Whether this communication is to be interpreted in a sense favourable to the prisoner, or whether it is to be taken as indicating a deep design to give colour to the idea that Cook died a natural death, it is at least certain that the statement that Cook had been "suffering from a bilious attack attended with diarrhoea," was utterly untrue. Mr. Jones being himself several days out on Tuesday at Westbury. He arrived at about 1 o'clock on that day, and immediately proceeded to see his old friend. Palmer came in at the same moment, and they both examined the patient. Mr. Jones paid particular attention to the state of his tongue;

remarked, "That is not the tongue of bilious fever." About seven o'clock that same evening, Dr. Bamford called, and found the patient greatly well. Subsequently the three medical men (Palmer, Bamford, and Jones) held a consultation, but before leaving the bedroom for that purpose Cook beckoned to Palmer, and said, "Mind; I will have no more pills or medicine to-night." They three withdrew and consulted. Palmer insisted on his taking pills, but added, "Let us not tell him what they contain, so he may be the same result that has already given him much pain." It was agreed that Dr. Bamford should make up the pills, which were to be composed of the same ingredients as those that had been administered on the three preceding evenings. The Doctor confined to his surgery and made them up accordingly. He was followed by Palmer, who asked him to write the directions how they were to be taken. Dr. Bamford, though unable to understand the necessity of his doing so, under the circumstances, complied with Palmer's request, and wrote on the box that the pills were to be taken at "bedtime." Palmer then took them away, and gave either those pills or some others to Cook that night. It is reasonable, then, had either or three-quarters of an hour elapsed from the time he left Dr. Bamford's surgery as he had brought the pills to Cook. When, at length he came, he produced two pills, but before giving them to Cook he took special care to tell Mr. Jones's attention to the directions on the box, observing that the writing was singularly distinct and vigorous for a man upwards of 25. If the prisoner is guilty, it is a natural supposition that he made this observation with the view of identifying the pills, or having come from Dr. Bamford, and so averring suspicion from himself. This was about half-past ten at night. The pills were then offered to Cook, who strongly objected to take them, remarking that they had made him ill the night before. Palmer insisted, and the sick man at last consented to take them. He vomited immediately after, but did not bring up the pills. Jones then went down and took his supper, and he will tell you that, up to the period when the pills were administered, Cook had been easy and cheerful, and presented no symptoms of the approach of disease, much less of death. It was arranged that Jones should sleep in the same room with Cook, and he did so; but he had not been more than three or twenty minutes in bed when he was awakened by a sudden exclamation, and a slight scream from Cook, who, starting up, said, "Send for the Doctor immediately, I am going to be ill as I was last night." The chambermaid ran across the road, and rung the bell of Palmer's house, and in a moment Palmer was at the window. He was told that Cook was again ill. In two minutes he was by the bedside of the sick man, and, strongly, volunteered the observation, "I never dressed so quickly in my life." It is for you, gentlemen, to say whether you think it had time to dress at all. Cook was found in the same condition, and with the same symptoms as the night before, gasping for breath, screaming violently, his body convulsed with cramps and spasms, and his neck rigid. Jones raised him, and rubbed his neck. When Palmer entered the room, Cook asked him for the same remedy that had relieved him the night before. "I will run back and fetch it," said Palmer, and he darted out of the room. In the passage he met two female servants, who remarked that Cook was as "bad" as he had been last night. "He is not within fifty fathoms of bed as he was last night; and what a game is this to be at every night!" was Palmer's reply. In a few minutes he returned with two pills, which he told Jones were innocuous, though I am assured that it is a drug that requires much time in the preparation, and can with difficulty be made into pills. The sick man swallowed these pills, but brought them up again immediately. And now came a terrible scene. He was instantly seized with violent convulsions; by degrees his body began to stiffen out; then suffocation commenced. Agonised with pain, he repeatedly attempted to be relieved. They tried to rub him, but it was not possible. The body had become rigid as iron, and it could not be done. He then said, "Fray turn me over." They did turn him over on the right side. He gasped for breath, but could utter no more. In a few moments all was hushed—the life of life was striking fast. Jones bent over him to hear in the action of the heart. Gradually the pulse ceased—all was over—he was dead. (Pause.) I will show you that his was a death entirely in accordance to the traces produced by strychnine, and not to any other possible form of poison. Scarcely

was the breach out of his body when Palmer began to think of what it to be done. It engages two women to lay out the corpse, and those women on entering the room had him searching the pockets of a coat which no doubt belonged to Cook, and hanging under the pillows and bedstead. They saw some letters on the mantel-shelf, which, as all probability, had been taken out of the dead man's pocket; and what is very remarkable is, that from that day to this, nothing has been seen or heard either of the letter-book or of any of the papers connected with Cook's money affairs. On a subsequent day (Thursday) he returned, and, on the pretence of looking for some books, and a paper bank, rummaged again through the documents of the deceased. On the 23rd of November he sent for Christie, and producing a paper, purporting to bear the signature of Cook, asked him to witness it. Christie glanced over it. It was a document in which Cook acknowledged that certain bills to the amount of 100*l.*, or thereabouts, were bills that had been exposted for his (Cook's) benefit, and in respect of which Palmer had received no consideration. Cook was the paper to which, 48 hours after the death of the man whose name it bore, Palmer did not hesitate to ask Christie to be an assisting witness. Christie, though, unfortunately for himself, too much a slave of Palmer, persistently refused to comply with this request; whereupon Palmer suddenly observed, "It is of no consequence; I dare say the signature will not be disputed, but it occurred to me that it would look more regular if it were attested." On Friday Mr. Stevens, Cook's father-in-law, came down to Rugby, and, after viewing the body of his nephew, to whom he had been tenderly attached, asked Palmer about his affairs. Palmer assured him that he had a paper drawn up by a lawyer, and signed by Cook, stating that, in respect of 400*l.* worth of bills, he (Cook) was alone liable, and that Palmer had a claim in that amount against his estate. Mr. Stevens expressed his amazement, and replied that there would not be 400*l.* standing for the holders of the bills. Subsequently Palmer displayed an eager attentiveness in the matter of the funeral, taking upon himself to order a shawl and an oak coffin without any directions to that effect from the relatives of the deceased, who were anxious to have the arrangements in their own hands. Mr. Stevens ordered dinner at the hotel for Bedford, Jones, and himself, and, finding Palmer still hanging about him, thought it best still to restrict the invitation to him. Accordingly they all sat down together. After dinner Mr. Stevens asked Jones to step upstairs and bring down all books and papers belonging to Cook. Jones left the room to do so, and Palmer followed him. They were absent about ten minutes, and on their return Jones observed that they were unable to find the letter-book or any of the papers belonging to the deceased. Palmer added, "The letter-book would be of no use to you if you found it, for the book are sold by his death." Mr. Stevens replied, "The book may be found," and then Palmer changing his tone said, "Oh, I dare say it will turn up." Mr. Stevens then rang the bell, and told the housekeeper to take charge of whatever books and papers had belonged to Cook, and to be sure not to allow any one to meddle with them until he was back from London, which he would soon do with his collection. He then departed, but, returning to Rugby after a brief interval, declared his intention to have a post-mortem examination. Palmer volunteered to nominate the surgeon who should conduct it, but Mr. Stevens refused to employ any one whom he should recommend. On Sunday, the 26th, Palmer called on Dr. Bamford, and asked him to be a certificate respecting the cause of Cook's death. The doctor expressed his surprise, and observed, "Why, he was your patient!" But Palmer impudently said, and Bamford making the pen filed up the certificate, and entered the cause of death as "apoplexy." Dr. Bamford is upwards of 60, and I hope that it is to some infirmity connected with his great age, that this most reprehensible act is to be ascribed. However, he shall be produced in court, and he will tell you that apoplexy has never been known to produce tetanus. In the course of the day Palmer sent for Newton, and after they had had some brandy-and-water, asked him how much arsenic he would use to kill a dog. Newton replied, "From half-a-grain to a grain." "And how much," inquired Palmer, "would be found in the stomach and intestines after death?" "None at all," was Newton's reply; but that is a point on which I will produce important evidence. The post-mortem examination took place the next day, and on that occasion Palmer secured the Medical men, of whom there were many

present, that Cook had had apoplexy the on Monday and Tuesday, and that they would find all arsenic in the heart and head. He asked that the poor fellow was "full of disease," and had "all kinds of complaints." These statements were very completely disproved by the post-mortem examinations. At the first of them, conducted by Dr. Devonshire, the liver, lungs, and kidneys were all found healthy. It was said that there were some slight indications of congestion of the kidneys, whether due to decomposition or to what other cause was not certainly; but it was admitted, on all hands, that they did not impede the general health of the system, or at all amount for death. The stomach and intestines were examined, and they exhibited a few white spots at the large end of the stomach; but these marks were wholly insufficient to explain the cause of decomposition. Dr. Bamford concluded that there was some slight congestion of the brain, but all the other Medical men concurred in thinking that there was none at all. In the evening month of January the body was examined with a view to more accurate examination, and it was then found to be in a perfectly normal and healthy condition. Palmer seemed surprised at the discovery, and turning to Dr. Devonshire, exclaimed, "Doctor, they won't hang to you." The stomach and intestines were taken out and placed in a jar, and it was observed that Palmer pushed against the Medical man who was engaged in the operation, and the jar was in danger of being upset. It escaped, however, and was covered with silk, and drawn, and sealed. Presently one of the Medical men turned round, and finding that the jar had disappeared, asked what had become of it. It was found at a distance over a different door than that through which people usually passed in and out, and Palmer exclaimed, "It's all right. It was I who removed it. I thought it would be more convenient for you to have it here, than you might by your hands readily on it as you went out." When the jar was recovered it was found that two slices had been cut in the slices with a knife. The slices, however, were clean, so that, whatever his object may have been in making the incisions, it is certain that nothing was taken out of the jar. He goes to Dr. Bamford, and remonstrates against the removal of the jar. He says, "I do not think it would be allowed them to be taken away." Now, if he had been an ignorant person, and familiar with the common liberty to be pursued by Medical men under such circumstances, there might be some excuse for this; but it is for you to ask yourselves whether Palmer, himself a Medical man, knowing that the contents of the jar were to be submitted to an analysis, might not have relied with confidence on the honesty and integrity of the Physician to which he belonged. You must say whether his anxiety to prevent the removal of the jar was not a sign of a guilty conscience. Dr. Bamford was a most respectable Practitioner, and his character and position were well known to Palmer. But the case does not stop here. The jar was delivered to Mr. Bayport, the clerk to Mr. Gardner, the solicitor. Palmer, finding that it was to be sent to London for chemical analysis, was extremely anxious that it should not reach its destination. It was going to be conveyed by Mr. Bayport to the Stafford station in a day, driven by a post-boy. Palmer goes to this post-boy, and asks him whether it is a fact that he is going to drive Bayport to Stafford? He is answered in the affirmative. He then asks, "Are the jars there?" He is told that they are. He says, "They have no business to take them; you does not know what they may put in them. Can't you message to upset the fly and break them. I will give you 10*l.*, and make it all right for you." The man said, "I shall do no such thing. I must go and look after my fly." That man will be found before you, and he will have an interest to state anything but the truth. I have now gone through the painful history, yet there are some points of intense importance which I ought not altogether to pass over, as nothing connected with the conduct of a man, considered that an impugnation of his character upon him can be considered. After the post-mortem examination it was thought proper to hold a coroner's inquest. On two of these occasions in the course of that inquiry Palmer was present in the witness. The statements of the deceased and his witnesses were sent to Dr. Taylor and Dr. Barr, at Guy's Hospital, who were known to be in communication with Mr. Gardner. A letter was sent by Dr. Taylor to Mr. Gardner, stating the result of the investigation; the letter was forwarded to Palmer by the postmaster, Christie, and Palmer then wrote to the coroner, telling him that Dr.

Taylor and Dr. Egan had failed in finding traces of poison, and asking him to take a certain course with respect to the evidence. Why should he have done this if there had not been a feeling of uneasiness upon his mind? These matters must not be hastily overlooked, although I will not ask you to give them any undue importance. I should have told you, in addition, that the prisoner had no money prior to Sherburny noon, while afterwards he was flush of cash. Some of £100 and £150 were paid by him into the bank at Exeter, two or three persons received sums of £10 each, and he seemed, in fact, to be giving away money right and left. I think I shall be able to show that he had something like £200 in his possession. Now, Cook had £700 or £200 when he left Sherburny on the Thursday morning. None is found. It may be that Cook, who, whatever his feelings, was a kind-hearted creature, compensating Palmer's condition, and influenced by his representations, assisted him with money. That I do not know. I do not wish to strain the point too far, but we cannot imagine that Cook, who had no money but what he took with him to Sherburny, should have given Palmer everything and left himself destitute. I will leave you to my whether the combination of motives I have referred to may not have led to the crime with which he is charged. This you will only have to consider supposing the case to be established between probabilities; but if you believe the evidence that will be given as to what took place on the Monday and Tuesday—if you believe the paragonage of the Monday, the master agent of the Thursday will show that things were administered on both those days by the hand of Palmer by a degree of evidence almost amounting to certainty. The body was subjected to a careful analysis, and I am bound to say that no strychnine was found. But I am told that, although the presence of strychnine may be detected by certain tests, and, although indications of its presence had inevitably led to the conclusion that it has been administered, the converse of these propositions does not hold. Sometimes it is found, at other times it is not. It depends upon circumstances. A most minute dose will destroy life, from half to three-quarters of a grain will by the strongest man provoke. But in order to produce that fatal effect it must be absorbed into the system, and the absorption takes place in a greater or less period, according to the manner in which the poison is presented to the surface with which it comes in contact. If it is in a fluid form it is rapidly taken up and soon produces the effect; if not, it requires to be absorbed, and the effects are a longer time in showing themselves. But in either case there is a difficulty in discovering its presence. If it acts only on the nervous system through the circulation, an almost infinitesimal dose will be present; and, as it is a vegetable poison, the tests which alone can be employed are entirely more delicate and intricate than those which are applied to other poisons. It is unlike a mineral poison, which can soon be detected and repeated. If the dose has been a large one death occurs before the whole has been absorbed, and a portion is left in the intestines; but if a minuscule dose has been administered a different consequence follows, and the whole is absorbed. Practical experience bears up the theory that I am maintaining. Experiments have been tried which show that where the same amount of poison has been administered to animals of the same species, death will occur in the same number of minutes, accompanied by precisely the same kinds of symptoms; while in the analysis afterwards made, the presence of poison will be detected in one case and not in another. It has been repeated over and over again that the minute dose employed in this case had come to the conclusion that the presence of strychnine cannot be detected by any tests known to science. They have been previously misinterpreted. They never made any such assertion. What they have asserted is this—the detection of its presence, even where its administration is a matter of necessity, is a matter of the greatest uncertainty. It would, indeed, be a fatal thing to assert on the notion that strychnine, administered for the purpose of taking away life, cannot afterwards be detected! Remembering, though, in the uncertainty of detection! Happily, Providence, which has placed this fatal agent at the disposal of man, has marked his effects with characteristic symptoms distinguishable from those of all other agents by the eye of science. It will be for you to say whether the testimony that will be laid before you with regard to these symptoms does not lead your minds to the conclusion that the deceased came to his death by poison administered to him by the prisoner. There is a circumstance which throws great

light upon this part of the case. Some days before his death this man was constantly vomiting. The analysis made of his body failed to produce evidence of the presence of strychnine, but did not fail to produce evidence of the presence of antimony. Now, antimony was not administered by the Medical men, and unless taken in a considerable quantity it produces no effect, and is perfectly innocuous. It is, however, which produces exactly the symptoms which were produced in this case. The man would sick, he vomited, and antimony was found in his body afterwards. For what purpose can it have been administered? It may be, that the original intention was to destroy him by means of antimony—it may be, that the only object was to bring about an appearance of disease as to account for death. One is lost in speculation. But the question is whether you have any doubts that strychnine was administered on the Monday, and still more on the Tuesday when death ensued? And if you are satisfied with the evidence that will be adduced on that point, you must then determine whether it was not administered by the prisoner's hand.

The opening address of the Attorney-General occupied upwards of four hours in its delivery.

MEDICAL NEWS.

ROYAL COLLEGE OF SURGEONS.—The following gentlemen having undergone the necessary examinations in the Diploma, were admitted members of the College at the meeting of the Court of Examiners on May 7:—

BARNARD, ROBERTSON, M.B. Ch. Surgery, Bombay.
 CARTMANN, ALAN G., Fossbridge, Herefordshire.
 CLARKE, ARTHUR GEORGE, Northampton.
 FOSTER, WILLIAM COLLE, Newport Pagnell.
 GIBBERTY, GEORGE, Cheltenham.
 HIGGINS, JOHN WILLIAM, Van Diemen's Land.
 HUNTER, GEORGE HOWARD, Exeter, Westmoreland.
 HOWELL, GEORGE, Llanidloes, Carmarthen.
 McCURRY, EDWARD, Royal Navy.
 MURPHY, FRANCIS, Sydney, Australia.
 PEARSON, WILLIAM, Bishopscote, Westmoreland.
 TAYLOR, ARTHUR, Norwich.
 WILKINSON, LEONARD, Cheltenham.

APPOINTMENTS.—Names of gentlemen who passed their Examinations in the Science and Practice of Medicine, and received Certificates in Practice, on Thursday, May 8, 1884:—

FLETCHER, THOMAS, Halifax.
 HAYWARD, THOMAS H., North Berby, near Reading.
 LINDON, MICHAEL JOHN, Tottenham, Essex.
 TURNER, JACOB, Stanley, Wiltshire.

APPOINTMENT.

NORFOLK AND NORWICH FREE DISPENSARY.—Dr. Goodwin has been appointed Physician to this Institution.

DEATHS.

MURDER.—May 10, at Oldchester, of appealing, David Morris, Esq., in his 40th year; L.R.C.S. Edin. 1829; L.S.A. 1832. (Contd.)

FIREBURN.—May 7, at College Green, Bristol, William Evans Fireburn, Esq., Surgeon, aged 61.

UNIVERSITY OF ST. ANDREW'S.—List of gentlemen who had the Degree of Doctor of Medicine conferred upon them, May 8, 1884:—

ANDERSON, W. BARNES, M.B.C.S., L.A.C., Glasgow.
 ARTHUR, JAMES SCOTT, M.B.C.S., London.
 BARNARD, HENRY HALL, M.B.C.S., L.A.C., Perth.
 BELL, JAMES, M.B.C.S. Ed., Leith, Fifehire.
 BURNETT, C. S. W., M.B.C.S., M.D.C.S., Dundee.
 BURNHAM, WILLIAM, M.B.C.S., L.A.C., London.
 BROWN, HENRY, M.B.C.S., L.A.C., Here, Sussex.
 CHAMBERLAIN, M.B.C.S., L.A.C., London.
 COLLINS, HENRY, M.B.C.S., Waterburyhampton.
 COOPERMAN, F. A., M.B.C.S., L.A.C. West Kensington.
 GIBBERTY, GEORGE, M.B.C.S., Wexmouth.
 HUNTER, EDWARD, M.B.C.S., L.A.C., Wrexham.
 JAMES, THOMAS M.D., L.A.C., London.

Dr. MERRILL BOSS, M.B.C.S. Ed., Yorkshire.
 FRANCIS, THOMAS BAKER, Lic. Phys. and Surg.
 Glasgow, St. Bartholomew's, West India.
 FURNESS, EDWARD, F.R.C.S., Kent.
 HENNING, GEORGE, M.B.C.S., L.R.C., Abingdon.
 HOLLAND, H. P., M.B.C.S., L.R.C., Goldsmiths, Surrey.
 JONES, WILLIAM, M.B.C.S., London.
 JONES, JAMES, M.B.C.S. & L.R.C., M.B.C. Bangor.
 KENNEDY, JOHN, M.B.C.S., L.R.C., Dublin.
 LEWIS, JOHN, M.B.C.S., Fulham, Middlesex.
 MANN, THOMAS JAMES, M.B.C.S., Dublin.
 O'KEEFE, WILLIAM, M.B.C.S., Wexford.
 OSMAN, PETER, M.B.C.S., L.R.C., London.
 PATERSON, ROBERT, M.B.C.S., L.R.C., Wexford.
 PRATER, ROBERT DEVLIN, M.B.C.S., L.R.C., Bath.
 PRATER, G., M.B.C.S., L.R.C., Chesham, Surrey.
 RAYNER, CHARLES, M.B.C.S. Ed., Devonport.
 REID, THOMAS, M.B.C.S., Manchester.
 REID, JOHN G., M.B.C.S., M.B.C. Madras.
 RICHES, JAMES, L.R.C., Warrington.
 RICHES, ROBERT, M.B.C.S. Ed., Dublin.
 ROBERTS, EDWARD, Cork.
 ROBERTS, G., M.B.C.S., L.R.C., St. George's Hospital, London.
 ROBERTSON, JOHN, M.B.C.S., Leam.
 SCOTT, WILLIAM, M.B.C.S., Edinburg, Essex.
 TAYLOR, T., M.B.C.S., M.B.C. Ed., Wilton, Essex.
 THOMAS, GEORGE ANDREW, L.R.C., Newcastle.
 WALLER, G., M.B.C.S., L.R.C., Sydney, N. S. Wales.
 WALLER, THOMAS HENRIETTA, M.B.C.S., Dublin.
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 WINDLE, THOMAS FRANCIS, Cork.

ROYAL LONDON OPHTHALMIC HOSPITAL.—Her Majesty the Queen has graciously been pleased to present the sum of one thousand of £100 towards the expense of the recent enlargement and improvement of this Hospital.

ST. MARK'S HOSPITAL MEDICAL SCHOOL.—The first public distribution of prizes in this school took place on Thursday, May 1st, under the presidency of the Rev. Frederick Denton Murray, Chaplain of Lincoln's Inn, when the large attendance of Governors and Medical Practitioners of the neighbourhood, together with the number of ladies who graced the meeting with their presence, afforded good proof that this young establishment is not wanting in warm friends and supporters. The renowned chairman delivered a very earnest and impressive address, dwelling chiefly on the great advantages likely to accrue to society from a more judicious union and combined action between the above named Practitioners, and on the very high privileges and rewards attendant upon the successful study and practice of the Medical Profession. The address was preceded by a report from the school committee, read by the Dean of the school. The following is a list of those students to whom prizes and certificates of honour were awarded:—Anatomy.—Session 1893-94; Prize—Mr. Owen Owen Rogers. Certificate of Honour—Mr. Arthur Lawrence; Mr. Walter J. Coulson, Es. Science.—Session 1893-94; Prize—Mr. Owen Owen Rogers. Es. Anatomy.—Session 1893-94; Prize—Mr. James Henry Johnson. Certificate of Honour—Mr. H. Howard Hayward. Chemistry.—Session 1893-94; Prize—Mr. Arthur Lawrence; Mr. H. Howard Hayward. Certificate of Honour—Mr. E. M. C. Hooker; Mr. Walter J. Coulson, Es. Science.—Session 1893-94; Certificate of Honour—Mr. E. M. C. Hooker; Mr. Arthur Lawrence, Es. Anatomy.—Session 1893-94; Prize—Mr. James Henry Johnson. Certificate of Honour—Mr. Henry Thibault. Medicine.—Session 1893-94; Prize—Mr. E. M. C. Hooker. Certificate of Honour—Mr. Walter J. Coulson, Mr. Mark Ferrant, Esq., Surgery.—Session 1893-94; Prize—Mr. George Owen Gwynnes, Es. Science.—Session 1893-94; Prize—Mr. O. O. Rogers. Certificate of Honour—Mr. Mark Ferrant. Surgery.—Session 1893-94; Prize—Mr. H. Howard Hayward. Materia Medica.—Session 1893-94; Prize—Mr. E. M. C. Hooker. Certificate of Honour—Mr. Mark Ferrant; Mr. O. O. Rogers. Midwifery.—Session 1893-94; Prize—Mr. O. O. Rogers. Certificate of Honour—Mr. E. M. C. Hooker; Mr. James Thomas. The Dean's Prize for General Proficiency in Anatomy, Medicine, Surgery, Chemistry, Midwifery, and Materia Medica.—Session 1893-94; Prize—Mr. George Owen Gwyn-

nes. A vote of thanks was then proposed to the Chairman, and a most warm expression of acknowledgments of the services of the Dean (Mr. Spencer Smith) concluded the proceedings.

REORGANIZATION OF THE UNIVERSITY OF LONDON.—This office has been visited about a month by the Deans of the Universities, who held it from the establishment of the University, nearly twenty years ago. Many candidates are in the field, some handling their claims solely on their accounts of literary reputation; others bringing forward the additional claim of having earned their good name as students of the very University in which they now apply to office. To ourselves there seems but one course which the Council can pursue, in the election, consistently with common sense and equity. It is to require for the efficiency of the University, that the Regentship should be held by the professional scholar, or mathematician, of the day, this let it be thrown open to universal competition. But if the only necessary qualifications, be, as we believe, simply high character, competent scholarship, business habits, and a desire to promote the welfare of the same cause, there surely can be no reason whatever for not bestowing the office on any graduate who has shown himself capable of holding its duties. We will only add, that if twenty years the University of London has not produced a competent man, the Council stands well-merited, and the matter then is a change of government, the latter.

THE LATE DR. CHAMBERLAIN.—The following particulars, in addition to those already given, connected with the career of Dr. Chamberlain, will be read with interest.—Dr. Chamberlain was the youngest of five sons and four daughters. His father resided at Marston. The Chamberlain family originally came from Foston in Hampshire, where they possessed a noble estate in landed property. Dr. Chamberlain's grandfather first came into Cornwall as a lieutenant in the army, and governor of the New Fort in the Isles of India. Some of the family took up their residence at Marston. After the death of Dr. Chamberlain's father, the eldest son and finally went to live at Trize. The eldest son became a solicitor, a deputy recorder of the borough, and served for the county. The Doctor was educated at St. Paul's, a Surgeon in great practice; at the age of 21 he went to London, and in his third year passed his examination at Surgeons Hall, 1799. His first residence in London was in Whitechapel, and he employed his leisure in writing a 24-monthly review, called the *Medical and Surgical Review*. This periodical was the means of bringing him into notice. He graduated at Glasgow in 1804; and subsequently settled in St. Paul's Churchyard, and discontinued the *Review* in 1807. He was elected to the Alderman's Dispensary in 1807, and then published his work on Fever. In 1809 he removed into his late residence in Bridge-street, where he wrote only after long intervals. We stated that the Doctor died of bronchitis; this is only partially true. He had the misfortune about eight weeks since to be knocked down by a cab as he was walking from his carriage; and from this accident he never recovered, and he did not bronchitis delish his career.

GENERAL MEDICAL OPINIONS GIVEN BY FRANCIS BURN.—General Burnham, on his way from the Crimea to France, visited General Skerret at Boulogne, to thank him for the services of the English Military Medical Officers at the French Fever Hospital. General Skerret, commending the French troops at Constantinople, writes to General Skerret as follows:—(Translation).—"Constantinople, April 25. My General, I have had some of the Medical men whom you have been good enough to place under me, we recalled to England. Permit me to beg your Excellency to express to them my gratitude for the care, the zeal, I may even say the affection, which they have shown in the treatment of the sick. This cruel epidemic, the progress of which was at first so rapid, has distributed in an extraordinary manner that we hope soon to see its termination. The number of the other sick lying dead is greatly diminished, a considerable portion of our surviving staff are at liberty, and this makes it a duty to recall the English Surgeons no longer, but to place them at your Excellency's disposal, begging you to be the interpreter of my profoundly grateful sentiments. As in your honour, who have shown such eagerness in coming to our aid, accept the new testimonies of my respectful devotion.—The General of Hospital, France."

TRIPLE NAMES.—The Registrar of Charles-the-Martyr Church, Finsbury, says, "the number of names is remarkable, 2 double births having been registered in the March quarter;

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12, Broad Street, Weymouth, May 29th, 1890.

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EDITORIAL ARTICLES.

The Government Medical Expenditure 62
Practising by Receipts 67

The West.

The Rye-Port Fisheries.—The Case of the Fishermen of Rye-Port. 69

REVIEWS.

History of Medicine, by G. S. Scudder, M.D. 69
A Practical Treatise on Dermatology, by J. E. Ayer, M.D. 69

PROGRESS OF MEDICAL SCIENCE.

Improvements and Progress in the Surgery of the Bladder, &c.

GENERAL CORRESPONDENCE.

Obituary 65
Deaths of the Week 68

By Campbell and the Assistant Medical Staff, 68
The Medical of Medicine 68

REPORTS OF SOCIETIES.

The Royal Medical and Chirurgical Society 68
The Anatomical Society 68
The Entomological Society 68
A Bill for Amending the Laws Relating to the Poor, &c., &c.
Medical News 69
Hospital Reports 69
In Communications 69
Arrangements for the Week 69

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LECTURE III.

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Case I.—Miss Henrietta W., aged 17. The subject of the most epilepsy for seven years. When a very young infant she had several attacks of convulsions, which were supposed to be dependent upon water on the brain. The first epileptic fit occurred at school after having been frightened by a noise in the earlier part of the day. Before this time the health had been gradually falling—falling, there is reason to believe, from the stony dietary arrangements of the school at which she was staying. After this time she recovered with considerable regularity at intervals of a month. The attacks were established about two years ago without any sensible effect upon the fit. According to the aunt with whom Miss W. lives, there is much hysteria mixed up with the case, and she fits themselves are often of an hysterical rather than an epileptic character. The patient had over seven hundred attacks.

Nov. 13, 1848.—Short and square built; head somewhat large; forehead swelling; eyes very prominent; pupils dilated, but not very sluggish; expression of countenance, sour but not stupid; the memory not very defective, but very wanting in the power of application. Will often have fits of crying and sobbing for hours together, particularly after having had a long walk. Hands and feet constantly cold; pulse very small and weak. In the upper third, but not defective upon the whole; the tongue has been bitten several times. The aunt states that she fits come more about the third day of the menstrual period, and generally in the night; and that the face is usually much discoloured. Sometimes, but not always, there is foam at the mouth.

Ordered to be kept quiet and sent to bed early,—to have an egg beat up in a glass of port, wine or sherry, which every morning, and a glass of wine shortly before going to bed at night, to dissimulate all studies for the present, and to take three times a day two tablespoonfuls of the following mixture—

R Ferri anaemio-chloridi ℥j, extracti chloridi ℥j, aquæ destillatæ ℥iv. M.

Nov. 20.—She has been much quieter, and is every respect appears to be better. No fit. No alteration in the treatment.

Dec. 12.—Three nights ago, about the usual time, a fit occurred in the night. This was very brief, and there was little depression and irritability the next day. The patient is stouter than she was, and she now retains an appetite. Her countenance is more relaxed, and of a better colour. No alteration in the treatment.

Feb. 14, 1849.—Till last night she went as very well, and she has had a fit of considerable severity after rising in from a long walk. This was two days after the completion of the menstrual process. This morning she is constantly depressed, and passes very much. Her pulse, also, is considerably dilated. For the last three weeks the medicine has not been given with any regularity, and she has been in the daily habit of taking long walks. She is growing very fat.

Ordered, not to tax herself by walking, and not to neglect taking the mixture for the present. Ordered, also, to have a glass of wine or port with her dinner.

March 16.—Exceedingly better. No fit since the last visit. During the last three or four weeks she has been a very persevering student at the piano, and this may be taken as a very considerable evidence of improvement; for, when she was first put under treatment, she had no power or disposition to apply herself to this or any other pursuit. No alteration in the treatment.

June 12.—No fit since the last visit, and a marked improvement in every other respect.

This patient went abroad shortly after this time, and I saw her no more. Twelve months later, however, I learned that Vol. XXXIII. No. 474.—New Series, No. 512.

her health continued to improve, and that she had had no fit; and a year after this time, when I had all traces of her, there reason to believe that she was still without the fit and well.

Case II.—Mr. William T., aged 18. The subject of marked epilepsy for six years. When sixteen he had formed an improper connection with a young woman, which led to her pregnancy, and besides this he had been guilty of other practices of an equally reprehensible character, and since this time there has been no marked reformation in his habits in these respects. At first the fits occurred at wide intervals, but lately they have been of almost daily occurrence.

Jan. 4, 1850.—His appearance indicates great debilitation. He is tall, and thin, and very pale; preparing profusely on the least exertion, and suffering from almost constant tooth-ach and headache. He abstains, and always has abstained, from alcoholic drinks, but he indubitably himself by smoking excessively—smoke before getting out of bed in the morning. His memory, he says, is very bad, and he cannot bear the least contradiction. His fits occur generally at night. He rises in the middle of the day, and takes no food of any moment afterwards. Often he lies awake half the night. The pulse is very feeble, 72. The hand is cold and clammy. The pupil is sluggish and dilated.

Ordered to be steady, to live more freely, to take more animal food, and make a good supply of one kind or another; to take a quart bottle of Chateau's stout in the course of the day, reserving the last glass for supper; to smoke less; to go to bed at half-past nine, and to take the following draught three times a day—

R M. Ferri comp. ℥j, extracti chloridi ℥ss.

Jan. 20.—Much better. His appetite improved, and his sleep much longer. The fits, however, have recurred every other day, and generally he had more of considerable violence. No alteration in the treatment.

Feb. 3.—Slightly improved. No fit for three successive days, and rather more much less than he did formerly both tooth-ach and headache. To continue as before.

Feb. 21.—Still improving. Has had three fits since the last visit. Appetite greatly improved. Pulse 76, a little stronger; wakes frequently at night with cramps in his legs. He complains of feeling low and depressed in consequence of having given up (perhaps wrongly) smoking. For three or four nights he has had a good deal of headache in bed. He proposes to go to Hastings for three or four months. Recommended him to sleep with his head upon a lower pillow, and to raise the head of the bed a little, so that the blood might gravitate from his legs and prevent the cramp; but no attention in other respects.

May 1.—He has been at Hastings since the last visit, and is evidently much benefited by the change. He is both more stout and stronger, and he now suffers very rarely from headache. During the whole of his stay on the coast he had only three fits, and two of these, he thinks, were brought on by ascending the Castle hill three times in the course of the same day. He has been taking no medicine during the last month, and he thinks himself not so well without it, though he has been taking wine in addition to the port. He says that the wine and port are the effect of making him less irritable and dependent than he used to be, and that he can now apply himself to reading without any great effort, which was not the case formerly. His mother's brother, it appears, was insane, and, accordingly, he thinks, may be his own heir, except he can get something to occupy his mind. As a student he was much smothered with Huxleyism. He was ordered to take a BELL of sulphur suspended in peppermint water with a little mull-egg, and to repeat the dose three times a day. No other alteration.

Nov. 15.—The medicine agrees very well. No fit since the last visit. The dose of sulphur increased from ʒss to ʒij.

September 18.—He has been in London since May last, and during the whole of that time he had only one fit. Several times he had throes, but he succeeded in averting the fit by smoking at a bottle of wine which he carried in his pocket, or by taking a glass of water if he had the opportunity. The fit which did happen appears to have been caused in the main by his having been kept waiting for food for some hours beyond the accustomed time, and then being very sick in crossing a ferry. It was very violent, but he awoke almost immediately afterwards, and the next morning by his comparatively well. His whole appearance is more satisfactory, but the expression of his countenance is jaundiced, and the pulse

week. He says that, when in Scotland, he generally took a glass of whiskey-and-water in the evening, and that he found no harm from the practice. He has again begun to smoke. He took the naphtha for two months.

Oct. 14.—No fit. Improved in general health. His memory, he says, now serves him very well, and it now requires more persuasion to rouse his temper. He was desired to return to the naphtha for a short time.

Dec. 1.—This afternoon I was sent for to visit him at his home and found him much worse. Three days ago, while shaving himself with jaqueting, he had plunged a sharp razor into the palm of his hand, and lost a considerable quantity of blood before any could be obtained. The night following he had a fine febrile sleep, and again on the next night. He is now suffering from great mental depression and headache. I recommended him to take nourishment and wine, to be quiet, and to take an ounce of Griffith's mixture with half a drachm of chloric ether every four hours.

Jan.—He is much relieved. No fit since the last visit.

Feb.—He had a fit in the night, and was again very much depressed. Ordered to take naphtha *ad usum*, in a little peppermint water every four hours.

1884.—He has been going about for the last three or four days, and he has now recovered his spirits and appetite. No fit since the 1st, and little or no headache. No alteration in the treatment.

Jan. 5, 1884.—Improving. Still no fit. No alteration in the treatment.

August 18, 1884.—To-day I have learned, that very shortly after I saw Mr. W. I. last, he went out to act as a clerk in the office of a relative, a merchant, in Columbia, and that upon the whole he had had very good health. I could not learn any particulars, but my informant told me that my previous very rarely had a fit now, and that he was quite equal to all the duties which devolved upon him.

Case 12.—Captain —, aged 34. For some years this gentleman was a "hard liver," and much addicted to very dissipated courses; but his health did not suffer, except in trivial matters, until about three years ago. The first signs of disorder was a swelling of the face. This happened on several on a hot summer day—about three months afterwards he labored again. About this time he occasionally smokes with headache, and once his temper was bad. Six months after the first swelling he had a fit in which he was convulsed and clark in the face. This was his second. During the twelve months following he had three more fits, two of them under similar circumstances to that in which the last had happened, and one after a long and fatiguing walk on a very hot day. After this he felt for the first time constrained to medical advice, which advice was to leave off his dissipated courses, to abstain from wine and spirits, to take less animal food, and to take regular walking exercise daily. He persevered in this treatment without any benefit. On the contrary, he became weaker and more depressed, and he had several fits, some not recorded in the number of fits, fainting and illness. After this he was urged by his commander, the officer in charge of Her Majesty's cavalry regiments, to return to the ordinary pursuits of the man, and from this time he says he began to improve.

Jan. 1, 1884.—Slight meals and rather tall; complexion sallow and somewhat rufous, particularly about the under eyelids. Pupils somewhat sluggish and dilated. Expression quiet. Pulse 68, weak. His memory, he says, was never good, but he does not think it is worse now than it was before he became subject to the fits. He further says, that the only change he can notice in himself is that he is more easily "put out," and not quite so "cheerful." When out with the hounds he "thinks" before putting his horse at a pace. His appetite is not weak. He often makes large quantities of pale urine, and not infrequently he is greatly tormented with flatulency, particularly when he smokes.

I recommended him to take more animal and less vegetable food, with at least an average amount of wine and alcoholic drinks, to leave off smoking, or else to smoke very mild tobacco, to adhere to the strictest rules of sobriety, to go to bed early, and to take three times a day a pill containing one grain of potassium and two grains of camphor.

Feb. 12.—He has had no fit since the last visit, and his countenance appears a little more cheerful than it did. There has also been much less flatulency. He has gone to bed early, and this forms only part of the treatment to which he objects. No alteration in the treatment.

March 11.—Captain — went on well up to a fortnight ago, when he had a severe attack of diarrhoea, brought on, he thinks, by a stale lobster salad. This was cured late at night at an evening party. The diarrhoea continued about twenty-four hours, and during this time he took little or no food, and nothing of a stimulating character. The day following he walked about three miles to see a friend, and then walked back again, and immediately upon his return he fell upon his dining-room floor in a fit. This deprived him very much, and he had no dinner except a little soup. In the course of the evening he had another fit, and on the day after the next, he had another. It proved he is far from having recovered, and he complains a good deal of headache and headache. He was recommended to continue his pills, and to take occasionally, in a little wine, a small teaspoonful of a mixture consisting of equal parts of chloric ether and castle's oil.

April 21.—Since the last visit he has progressed favorably, and he is now in very good spirits. No fit as yet. No alteration in the treatment.

May 4.—No material alteration. No fit. The same treatment continued.

July 18.—He progressed favorably, without any fit, until a week ago, when he had one. This was followed another by headache, no sleep, and, four or five hours afterwards, he went out to dine. He says that he cannot account for this fit, but that, for a few days previously, his appetite had not been quite so good as usual, and that he had been much tormented with flatulency. The tongue is at present disposed to be dryish, and there is a little thirst. Ordered to have a grain of compound rhubarb pill added to the pills he is taking, and to go on as before.

September 14.—He looks to-day much better and stronger than he was when seen last, and there has been no return of the fits. He has just returned from a few days' partying shooting, and he says that he enjoyed his sport very much. Drinking game was eight he felt considerably tired and depressed, and he thought he should have a fit, but after dinner and a few glasses of wine he felt better. On this day he had supposed to take my means of reinforcement with him. He now thinks he is well enough to dispense with any more medicine.

November 4.—The improvement noticed at the last visit still continues. The fits are still absent. Six weeks ago, he says he was troubled with headache and irritability, and these symptoms caused him to return for a few days to the pills and dips, and this was all. The pupil is certainly very much less sluggish and dilated than it was at first.

This was the last time I saw, or heard, of this gentleman.

Case 13.—Mr. William H.—, aged 37. The subject of epileptic fits for five years. Lately the fits have occurred so frequently as not a month, and generally with considerable regularity, but formerly they were separated by much longer intervals. The first fit occurred in the neighborhood of Calcutta, where he had been living for ten years. He never enjoyed good health in India, and more than once he nearly lost his life from dyspepsia. He had also suffered from three distinct attacks of violent fever, and for six months preceding the first fit he had noticed symptoms of tertian ague. The first fit occurred in the open air, on a very hot morning, but he does not think that he had been at all exposed to the direct action of the sun. For this fit was mild twice. The week following he had another fit, when he was laid again. His progress was given him, for his bowels were then in a very loose state; but he was kept upon very few diet for three or four weeks, and all symptoms were gradually subsided. During the next two months he had several fits, and at the end of this time, feeling himself much weaker, he resolved to return to England. The voyage home, which was by the Cape, did him much good, and at its conclusion he felt much stronger. He had four fits while at sea, all in the night.

March 1, 1884.—He has been in England about a fortnight, and feels the cold very much. He is short and well made, except that the head is perhaps a little larger than it ought to be. His countenance is somewhat wanting in expression, and his complexion is very sallow, and much tormented by an itchy skin. There is no decidedly epileptic expression, and no specific peculiarities about the eyelids. The pupil is somewhat dilated and sluggish. The hand is cold, and he complains much of cold feet. In the night he had, for the first time for several months a distinct attack of aguish

rigor, followed with heat and thirst; but now his pulse is weak and slow, 48. At the present moment he is suffering from what his wife is a very common complaint—headache. The bowels are at present somewhat sluggish, and they have been in this state for five or six weeks; he complains, also, of a little dull pain in the right side and shoulder, but there are no other perceptible evidences of bilious derangement. The appetite is very defective, and there is no thirst. On the voyage home he was recommended by the captain to resume his former habits in the matter of stimulants, and after this time he always took wine or ale, or both, at dinner, and ended the day with a glass of warm whiskey-and-water. He had, he says, restless nights before he adopted this practice, but since he adopted it he has slept well, and finds himself refreshed in the morning. He says further that stimulants do not now "get into his head as they once did." He still continues the practice.

I recommended him to keep quiet and warm, and to take three grains of quinine three times a-day; and in other respects recommended him to live as he had lived on ship-board.

2.—He had a bout of ague yesterday, but the rigor was not so prolonged as before. No alteration in the treatment.

11.—He had another attack of ague in the night, and this morning upon getting out of bed, he felt fever and fell upon the floor. He says he did not lose his consciousness, but there is some doubt upon this point. He is at present suffering from headache and depression of spirits. The tongue was not bitter, but it exhibits the signs of former biliousness. He was ordered to keep more quiet and to continue as before.

25.—He has been improving since the attack, without any sign either of ague or epilepsy, and his appetite is now good and his countenance much more cheerful. He takes about returning to India, and says he does not see why he should not be as well there as here, if he adheres to the same rules.

April 18.—Much improved; for a while month he has been free from headache, and this is a great evidence of improved health, for he has been so almost constant nearly to this illness for years. The bowels act naturally. The quinine to be continued.

Feb. 4, 1882.—He writes to me from India to say that he had been quite well since he returned home, and that he still remains almost entirely free from headache. About three months ago he had some symptoms of ague, but these subsided in the course of a fortnight under the use of quinine. He still continues to take what he calls "a fair quantity of stimulants."

Case 5.—Mr. Cress H.—aged 37. This gentleman has had occasional attacks of epilepsy for five years. These attacks have generally occurred during the night, but lately they have occurred several times during the day. He has also had repeated attacks of diarrhoea. At one time he had a very disturbed sleep, and he notices the fit in this manner; but now his habits are entirely changed. He has, indeed, for some time been a most rigid ascetic in every respect, not touching animal food on the days in which it is prescribed by the Russian Church, of which he is a very strict member, and never tasting any kind of stimulating drink. Every morning he gets up early to go to church, before going to his ordinary duties, which are those of a clerk in a public office. For some time he has suffered from gastric ailments, and these occasion much physical depression and great mental distress.

March 7, 1881. Tall and thin. The face extremely pale, and the hands almost transparent. The pupils are both sluggish and dilated. His memory, he says, is not at all affected, and he has no difficulty in dealing with very complicated calculations. What he says most stress upon is his mental depression, and this he considers as a proper punishment for his former sins. When at home he will be brooding and desponding for hours together. He is unmarried, and exclusively avoids all society. The pulse is exceedingly weak—72. The tongue has not been bitter.

Ordered him to take animal food at least once a-day, to take heated steam, to go out occasionally to places of amusement, to go to bed early and not to get up until nine o'clock, and to take an ounce of Huxham's solution with thirty drops of chloric ether three times a-day; ordered him also to have a brandy and glass oferry at his office in the middle of the day.

25.—His spirits are evidently improved. To continue as before.

April 18.—He woke this morning laughing, and says that that laugh was the first he had been guilty of for at least three years. He now eats with an appetite, and begins to think the world not quite so dismal. Three days ago he had a slight fit on his return home, and thinks this was due to his having missed his brandy and glass oferry in the middle of the day, his work being unattended. This was followed by a good deal of sleeplessness and headache, but the next day he felt pretty well, except a little nervousness in his head.

May 2.—He went yesterday to the Great Exhibition in Hyde Park, and became quite excited and delighted whilst there. After this he walked home with as much buoyancy as he had ever felt. He has ceased to fast on Fridays. He now takes upon an average three glasses of wine and two glasses of brandy per day in the course of the day. His countenance is still pale, but not so pale as formerly. No alteration in the treatment.

April 9, 1882.—I met him to-day accidentally in the street, and was surprised to see the great change for the better which had taken place in his appearance. He said that he believed himself to have entirely got over his fit, and that he had and had no more to say on a post ago, except once at the beginning of the past winter. That fit, if it did occur, occurred in the night. He thinks it did occur because he felt in the morning as he used to feel after the fits; but he says that he had been smoking a good deal ever night, and that smoking always puts him out of order. Very shortly after seeing me last, he removed into the country, and there he is at present. He says he now feels quite well and happy, and he hopes before long to be married.

Case 6.—Miss C., aged 28, an epileptic of fifteen years' standing. The fits have always occurred frequently, but lately their frequency has considerably increased, and now rarely a week passes without one. Sometimes, but not invariably, two or three fit succeed each other before the next recurrence returns. She suffers almost constantly from depression of spirits and great headache. She belongs to a very respectable family, but since the death of her father, which happened some years ago, her circumstances have been much straitened.

Oct. 28, 1881.—Short and square-built; head large; eyes large and prominent; pupils very much dilated and very sluggish, under eyelids large and lacerated, with numerous minute spots of ecchymosis upon them. Expression of countenance dismal rather than melancholy; pulse very small and weak—68; hand cold and clammy; tongue white, great flatness; habitual diarrhoea. The countenance profuse, and attended with much pain.

The dietetics given to her were to take more animal and less vegetable food, with a fair allowance of seasoning; to take beer to avoid tea, and to take coffee after dinner; to avoid walking so much as possible; and to take three times a-day a pill containing ʒi grains of sulphate of iron, and ʒi of camphor, and occasionally a teaspoonful of a mixture containing equal parts of chloride ether and oil volatile. Her supper for a short time was to be a pint of milk with half a wine-glassful of rum in it.

November 18.—She looks a little more cheerful. The diarrhoea is stopped, but the bowels still act twice a-day. The headache and mental depression are but little relieved. She has had two fits. The pulse a little fuller—62. No alteration in the treatment, except to take the drops a little more frequently, and to sit down for an hour after dinner, which is in the middle of the day.

December 1.—A decidedly more cheerful expression in the countenance. She is now some hours without headache every day—a relief which she has never known, for four or five years; and her sleep is disturbed by fewer dreamy scenes. The bowels now act only once a-day. No alteration in the fit, one still occurring about once in seven days. No alteration in the treatment.

Feb.—Not so well. Three days ago, having missed the medicine, she had a walk of five miles. A fit followed in the night. The next morning the countenance appeared with great profusion and much pain, and during the day she had another fit. Her headache is almost constant; and the expression of her countenance is extremely desponding. Ordered her to keep in the room during periods until the countenance

discharge ceased, to take bottled porter, and to continue the medicine.

10th.—Better again. She had a severe fit immediately upon reaching home after the last visit. Her headache is better, but her spirits are very depressing, and her dreams are very distressing. Instead of the pills, to take three times a-day the following draught:—

R. Naphtha paraffina, ss .i. mucos. acros. ss .i. aqua. menthae ss .i. aqua. destillata, ss .i. M.

February 1, 1882.—Since her last visit she has had two fits, one of considerable severity, and both during the period of menstruation. The dreams were as profuse as ever. A fortnight later she had a good deal of headache, but she escaped the fit. During the last week she has been comparatively free from headache, and she says that her head is now comparatively comfortable, except after a disturbed and sleepless night. Her coffee, she thinks, will often relieve her headache now. The medicine, she thinks, has made her head feel lighter and clearer. Ordered to increase the dose of naphtha from ss .i. to ss .ii., and to go to bed not later than half-past nine o'clock.

March 18.—No alteration of any moment. She had two fits, during the last menstrual period, but these were less severe. The discharge also, was less profuse, and there was less pain in the head and elsewhere. Her mother states that she wakes much sooner after a fit, and that there is less confusion and sleepiness afterwards. The dose of naphtha to be increased from ss .i. to ss .ii. or ss .iii.

May 1.—No material alteration. She believes, however, that she should have been much better if she had not had to bear some very distressing domestic losses. The medicine still relieves the headache, but it causes some nausea, and the patient has taken a strong dislike to it. Two fits occurred during the last menstrual period, and one a fortnight later, the latter being the transmission of a fit of crying and sobbing, which continued for more than half the night. Ordered to take a glass of bottled porter or bitter ale before going to bed, to sleep with the head upon a lower pillow, and to take the following draught three times a-day.

R. Citrus aurantiaca, ss .i. naphtha ss .i. M. q. s. etheris chloridi ss .i. M. q. s. aqua. menthae ss .i. M. q. s.

June 12.—Looking better again. There has been only one fit since the last visit, and this occurred in the night, about the end of the menstrual period. Much less headache than formerly. Ordered to persevere in all things, and so to particularly careful not to exhaust herself by walking, or in any other way, when she expected her next monthly period.

September 12.—There has been no fit since the last visit, and the countenance has now become bright and animated. Headache is now only an occasional symptom. The mother also says that she is much less irritable, and enters more into the amusements and occupations of the family. This is a great change, for formerly she would sit at her desk in a mooping, brooding condition, and never once lose the appearance of a person suffering from marked melancholy. She has fewer disagreeable dreams since she slept with her head upon a lower pillow. She has taken the medicine regularly up to this time, and now wishes to discontinue it.

November 8.—Not so well. She went so well for two months after the time of the last visit; and during this time she had only one fit, which followed a long walk in the country. She says she could neither lie in, she is sure, if she had less domestic anxiety to depress her. During the last fortnight she had three fits, occurring on successive days. These happened at the end of an unusually protracted menstrual period. Ordered to increase the last mixture, and to carry out all the old rules.

May 7, 1883.—She has been staying for three months with a relative in the country, and the change has done her much good. During this visit she had every day three glasses of port-wine; and this, she thinks, did her so much good as the medicine, which she has taken regularly. During this time she had two slight fits. These occurred at the two last menstrual periods.

From the time I continued to see Miss C. at intervals. As the winter of 1883 came on she began to flag, and she did not really again reach the summer. During this time she fit occurred about once in two months, and generally about the same time. Sometimes she got over two months. She is not now troubled very much with headache, and her spirits are

much better; and this was her state about twelve mo. or 13 ago.

Case 7.—John Walker, aged 38. This patient, who was an out-patient at the Westminster Hospital, says he enjoyed good health until about two years ago, when he was hurried out of his situation as a groom on account of his opening tendons. Before this time he lived very well, and had abundance of meat liquor, but since that time he has been suffering from almost constant debility. Soon after leaving his situation he began to suffer from frequent prostrations. The first fit occurred about eighteen months ago, and since this time the prostrations and fits have been very frequent. He rarely passes three days without a fit, and the fit generally occurs during a long walk. He writes a great deal, necessarily with a view to finding work. His memory is very retentive.

June 1, 1882.—Tall, tall, and bony. His face is very stupid, and there are numerous epiploic excrescences upon the under eyelids and forehead. The tongue has been frightfully bitten, and it is now raw and raw from a recent bleed. His pulse is remarkably small— ss . Ordered to live as well, and to keep as quiet, so he could, and to take 2 grains of camphor in a pill every four hours.

7th.—No material alteration. The dose of camphor to be increased from 2 grains to 4 grains. One fit since the last visit.

14th.—She had no fit since the last visit, and only one prostrations. Her pulse seems a little stronger.

21st.—He has now been ten days without either fit or prostrations, and his appearance is much more satisfactory. Ordered, in addition to the pills, an occasional dose of the ordinary cathartic mixture of the Hospital.

July 4.—Still continues to improve, and still without a fit. He has now got employment in a brewery-stable, and he is already benefited by the better diet which he is able to command. He takes two glasses of bitter beer in the course of the day, and so more. No alteration in the medicine.

October 2.—A week after my last seeing him he considered himself well enough to be able to do without medicine, and the improvement continued until about a fortnight ago, when he had a fit in the night, and another on the night following. This was two or three days after marriage. These fits were followed by much headache, but his spirits were not so much depressed as formerly. He has again returned to the camphor pills and camphoric mixture.

11th.—Considerably improved in appearance. No return of the fits.

This was the last time this patient made his appearance at the Hospital.

LECTURES

ON

GENERAL NATURAL HISTORY.

By THOMAS H. HULLBY, F.R.S.

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LECTURE V.

THE *Artemisa* are those *Colobosoma* in which the stomach is a sac suspended within, and entirely distinct from, the body, from whose pylorus it is separated by a portion of the general cavity of the body, which may receive the special denomination of "perivisceral cavity." The stomach communicates freely by an inferior aperture with the general cavity. A rough conception of the relations between the *Artemisa* and the *Siphonura* may be obtained by supposing the walls of the material disc of a *Loricaria* to become united with those of its central polyp; it would then become, to all intents and purposes, an *Artemisa*. As the *Siphonura* was taken as the type of the class *Siphonura*, so the *Artemisa*, or *Artemis*, may be considered to be the type of the *Artemisina*; and I shall, therefore, prefer what I have to say regarding this class with a general description of the structure of the *Artemis*.

FIG. 1.



Transverse section of *Hydra heliosa* after Pavy and Leuckart—A. Mouth; B. Tentacles; C. Gastrovascular cavity; D. Intestine; E. Stomach; F. Oral cavity; G. Oral cavity; H. Oral cavity; I. Oral cavity; J. Oral cavity; K. Oral cavity; L. Oral cavity; M. Oral cavity; N. Oral cavity; O. Oral cavity; P. Oral cavity; Q. Oral cavity; R. Oral cavity; S. Oral cavity; T. Oral cavity; U. Oral cavity; V. Oral cavity; W. Oral cavity; X. Oral cavity; Y. Oral cavity; Z. Oral cavity; a. Oral cavity; b. Oral cavity; c. Oral cavity; d. Oral cavity; e. Oral cavity; f. Oral cavity; g. Oral cavity; h. Oral cavity; i. Oral cavity; j. Oral cavity; k. Oral cavity; l. Oral cavity; m. Oral cavity; n. Oral cavity; o. Oral cavity; p. Oral cavity; q. Oral cavity; r. Oral cavity; s. Oral cavity; t. Oral cavity; u. Oral cavity; v. Oral cavity; w. Oral cavity; x. Oral cavity; y. Oral cavity; z. Oral cavity.

An *Hydra* presents a cylindrical body, attached by one end, and presenting at the other a flattened and rounded disc, in the center of which is the aperture of the mouth, while its margins give origin to a more or less numerous series of radiating tentacles. Much as it may seem, however, that the *Hydra* presents a perfect example of radial symmetry, a careful inspection of the mouth shows that this radial arrangement of the parts around a common centre is most apparent than real. At two opposite points of the circumference of the mouth, in fact, strong prominences are observed, which are quite distinct from the wrinkles into which the oral membrane is thrown during contraction, and do not become obliterated during its dilatation. Each is the termination of a strong fold of the mucous membrane which runs parallel with the axis of the body, from the oral aperture to that by which the stomach communicates with the gastrovascular cavity. Each fold is covered, and represents a muscular. The gastric epithelium is ciliated, as may easily be seen, and doubtless carries a previously solvent fluid, through M. B. Haller's [a] could obtain neither an acid nor an alkaline reaction from the mucus with which it is covered.

The mouth is kept in place by membranous mucous bands which extend from the roof of the gastrovascular cavity to the periphery of the stomach on the one hand, and to those of the body on the other, terminating in a five-angled edge laterally and below, and dividing the gastrovascular cavity into a corresponding number of chambers. These chambers, therefore, all communicate with one another below; above, each answers in, and passes into the cavity of, one or more tentacles, while in some species of *Hydras* additional means of communication between the chambers are provided in openings which place the mucous tissue themselves.

The muscular structure of the body, and the corresponding lines, marked by the arrangement of the muscular fibres which they contain, being turned towards one another. These muscular fibres are divided by M. Haller into four distinct bundles. On the one face are two muscles, the most of which, small above and wide below, extends obliquely from the posterior tentacles of the gastrovascular cavity; the fibres of the other are disposed transversely along the lower margin of this muscle. On the opposite face of the intestine, are two other muscles—the one, narrow below and wide above, passes obliquely from the roof of the gastrovascular cavity downwards and forwards to its periphery; the other runs along the lower edge of this, from the base of the tentacle to the base of the gastrovascular cavity, its fibres being nearly vertical, and diverging as they descend.

The lower and lower free edge of each musculary give attachment to a curious subepithelial cord which is much longer than the musculary, and hence depends in lower cells and folds. The cord contains a canal in its axis which is held to open into the stomach, whence the whole apparatus has been regarded as a secreting organ. The walls of the canal are very thick, and contain a great number of thread-like. It is very possible, therefore, that these coiled cords may be destined to act as offensive weapons against any living prey which the *Hydra* may swallow.

It is upon the base of the mucous tissue that the repre-

sentative organs make their appearance in flattened bands, in which *Hydra* or *Siphonaria* are constantly developed; both products serve, so far as we know at present, existing in a single individual. The males and females, which are distinguished by an external character, appear to be about equal in number.

As in the *Siphonaria*, the body of the *Hydra* is essentially composed of two layers, an ectoderm and an endoderm; but in the latter the former is differentiated, according to Haller, into a superficial epidermis and a deep dermal layer. The former consists of a superficial layer composed of poly-gonal cells frequently detached and rounded again, beneath which lies a granular layer, but separated from it by epithelial and masses of pigment. In the deep dermal layer two sets of muscle fibres are found, a superficial circular, and a deep longitudinal set. These, like the others, are flattened, and exhibit an extensive striation.

In some *Hydras*, such as *A. medusiformis*, bright blue spots, whose structure requires further description, are placed at the edge of the oral disk; while in *A. gemmae*, *A. medusa*, etc., clear spots are scattered over the integument, which have been regarded as apertures of tubercles. M. Haller, however, states, that these are imperforate vesicles, possessing a kind of bilobed mouth, surrounded by a sphincter-like arrangement of muscular fibres. Any foreign body introduced into these vesicles is seized and tenaciously held, so that, if this cannot be carried, these organs may be compared to the pedicels of the *Antennaria*, as the *Antennaria* of the *Polypus*.

A ganglionic nervous circle was supposed by Pavy to exist in the base of attachment of *Hydra*, but subsequent observations have not confirmed the statement; and unless the coloured tubercles upon the oral disc should turn out to be such organs of sense as appear to be equally absent.

The majority of the *Hydras* are oviparous, the young developed from one impregnated within the gastrovascular cavity of their parent, being expelled by the mouth from the cavity of the stomach, from which they have made their way through its lateral apertures. The *Hydras* are capable of asexual multiplication by budding, and occasionally by fission, while their power of restoring themselves after mutilation appears to be as great as that possessed by the *Alpheas*. Like the *Alpheas*, again, though normally fixed, they are able to creep about upon their expanded disc of attachment, as even a fixed by themselves upon the surface of the sea. Certain *Hydras* (*Hydras*) are stated even to possess a local "sensitivity," but the precise structure of this tent-like apparatus does not appear to have been made out.

The great majority of the *Hydras* exhibit a structure closely corresponding with that of the *Hydras*, but from the manner in which they grow up into compound masses of connected polyps—produced by gemmation or by fission—they stand in nearly the same relation to *Hydras* as the compound *Siphonaria* do to *Alpheas*. A curious difference, however, in the numerical relations of their parts obliges us to separate the *Hydras* into two parallel series. In the one of these series, to which the *Hydras* itself belongs, and for which the term *Zoantharia* may be reserved, the number of tentacles, mouth-folds, etc., is always either five or six, or some multiple of five or six. In the other division, that of the *Siphonaria*, their number is some multiple of four. Again, in each of these series we find mutually representative subdivisions, according to the extent to which a skeleton or supporting framework is developed. This skeleton, the frame of which (polysiphonous) is ordinarily calcareous, is entirely [?] absent in some forms, such as the ordinary *Hydras* and the *Siphonaria*, in others, such as the *Zoantharia* and *Alpheas*, it makes its appearance in the form of spirals, arranged loosely through the intestine. In other forms, such as the *Siphonaria*, *Pennantia*, and *Antennaria*, the remains of the base of the aggregate *Siphonaria* constitute a succession of heavy epidermic layers, which accumulate one upon the other, so as to form eventually a red-like or branched solid wall, enclosed by the connective, but nevertheless, as much outside it as a tissue is external to the mucous membrane which invests it. Cellulose matter may be deposited in the heavy "subcutaneous" skeleton thus formed, either continuously, as in the red coral of commonness, or at intervals, as in the genus *Fila*; and a loose epidermic deposit in the connective and its polytypous may simultaneously take place.

In the remaining families of the *Hydras* the skeleton

deposit themselves in the form of detached spines; but these soon unite together, so as to form a network, which may ultimately, by increasing deposition, be converted into a solid and impervious mass. The firm and continuous skeleton thus formed is called a *Corallite* (*z*), so far as it corresponds with a solitary *Actinozooite*, or with the polypide (*y*) of a compound form, while the entire skeleton of one of the latter, consisting of the aggregate of corallites with their unifying substance, is termed a *corallum*. A fully developed corallite is a somewhat conical, more or less cup-shaped, body, whose structure may be best understood by comparing a *Cyathina* or *Spirastrea* with the annexed diagram.

FIG. 2.



Diagram illustrating the parts of the skeleton of a *Coral* and their position in the soft parts of the animal. A division of common interest between zoologists and naturalists. A. *Actinoptera*, B. *Actinoptera*, C. *Actinoptera*, D. *Actinoptera*, E. *Actinoptera*, F. *Actinoptera*, G. *Actinoptera*, H. *Actinoptera*, I. *Actinoptera*, J. *Actinoptera*, K. *Actinoptera*, L. *Actinoptera*, M. *Actinoptera*, N. *Actinoptera*, O. *Actinoptera*, P. *Actinoptera*, Q. *Actinoptera*, R. *Actinoptera*, S. *Actinoptera*, T. *Actinoptera*, U. *Actinoptera*, V. *Actinoptera*, W. *Actinoptera*, X. *Actinoptera*, Y. *Actinoptera*, Z. *Actinoptera*.

The wall of the cup corresponds with the portion of the body within which it was developed, and is called the *corium*. Radiating from the throat towards the rim are a number of vertical plates, the *septa*, which divide the cavity of the cup into a corresponding number of chambers, the *lobes*. The base itself is occupied by a columnar mass, the *columnella*, and between the columnella and the septa there are sometimes (s. p., in the *Cyathinae*) situated one or more rows of distinct vertical pillars, which may be regarded as dismembersments of the septa, and are called *petals*. Nerves, the same occasionally run longitudinally down the outer wall of the cup, corresponding with the septa internally. If a *Cyathina* be split vertically, it will be found that the lobes extend without interruption between the septa for the entire length of the corallite. In the *Poriphe*, however, contrary practice, the septapores, are developed from the front of the septa, and unite with one another across the lobe. In the *Actinozoa*, the process of union of the septa has gone further, the lobes being divided by horizontal partitions, arranged at intervals one above the other; but one extending across the whole diameter of the corallite. These may be termed *interseptal dismembersments*, to distinguish them from others which exist in the interseptum and in the rapae corals, stretch table-wise across the whole width of the corallite without interruption, and are called *tabulae*.

At the base the septa, united, support the structure of a single septum, and form the *tabula*. At the top they are united, and form the *septum*. The *septum* is the *tabula* of the *Poriphe*, and the *tabula* is the *septum* of the *Actinozoa*, and in the *Poriphe* the *tabula* is the *septum* of the *Actinozoa*.

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Actinozoa. Finally, in a solitary condition, the basal part of the stem frequently becomes united, with age, by a smooth layer, like a varnish, which *Milne-Edwards* and *Milne* consider to be a secretion of the epidermic layer of the zooids.

If a section be made through a compound coral, the separate corallites will sometimes (sandy *Spirastrea*, *Poriphe*) be found to be in close contact with one another by their walls; but, in the greater number of cases, the corallites are united by a distinct substance interposed between their stems. This substance is called the *interseptum*; it is essentially a secretion of the zooids, connecting the polypides, and its texture may present every variation, from open reticulation, in *Actinoptera*, particularly in *Polypora*, and reticulation in some *Actinoptera*, to the dense and solid mass which it presents in the *Cyathinae*.

The manner in which the aggregation of zooids, constituting a compound coral, is developed from the primarily solitary *Actinozoa* zooids, of course, involves an important influence upon the form of the *Corallum*. Sometimes, as in most *Poriphe*, another generation may be added very late in life. In the *Cyathinae*, generation stops earlier, and in these and other *Actinozoa* of the present day, the development of both these plans takes from the base or from the sides of a corallite, or from the zooids. Certain of the earliest *Poriphe*, however, exhibit cellular generation, the lobes being developed from the oral disc or cup of the polypide, which, naturally, under these circumstances, have retained any active vitality. The massive corallite of some *Cyathoporidae*, thus standing like inverted pyramids, all the lobes supported upon the narrow centers of the primary corallite, have a very singular and striking aspect.

In the ordinary process of extension by fission, a polypide divides, and then branches and complex rapid and these divisions are built up upon the old one; but it sometimes happens, if one may speak figuratively, that the process of division of the polypide goes on faster than the building-up of the skeleton, so that when the soft parts are stripped away, the skeleton appears to run into one another; and this may be carried so far, that, as in the *Murchisonia*, or *Actinoptera* corals, the skeleton exhibits nothing but a series of unending elements or grooves divided into lobes by septa, but presenting no distinct stems.

The Polypides of the compound forms of *Actinozoa* differ in but few important particulars from *Actinozoa*. In the *Poriphe* the polypide are placed very far down upon the interseptum, and the oral are the in number. In the *Polyporidae*, according to Dana, two only of the zooids are exserted. The same excellent observer states, that in both the *Actinozoa* and the *Poriphe* the interseptum chambers of different Polypides communicate. In the *Poriphe* the tentacles are small and irregularly cutted.

The *Poriphe* appear at first to differ very widely from the type of structure which prevails among the other *Actinozoa*; but a close examination of any of their forms suffices to demonstrate the justice of the conclusion first advanced by *Fries* and *Leuckart* (*Beitrage*, p. 24.) as to their essential identity with *Actinozoa*.

The *Cyathop* (*actinoptera*), which abounds upon our own coasts, and is equally plentiful in all the other seas which I have visited, differs from its small size and extreme transparency, an excellent subject for the student of the *Poriphe*. The body has a regularly oval form, somewhat produced transversely around the aperture of the mouth, and is marked by eight longitudinal narrow transverse areas, which are wider equidistantly and diminish to a point towards the poles, which they do not nearly reach. Each area is raised into a succession of transverse ridges, to every one of which a wide flattened pedicle, composed of a number of large cells, is united laterally at its base together—is attached. Looking down upon the body, as usually is seen in its nearly vertical, but divided into eight lobes, the two lobes opposite the ridge of the flattened stomach being the widest, and separating the other six, which correspond to pairs, from one another. Four of the dilated areas are situated in the incursions between the great lobes and the lateral smaller pairs; the other four are placed in the incursions between these and the median lateral lobes. The center of the lateral lobe, again, which corresponds with the extremity of a plane drawn at right angles to that of the stomach, is occupied by a wide aperture through which a long tentacle is protruded. It will be readily understood from this description, that the *Cyathop* is not radially but laterally symmetrical, the plane of the stomach dividing the

body into two symmetrical halves, each of which presents four dilated areas, and a transverse canal. The mouth leads into a flattened stomach about one-fourth as broad as the body, and extending to or beyond the centre,—where it terminates in a transversely elongated aperture, opening into a wide cavity, which occupies the rest of the side of the *Cylops*, and is termed the "funnel" by Will (Herrn Torgaust). It corresponds with the common cavity of the body into which the locomotoric chambers and the stomach open, in the *Arctia*, or, that into which the *Podipe* and the canal of the saggittate organ pass in the *Leucosticta*. The common cavity of the body in *Cylops*, however, differs from those just alluded to, in possessing two apertures, by which it communicates with the exterior. Five wide canals, in fact, take their origin from the common cavity; of these, one passes up to the side of the body, and, at its dorsal pole, divides into two short branches, which terminate by corresponding fingers. Two other canals pass vertically downwards on the flat face of the stomach, in the neighbourhood of the mouth. The remaining two canals take a direction horizontally outwards, and perpendicular to the flattened face of the stomach; they are very short, and enter the bases of the tentacles, giving off a branch on each side immediately before their termination. This branch passes obliquely upwards, and then divides again into two branches which run outwards, towards the dilated area, and terminate in longitudinal canals which lie beneath them in their whole length. In *Cylops* the canals do not appear to subdivide further, or to unite; but in other *Boreids* they become much ramified, and form networks.

All these canals are, like the corresponding vessels in *Arctia*, lined with ciliated cells, by whose action the fluid which they contain, and which consists principally of sea-water mixed with the products of digestion, is kept in constant motion. The proper walls of the canals are distinct, though thin and delicate, and can be traced into continuity with the cuticle lining the stomach; on the other hand, the cuticle is thick and gelatinous, lining up the intervals between the canals and constituting the principal mass of the body. Will has described a system of blood-vessels dispersed along and external to the canals; but I have been as unable as other observers to detect any trace of such a system.

The tentacles are very long contractile coels, lodged in a subcylindrical cavity, situated in the substance of the body, and extending from the termination of the horizontal canal in a point distant about a third of the circumference of the body from the dorsal pole, where it opens in a wide aperture. The base of the tentacle is formed by a wide flattened or cord-like mass, with which the horizontal canal freely communicates; from the base between the two lobes respectively, the stem of the tentacle arises; it is at first wide and flattened from side to side, but soon becomes cylindrical, and gives off different lateral filaments. The walls of the stem and filaments are double, consisting of the cuticle and the cuticle, and containing a cavity continuous with that of the basal sac. The latter is highly contractile, and probably, by forcing the liquid which it contains into the tentacle, produces its extension and protrusion, extension being accomplished by the action of the parallel fibres, which may be observed in the cuticle of the stem of the tentacle. The stem and its branches are thickly coated with a layer of granular matter about $\frac{1}{16}$ of an inch in diameter, in which I was unable to detect any thread. These granular bodies are, indeed, according to Will, nothing but delicate filamentary terminations of the branches of the tentacle, retracted and coiled up. So far as I am aware, thread coils having the same complex structure as those in the *Arctia* have not yet been observed in the *Boreids*.

The reproductive organs of the *Boreid* was shown by Will to consist of thickening of the lateral walls of the longitudinal canal placed beneath the dilated area. Here the generative products are developed beneath the cuticle, and, probably, becoming discharged into the canal, they are eventually carried out through the dorsal aperture. The *Boreid* and *Leucosticta*, the one wall of each canal giving rise to tentacles, the other to ovarian thickenings.

The dorsal face of the body is slightly depressed between the aperture of the vertical canal; and in the depression, which is bounded laterally by two folds, an oval sac, or litho-cyst, is situated, containing a mass of strongly refracting granules, of about $\frac{1}{16}$ of an inch in dia-

meter. The whole structure closely resembles that of the lithocyst in the *Stomatopoda* *Leucosticta*. Small coloured granules are deposited around this organ, and beneath it is a body which has been regarded by Miles Edwards and Will as a parovis ganglion. The latter considers that he has traced nervous cords from this ganglion down to the stomach, and to the walls of the longitudinal canal.

FIG. 2.



Diagram of *Cylops*.—A, Mouth; B, Stomach; C, Common cavity of locomotoric organ; D, One of the lithocysts, driving liquid into the parovis ganglion, which opens into the longitudinal canal; E, Canal passing vertically downwards from the side of the stomach, in the neighbourhood of the mouth; F, Canal opening at a, on each side of C. The granules and lithocyst.

If we now compare the structure of *Cylops* with that of *Arctia*, we shall find that (as Drury and Leuckart have particularly pointed out) they closely agree in their mode and structural parallelism. In each the stomach opens at its anterior end into a common cavity, whose canals are given off, which run between the stomach and the parovis. In *Arctia* the partitions between these canals are very thin, and constitute the locomotoric canals themselves being very wide. In the *Cylops*, on the other hand, the canals are comparatively narrow, and the walls which divide them, corresponding with the locomotoric, are very thick. The reproductive organs are, in each case, developed from the walls of the canals. The tentacle of the *Cylops* is not a wide deviation from the type of the *Arctia*, that of the *Podipe*, is from the more ordinary form of pedicellate organ in the *Stomatopoda*. The nervous system and influence of Cuticle appear to be the only parts unrepresented in the *Arctia*, in, according to Miles Edwards and Haines, the genus *Mayes*, which belongs to the latter division, has an aperture in the middle of the pedicel, which communicates with the cavity of the body.

It is impossible to enter here into the varieties of form presented by the *Boreid*, and which chiefly arise from the development of lateral lobes, a process which is carried to an great length in *Chiron* that the body becomes ribbon-like.

The habits of the *Arctia* demand the especial attention of the zoologist, the physical geographer, and the palæontologist. All are marine. The *Arctia* and the *Arctia* inhabit the shallowest and even the deepest parts of all seas; the *Stomatopoda* and *Cyrops* are found at considerable depths, *Chiron* having been taken in 220 fathoms, and *Cyrops* in 140, and almost both to cold and in warm latitudes. The *Podipes* and *Podipes* inhabit almost exclusively the shallowest parts of warm seas; but among the former the *Stomatopoda* extend to the polar regions and to depths of 500 fathoms. So, again, the *Arctia* are for the most part confined to the shallowest of hot seas, but the *Podipes* extend into very cold regions. The whole group of the *Arctia* is now extinct, only one genus, *Arctia*, having survived even the palæozoic period; and we have no means of judging what climatal conditions they may have required.

Among the coral-forming *Arctia* of the present day there are some which are solitary in habit, others which are social, growing together in great banks, and forming what are called "coral-reefs." The latter are mentioned within that compo-

dry surface some of the earth's surface which lies between the latitudes of 30°, or, in other words, they do not extend for more than about 30° on either side of the equator. It is not conditions of temperature alone, however, which limit their distribution; for within this zone the reef-limestones are not found alive at a greater depth than from fifteen to twenty fathoms, while at the equator an average temperature of 68° is not reached within a depth of 100 fathoms.

Not only heat, then, but light, and probably rapid and efficient aeration, are essential conditions for the activity of the reef-building *Artemesia*. But, even within the coral zone, the distribution of these corals appears to be singularly capricious. Some are found on the west coast of Africa, very few on the east coast of South America, none on the west coast of North America; while in the Indian Ocean, the Pacific, and the Caribbean Sea, they cover thousands of square miles. It is by no means certain, however, that any one species of West India coral is identical with any East India species, and the corals of the central Pacific again differ very considerably from those of the Indian Ocean.

Different species of Corals exhibit great differences as to the rapidity of their growth, and the depth at which they flourish best; and we may want to take as evidence for or against in these respects. Certain species of *Favosites*, *Stenopora*, and *Porites*, appear to be at once the fastest growers, and those which delight in the shallowest waters. The *Strobilites* among the *Agaricæ*, and *Serpentaria* among the *Tubulites*, live at greater depths, and are probably slower of growth.

Under the peculiar conditions of existence which have just been described, it would seem easy enough to comprehend, at a glance, the necessary arrangement of coral reefs. As the reef-building *Artemesia* cannot live at greater depths than twenty fathoms, or thereabouts, it is clear that no reef can be originally formed at a greater depth, below the surface, and such a depth usually implies no very great distance from land. Furthermore, we should expect that the growth of the coral would fill up all the space between the shore and this furthest limit of its growth; so that the shores of all land in coral seas would be fringed by a sort of flat terrace of coral, covered, at most, by a very few feet of water; that this terrace would extend out until the shelving land upon which it had grown was covered by a depth of some twenty fathoms of sea, and that there it would suddenly end in a steep wall, whose top and upper parts would be crowned with overhanging ledges of living coral, while its base would be hidden by a mass of dead fragments, torn off and accumulated by the waves. Such a "fringing reef" as this, in fact, surrounds the island of the Hawaiian. The beach here does not gradually shallow down into the depths of the sea, but passes into a flat, irregular bank, covered by a few feet of water, and terminating at a greater or less distance from the shore by a ridge, over which the sea constantly breaks, and whose upward face slopes at once sheer down into fifteen or twenty fathoms of water.

deeper still we find all living coral ceases; the land bringing up either dead branches or showing the existence of a flat, gently sloping floor, the base sea bottom, covered with fine coral-sand and mud. Passing from the edge of the reef landwards, the *Porites* cease, and are replaced by a ridge of accumulated dead branches and sand, coated with *Stellipora*; the floor of the shallow basin, or lagoon, is formed by a mass of conglomerate, composed of fragments of coral removed by waves; and on this mass of *Stellipora* and *Porites* rest and flourish, exhibiting the most gayest coloration, and sometimes attaining a great size. In some, masses of coral are heaped on to the terrace of the reef, and these gradually increase the mass of rocky conglomerate; but by no other way can a fringing reef, which has never attained its limit in depth, be said to increase in size, unless, indeed, the waves accumulating at the foot of its outer wall should raise the sufficiently high to afford a footing for the corals within their prescribed limits of depth.

Such is the structure of a fringing reef; but the great majority of reefs in the Pacific are very different in their character. Along the north-western coasts of New Holland, for instance, a vast mass of rock runs at a distance varying from a hundred to ten miles from the shore; and forming a mighty wall or barrier against the waves of the Pacific. At a few hundred yards outside this barrier reef no bottom can be obtained with a sounding line of a thousand fathoms; between the reef and the main land, on the contrary, the sea is hardly ever more than thirty fathoms deep. Many of the islands of the Pacific, again, are encircled with reefs corresponding exactly in their character with the barrier reef; appeared, that is, by a corresponding shallow channel from the land, but facing the sea with an almost perpendicular wall sloping down into an enormous depth.

Finally, in many cases, especially among the single reefs which, taken together, constitute the great Australian barrier, there is no trace of any central island; but a great circular reef, usually having an opening on its leeward side, stands out in the midst of the sea. These reefs, apparently unconnected with other land, are what are called *Atolls*.

How have these barrier reefs, and encircling reefs, and *atolls* been formed? It is certain, that the habitations of these reefs cannot live at a greater depth than in the fringing reefs. How can they have grown, up there from one thousand fathoms or more? Why do they take so generally the circular form? What is the connection, finally, between fringing reefs and *atolls*? The only thoroughly satisfactory answer to these questions has been given by our distinguished countryman, Mr. Darwin, from whose beautiful work on *Coral Reefs* I have already borrowed most of the foregoing details. Consider for a moment what would be the effect of a slow and gradual subsidence of the island of *Hawaii*—a subsidence, perhaps, of a few feet in a century (at any rate, not greater than the rate of upward growth of coral) continued for age after age. As the edge of the fringing reef sank, new coral would grow up from it to the surface; and, as the most active and important of the reef builders flourish best in the very reef of the breakers, so the margin of the reef would grow faster than its inner portion, and the discrepancy would increase as the latter, sinking deeper and deeper, became further removed from the region of active growth. Nevertheless, the sea bottom within the reef would tend constantly to be raised by the accumulation of fragments and by the deposit of fine sand, in its sheltered and comparatively dead waters. On the other hand, on the outward face of the reef, no positive elevation could take place by direct growth, and that by accretion must be exceedingly slow; the incessant wash of tides, waves, and currents tending constantly to spread any talus over a wider and wider area.

Thus, then, the edge of the reef necessarily compensates itself for the depression which it undergoes, while, inside the reef, only a partial compensation takes place, and we might hardly say at all. Continue the sinking process until "Peter Pan" was but a few hundred feet above the surface, and all that would be left of *Hawaii* would be an island surrounded by an encircling reef; every on the depression further still, and a circular reef or *atoll* alone would remain. But the region of the coral reef is, for the most part, that of constant winds. During the whole process of growth of the reef, therefore, one of its sides—that is windward—has been exposed to more wind than that to leeward. Not only will the greater quantity of debris, therefore, have been heaped up by means

FIG. 4.

FIG. 5.



Diagrams representing Fig. 4 (a fringing reef) and Fig. 5 (a barrier reef). Fig. 4 shows a central island (A) and a shallow lagoon (B) with a fringing reef (C). Fig. 5 shows a wide lagoon (D) and a steep outer wall (E) with a barrier reef (F). Below these are two cross-sectional diagrams showing the internal structure of the reefs, including the reef flat, the reef wall, and the lagoon floor.

If we examine the structure of this reef it will be found to vary at different distances from the land and at different depths in its seaward face. The edge border by the reef will be found to be composed of living masses of *Porites* and of the coralline plant, the *Stellipora*; deeper than this is a mass of *Agaricæ* (*Artemesia*), and *Tubulites* (*Serpentaria*); and

upon the windward side, but the coral builders themselves will have been better fed, better housed, and consequently more active. Hence it is that when things being alike, there is a probability that the leeward side of the reef will grow more slowly, and make any damage less easily than the windward side; and hence, again, as a result, she knows that, that the probability channels of entrance into including reefs or shoals are usually to leeward.

That the earth's crust does slowly undergo changes of level over great areas, in the way required for Mr. Darwin's hypothesis, is a fact familiar to every geologist, and strong evidence that the level has been changed near the particular spot in which existing harbor-cools and straits are found, is brought forward in Mr. Darwin's work—a book which will repay your most careful study, if only as a striking example of the manner in which Geology and Natural History may be made to elucidate one another.

The winds and waves are singularly aided in grinding down the corals into sand and fragments by the stars and their larvae which bore the truth; the waves leaping upon the fringing Actinonera, with their hard and parrot-like jaws, and passing a fine strainer into its teeth's meshes; the latter more probably, swallowing only the smaller fragments and sand, and being attracted from these such nourishment as they may contain, casting out a similar product. It is curious to reflect upon the similarity of action of these worm-like Herbivora upon these sea-measures of coral, to that which the Earthworms, as Darwin has shown, exert upon our land meadows!

In the Palseozoic period, more particularly during the ages in which the carboniferous limestone was deposited, corals like those which have just been described appear to have abounded in our own hemisphere; and there is the most striking superficial resemblance between the masses of coral limestone found enough to sink with a hammer, which are now being formed in the Pacific, by the processes of accumulation of sand and fragments, and their consolidation, by percolating water, and the natural beds of stone which lie at the bottom of the Carboniferous veins. Close examination, however, shows an important difference in the nature of the corals which compose the two corals. The modern limestones are made up of *Porphyra*, *Filicina*, and *Asperites*. The first of these contain *Filicina*, but usually neither *Porphyra* nor *Asperites*,—both these groups being replaced by the *Jaspina*, some of whose members (with a doubtful exception) have survived the palaeozoic period. On the other hand, *Palaeopora* and *Phylloporites* (if these are the only genera belonging to the *Asperites* or *Porphyra*, which have yet been discovered in strata below the tertiary. Here, then, is an almost complete replacement of one great group of animal life by another; but the highest progressive would hardly venture to assert that the *Jaspina* are inferior in organization to the *Palaeopora* and *Porphyra*.

CLASSIFICATION OF THE ACTINOZOA.

- Siphia*, etc. = 4 or 5. *Siphia*, etc. = 4.
- Single—*Siphia*—*Isidaria*.
- | | |
|---|---|
| 1. <i>ACTINERA</i> ,
Isidaria, <i>Milnes</i> . | 1. <i>RECORVA</i> ,
<i>Ophiops</i> , <i>Cordia</i> . |
| Compound— <i>Milnes</i> — <i>Siphia</i> . | |
| 2. <i>RECORVA</i> ,
<i>Siphia</i> . | 1. <i>ALICOZOA</i> ,
<i>Aliposium</i> . |
| Compound— <i>Milnes</i> — <i>Siphia</i> . | |
| 3. <i>ACTINERELLA</i> ,
<i>Asiphia</i> . | 2. <i>COSCINOZOA</i> ,
<i>Coscinis</i> , <i>Isid. Cordata</i> . |
| Compound and single— <i>Milnes</i> — <i>Isid.</i> , <i>Asiphia</i> . | |
| 4. <i>PARACORDIA</i> ,
<i>Paris</i> , <i>Malpighia</i> . | 5. <i>TRICORDIA</i> ,
<i>Talipora</i> . |
| 5. <i>TERRALEA</i> ,
<i>Milnesia</i> , <i>Siphonopora</i> . | 6. <i>RECORVA</i> ,
<i>Milnesia</i> , <i>Ophiopora</i> ,
<i>Ophiopora</i> ,
<i>Ophiopora</i> . |
| 7. <i>ACTINURA</i> ,
<i>Ophiops</i> , <i>Ophiops</i> ,
<i>Asteris</i> , <i>Siphia</i> . | |

FIG. 1.

This cut was accidentally omitted in the last Lecture.



Diagrams illustrating the various stages of development of a Mollusc. 1. Dorsal view of the adult. 2. Trochophore larva. 3. Veliger larva. 4. Trochophore larva. 5. Veliger larva. 6. Trochophore larva. 7. Veliger larva. 8. Trochophore larva. 9. Veliger larva. 10. Trochophore larva. 11. Veliger larva. 12. Head and foot. 13. Head and foot. 14. Head and foot. 15. Head and foot. 16. Head and foot. 17. Head and foot. 18. Head and foot. 19. Head and foot. 20. Head and foot. 21. Head and foot. 22. Head and foot.

Sketches in Lecture III.—Fig. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

ORIGINAL COMMUNICATIONS.

JERSEY HOSPITAL REPORTS.

EXTENSIVE GAMES OF THE LEFT TIBIA—ALSO OF THE UPPER THIRD OF FIBULA—DISLOCATION OF THE HEADS OF BOTH BONES BACKWARDS—RESECTION OF THE KNEE-JOINT, ETC.—RECOVERY, WITH THE PERFECT USE OF THE LIMB.

By G. M. FONES, Surgeon.

DEBUT the following case presents features of more interest than any of those in which I have performed the operation of excision of the knee-joint, or in those resorted to by others, which have come to my knowledge, I should now readily state that I had again performed this operation, together with the results, for it appears to me that it is only by reflecting cases, whether favourable or otherwise, that we are enabled to arrive at a just conclusion respecting the merits or demerits of an operation.

I am willing to confess that the extensive nature of the tibial and the disorganized condition of the knee, would have de-

(d) I find some writers to express my dissent from the view which Professor King has lately taken of this nervous system. I hope to take an early opportunity of expressing my dissent in a paper on the truly networked nature, when translated by some more clear.

the subject of congenital phlycten. Cause of the pearly had existed eighteen months, and was very extensive. Amputation of the organ high up. Recovery.

OPERATIONS FOR NEURUS.

In two cases, one under the care of Mr. Lawrence, and the other under that of Mr. Cook, cases of very large size have been treated by the injection of the paravertebral vein. In both patients has been obtained, but the case is not illustrative. In six others the more usual procedure by ligature have been adopted.

TRACHEOTOMY AND LARYNGOTOMY.

Case 1.—University College: Mr. Robbins.—A man, aged 45. Laryngotomy was performed, on account of chronic epiglottic disease of the larynx threatening asphyxiation. Recovery. Case 2.—The Hospital for Sick Children.—A boy, aged 4 years, was admitted, on March 29, with croup. The symptoms were reported to have commenced three days previous to admission. Tracheotomy was performed by Mr. Walter Clipperton, the House-Surgeon, on the 21st. The case progressed favourably up to the thirteenth day, when the child became suddenly depressed, and sank in a few hours. The tube had been finally removed on the sixth day. On post mortem examination, the opening into the trachea was found to have cicatrized from the second plug to within an inch of its bifurcation, measuring an inch and a-half in length. The interior of the larynx was coated with an imperfect and very thin layer of epithelium and easily detached fibrinous membrane. Case 3.—King's: Mr. Callaway.—A man, aged 35.—Malignant disease of the larynx and trachea of five months' duration. Repeated attacks of epiglottic dysphagia had threatened asphyxiation, and during one of these laryngotomy was performed. The relief afforded by the operation was complete, but death from tubercular pneumonia followed forty-eight hours afterwards. The tube had been retained the whole time. The autopsy showed evidence of tubercular pneumonia and pleurisy. About four inches below where the operation had been performed was an opening communicating with the emphysemata.

RESECTION OF THE CERVIX UTERI.

The Metropolitan Free: Mr. Woodhouse.—A woman, aged 47, straggled and pale, was admitted on account of uterine symptoms. A polypoid mass, about two inches long, was found to grow by a broad base from the os uteri. It had occasioned much bleeding at times, and was believed to have been growing for about six months. It was of soft structure, and very easily came away into the polypus sinings. It was removed by fragmenting growths, the sloughed surface being about the size of a penny piece. Examination with the microscope confirmed the opinion that it was of cancerous nature; and, as no secondary tumours could be found, and the body of the uterus itself appeared healthy, it was determined to excise the diseased part. This was done; the operation removing the anterior lip high up, and leaving almost the whole of the posterior. The total cavity was applied immediately afterwards to arrest hæmorrhage, and the vagina was plugged with sponge. Some coagula of blood continued during about three hours, but it was not excessive. The parts healed well, and in about a fortnight the patient was able to leave her bed. At the present time (two months after the operation), the parts remain soundly cicatrized, and there are no indications of return of the disease.

REMOVAL OF LOOSE CARTILAGE FROM THE KNEE-JOINT.

Guy's: Mr. Hackett.—A man, aged 22, had suffered for some months from a small loose cartilage in the right knee-joint. On April 1, Mr. Hickey operated by the subcutaneous incision, intending to bring the cartilage into the cellular tissue external to the joint. Failing in this, stripping was applied to reduce the body to the plane it occupied in the upper and internal cul-de-sac. On the 21st a direct incision was made over it, and it was removed. No outward symptoms followed, and the man is now well.

REMOVAL OF THE EYE BALL.

Case 1.—St. George's: Mr. Pilleck.—A woman, aged 25, in good health; but for thirteen years the subject of disease of the eyeball, which had assumed the character of melanosis. Covered the globe. Recovery. Case 2.—The Metropol-

itan Free: Mr. Forbes Childs.—A boy, aged 14, for six months the subject of a cancerous growth involving the cellular tissue of the orbit. The disease had followed a slow. An enormous fungating mass had protruded from the upper part of the orbit, and the eye had been pushed down and was destroyed. The boy was emaciated and pale to a degree. Excision of the whole and of the entire contents of the orbit was performed. He recovered well, and remarkably regained his health; but, within three weeks of the operation, there were signs of returning disease, and at the present time (three months) the mass is almost as large as at first. The removal of the globe being delayed, no further operation is proposed.

PLASTIC OPERATIONS.

In three cases operations have been performed for the mitigation of diarrhoea consequent on the absorption of barium, and in all three is prominent a case of benefit. In two, barium has been successfully operated on. Case 1.—St. George's: Mr. Johnson.—A girl, aged 15. Fissure of the soft, and of part of the hard palate. Staphyloplasty. No union was obtained, and it is proposed shortly to repeat the operation. Case 2.—St. George's: Mr. Pilleck.—A woman, aged 21. Fissure of the soft palate only. Two operations were performed, and complete union obtained. Case 3.—The London: Mr. Lake.—A woman, of middle-age, under care on account of a vesico-vaginal fistula of considerable size. The edges were pared, and united by three sutures. Perfect closure followed, but, from the retention of the menses, the woman now suffers from incontinence of urine. Case 4.—St. George's: Mr. Pilleck.—A woman, aged 28, the subject of an incurable vesico-vaginal fistula, in which several operations had been performed without success. It having been determined to attempt to close the vagina below the level of the apparatus, and thus allow the upper part of the vagina and the bladder to continue as usual receptacles, the first step in the procedure has been the dissecting away of a fold of mucous membrane from the vagina. Further operations will be necessary.

OPERATIONS FOR ARTIFICIAL ANUS.

The London: Mr. Lake.—A man, aged 58, who had suffered from constipation of the bowels for eighteen days, and had all the symptoms of malignant stricture of the lower bowel. An artificial anus, a little above the left groin having been made, the Sigmoid was introduced. During manipulation a part of the gut, which was distended and much softened, gave way, and lacerated. Extensive adhesions prevented any attempt from being made to draw the torn bowel into the wound. Death took place next day, and at the autopsy a cancerous stricture of the sigmoid flexure was found, the mucosa being drawn over and united by old adhesions to the diseased part. The latter bowel was very soft, from long distension, and was the part which had given way in the operation.

Medical Times & Gazette.

SATURDAY, JUNE 11.

THE GOVERNMENT MEDICAL REFORM BILL.

ON this day place before our readers the New Medical Reform Bill, as amended by the Select Committee of the House of Commons. This is, no doubt, the last Medical Reform Bill of which we shall hear during the present Session, and if this Bill should break down, we know not how any other can have a chance of success.

It will be seen that the Bill provides for the appointment of a Medical Council, to be chosen by the Crown; the institution of a Preliminary Examination for all those who are entering upon the Study of Medicine; the establishment in each division of the Kingdom of a Board of Preliminary Examiners, to be chosen by the Colleges of Physicians and Surgeons and the Universities, and, for ten years, by the Society of Apothecaries.

series of London and the Apothecaries' Hall of Dublin; the Registration of all licensed Practitioners; the power to remove just claims by those who are registered; and the punishment of those who feign to possess any Medical title. Those who pass the Preliminary and the Professional Examination will be entitled Licentiates in Medicine, and will form a class analogous to the General Practitioners under the present conventional arrangements; but those who aspire to the rank of Physiologists Surgeons, must pass the examinations of the respective Colleges of Physicians or Surgeons in England, Scotland, or Ireland.

Such, among a multiplicity of details, are the chief features of the new Medical Reform Bill, which must have cost its framers an infinity of labour in the attempt to reconcile the conflicting interests of the different corporations.

It is but right to state, that already the College of Physicians of London and the College of Surgeons of England intend to oppose the progress of the Bill by every means in their power. These Colleges conceive that their functions will be annihilated if the Bill becomes law; and that the Practitioners of Medicine, content with passing the Examinations prescribed by the Medical Council, will cease to aspire to the honours conferred by the two Colleges. We do not believe that such is the intention of those who framed the Bill, nor do we ourselves fear any such result. If the abolition of the time-honoured College of Physicians were aimed at by the Bill, or if the magnificent College in Lincoln's-inn Fields were threatened with extinction, there is no doubt that the whole voice of the Profession would be raised in opposition to the passing of the measure; but we cannot help expressing our belief that by some modification in the language of the Bill, not only might such an objection be removed, but the Colleges might be made to occupy a still higher ground in the opinion of the Profession than that which they have already attained. We have spoken so distinctly on former occasions upon the necessity of maintaining the rights and privileges and the true dignity of the Colleges, that we need here only repeat our wish and our hope, that whatever changes may be effected in Medical Legislation, those corporations may be regarded with esteem and gratitude for the services they have rendered, and may continue to flourish and to prosper so long as Medical and Surgical science shall be cultivated in the British dominions.

POISONING BY STRYCHNIA.

Now that the chief actor in the Ragby tragedy has been assigned to his doom, it is perfectly competent for us to offer some observations upon the nature and properties of Strychnia, as a poison, and upon the means of its detection. Until the revelation of the facts at the late investigation, we were not aware that Strychnia had been frequently, or, indeed, ever, known as an agent of intentional poisoning, except in some suicidal cases; and as the master of Cook has already been the means, as it is alleged, of causing another murder by the same poison, it is of paramount importance to the safety of society that the properties of this fatal agent should be thoroughly understood by the Medical jurist, with a view to the prompt detection and punishment of heinous crimes. We shall endeavour in the present article to point out briefly the facts which are known in relation to the chemical and physiological properties of Strychnia; and also to indicate the points which appear to us to be worthy of further examination.

Strychnia is an organic substance, belonging to the class of alkaloids, crystallizing in prisms, of an intensely bitter taste, and very slightly soluble in water. The taste by which it is distinguished are rather numerous, but very little reliance can be placed upon any of them when the quantity is small

or when the poison is mixed with other matters. By the most distinct and characteristic test is the action of sulphuric acid and tannic acid of potash, which together give with strychnia a series of beautiful brilliant colours. Dr. Letheby has also stated that the same effect may be produced by putting a little strychnia with sulphuric acid on a piece of platinum foil, connecting the foil with the positive pole of a galvanic battery, and then touching the foil with the negative pole, which terminates in a piece of platinum wire. The production of colour in both cases, appears first, as Dr. Letheby observes, to the action of nascent oxygen. We may at once state, that when the strychnia is in mass, these tests are very satisfactory, and liable to little fallacy.

The physiological action of strychnia is very characteristic, and is remarkably uniform in all cases. It is generally admitted that it acts as a spinal irritant, although it may, perhaps, be a question whether it does not also act upon the heart. It is certain that it causes violent contractions of the voluntary muscles, but without affecting the consciousness, which remains perfect throughout; and it is supposed to cause death by excessive rigidity of the muscles of respiration. The symptoms produced by strychnia very much resemble those caused by tetanus, but it would be a serious mistake to confound tetanus with poisoning by strychnia. Putting tetanus out of the question, and discarding also the hysterical forms of the disease, and after cases which may be inaccurately recorded in this Journal) be dependent upon worms or other parasitic causes, we apprehend that there can be little difficulty in distinguishing a case of tetanic tetanus—which, it must be remembered is a rare disease—from the kind of poisoning to which we now allude. In tetanic tetanus, the symptoms come on gradually, increase in severity, and last for a considerable period, perhaps for two or three days; whereas, in strychnia poisoning, the symptoms come on suddenly, and terminate in recovery or death in a very short period, perhaps from a quarter of an hour to an hour. We apprehend that there are very few Medical men in their senses, and possessed of a competent knowledge of pathology, who will not readily admit that the symptoms described in Cook's case were entirely consistent with poisoning by strychnia, even if they were not positively pathognomonic of that form of affliction.

The above remarks may be said to comprise only the truths connected with strychnia as a poison; but some questions still remain for discussion, on which the data are not so certain. As we are now about to break new ground, we shall proceed with caution, and rather indicate the path to be followed, than offer, at present, any decided opinions of our own.

In the first place, we may remark that a very considerable difference appears to exist in the mode of absorption observed, as to the condition of the strychnia after it has left the stomach. The opinion generally entertained is, that strychnia being an organic poison, undergoes decomposition after absorption from the alimentary canal; but some have recently asserted, that it is as unchanged as arsenic or antimony; and that, if it has once been swallowed, it may be detected in all the tissues at any period after death. This very striking assertion of course requires confirmation; and, whenever experiments may be made upon the subject, we have a right to demand that the most rigid proof shall be given that they are performed with the most scrupulous care, and with the avoidance of every possible source of fallacy.

We are assured that a single grain of strychnia, taken into the system, may perform its fatal office, may be absorbed into the blood, may be carried by the current of the blood into the whole of the body, and in every part of the frame may be developed as strychnia in the crystalline form. This view, applying to minute quantities, is entirely new, and before we admit it, we are justified in demanding the most unexceptionable evidence

of its track. The experiments should be made, not by one individual, but by several; not by persons predisposed to find certain evidences of colour or excretion, but also by persons who are sceptical upon those points; not upon bodies of animals placed under the most favourable circumstances, but upon those which are purposely placed under the most unfavourable conditions; not upon animals which have been made to swallow a definite dose of a known poison, but upon animals which have been made to swallow different doses of different poisons, or which have swallowed no poison at all; not upon animals killed immediately after the experiment, but upon those which are permitted to live for some time after the ingestion of the poison, and in which it might have been changed or eliminated.

Again, it is established, that of the materials taken into the system, whether nutritive, medicinal, or poisonous, many are eliminated by the urine and the sweat; and yet it is asserted that the poison may be discovered in the tissues many months after its administration. It is also known that many poisons accumulate more in certain organs than in others, and yet it is asserted that they may be detected equally in all parts of the body.

In case of an overdose of strychnin, it would be interesting to ascertain, whether a certain portion only (just enough to cause death) enters into the system while the rest remains unchanged, or whether the whole is absorbed; for if only a minimum quantity, say a grain, were absorbed into the whole human body, (weighing, perhaps, 150 lbs.), then, according to the new views, this grain must be equally diffused over about a million and fifty thousand grains. The case is very different when a small animal, say a rabbit, weighing two pounds, is poisoned with two grains of strychnin. In here the poison is present in a most concentrated form, and may readily be traced.

We have already expressed our scepticism, as to these new views, but we are open to conviction. Like Huxley, "we pause for a reply."

THE WEEK.

At the last interview between Palmer and his solicitor, Mr. Smith, the former made a request that the body of Cook should be exhumed, and a promise was made that the exhumation should take place. It appears to be forgotten that the body was exhumed on the 11th of January last, when the notice was given to Mr. Smith, who sent two Medical men to be present, and who, it is said, had previously consulted Chemists on the matter. It was then known that strychnin had not been found, and any post, or the whole of Cook's body might have been taken away for analysis by the witnesses for the defence. It is certainly extraordinary that Mr. Smith, with a full knowledge of the nature of the charge, and with a full conviction of Palmer's innocence, which he seems to have shared with Benjamin Drew and one or two others, did not at once, last January, submit Cook's body to the searching analytical investigations of Mr. Harewood and Dr. Leathley. If those Chemists had failed to detect strychnin, it might have tended to strengthen Mr. Smith in his belief of his client's innocence, and might indeed have produced more effect with the jury than the mere theoretical evidence given by those gentlemen without any practical acquaintance with the facts of the case.

The answer claimed by Sir John Trevelyan's question to Mr. Bouverie upon the subject of Medical Relief to the Poor has not disappointed us, and we are not prepared to censure the Poor-Law Board for its apparent indisposition to assist the Poor-Law Managers. Mr. Bouverie stated very truly

that one main point had been gained in making the Poor-Law Medical appointments permanent instead of temporary; but he declined to interfere between the Guardians and the Medical Officers on the subject of increasing the salaries, although he alluded to the fact, that an increase amounting to £18,000 or £17,000 had lately been offered. In fact, on this matter, the Medical Profession must help itself; and, although we shall always most cordially advocate the necessity of remunerating the members of our Profession in an adequate manner, yet what can be done by the Poor, or the Poor-Law Board, or the House of Commons, when the members of the Profession themselves set down their own services at the lowest possible figure? Let Medical men insist upon a just reward for their services, and there can be no doubt they will succeed in obtaining it.

A most painful excitement has been caused in the Profession, by the prosecution, at the instance of the Committee of Lunacy, of Mr. Snags, the respected Medical Superintendent of the male department of the Surrey County Lunatic Asylum, for the alleged murder of a pauper inmate, by causing him to be placed in a shower bath. It appears that the deceased was a voluntary patient, and subject to fits of excitement, for which it was deemed occasionally necessary to order the shower bath, and small doses of tartar emetic,—a plan of treatment, in ordinary cases, to which we can see no objection; but which, on the contrary, we believe to be generally advantageous. On a particular occasion, however, the poor man in question was ordered into the shower-bath, and was pumped upon for the space of twenty-eight minutes, and after his removal from the bath, he died. A post-mortem examination was made, and it is said that some disease was discovered about the heart; but upon this point, the evidence is at present very vague. An anonymous letter on the subject was addressed to the Commissioners in Lunacy, and they investigated the matter, and the conclusion at which they arrived was, to send the case for adjudication before a magistrate, as a preliminary step to a criminal trial. We must again express our very great regret that this event has occurred; it is not alleged that Mr. Snags acted from excitement on this or any other occasion; but it is known, on the contrary, that he is a mild, kind, and humane man; and, without any wish to prejudge the case, we must regard it as one of those unfortunate mishaps which will occasionally befall any officer in what he conceives to be the proper execution of his duty.

A very unamiable squabble between two members of our Profession has lately occupied the attention of the Law Courts at Westminster. Mr. Barken, brings an action for words against Mr. Kew, and obtains a verdict, with £10 damages; and Mr. Kew brings an action against Mr. Barken in another Court, and obtains the damages for a libel on his Professional character. The libel complained of was published in the columns of a Medical contemporary, and was answered in the same paper; but the combatants, not satisfied with contending in a literary arena, have resorted to the Law; and we fear that the result will be, as is usual in such cases, that the lawyers will be the only gainers. We very much regret that gentlemen of our Profession should be dragged before the public on account of polemics and quarrels which ought never to have had any existence, or which might, under the exercise of forbearance and concession, have been arranged by the agency of mutual friends. The money expended every year upon Law might have been much better bestowed upon the Medical Benevolent Fund, or the Medical Students' College, or the Widows' and Orphans' Fund, or any other of our Medical charities; and probably, before long, both plaintiff and defendant will be of this opinion.

The late case of suicide of a female at the Agapeum, or "Abode of Love," is only another evidence that the State is not watchful enough over the harmful influences that are exercised upon society by designing men. In the case of the Agapeum, advantage is taken of religious convictions to secure dues, the weak point of the victim is worked upon, either to obtain present donations, or, a will having been made (as previously known) in favour of the loved one or his managers, the mind is perverted although billions stave of human nature as to drive the victim to despair on religious topics, and ultimately to produce a confirmed monomaniac. Suicide comes next, and the realisation of a handsome legacy or residuary estate by the Agapeum concludes the scene. It appears that in the instance before us, the "Abode" had already realised to the extent of £1700 out of the name of this lady's sister; and whether anything is to follow upon her death remains to be seen. Evident is, that in the "Abode of Love," she had been driven to despair and to her own murder; and we are persuaded that a most rigid and searching investigation is needed into the affairs of this institution, to protect society from fraud and true crime, from delusion.

REVIEWS.

History of Medicine, from the Origins in the Prehistoric Century, to the Age of Asclepius, comprising a Philosophical and Historical Review of Medicine in the present time. By P. V. BARRON, M.D. Translated from the French by GEORGE W. G. CHAMBERLAIN, M.D., Professor of the Institute of Medicine, Miami Medical College, London, 1895. Pp. 126.

THE work before us is highly creditable to the Medical Profession in America; for although there is the name of a London publisher on the title-page, the paper, and print, and authorship, are American. It is a work which is greatly needed, if that need is to be estimated by the absence of any similar modern work, in my language, and by the fact that some such work ought to form a part of every extended and liberal course of Medical education.

But what, it may be asked, is the use of reviewing the history of ancient systems* of theories that now are ridiculous, and of modes of practice cumbersome and violent, or expeditious and ineffectual?

The reason, courteous reader, is, that no matter how much theory and practice may vary from age to age, human nature is the same; and the most palpable errors and absurdities into which Physicians of every age have been betrayed, have arisen, not so much from the imperfections of an act occasionally imperfect and occasionally changing, as from certain imperfections inherent in human nature, which exist now in as full force as they have existed always, and which require constantly to be pointed out and combated.

Of course, every Physician, now-a-days, professes to hold Theory and Observation each in its proper place. Every experimentalist, or Empiric, (using the word in its original and honourable sense,) calls himself a Rational Empiric; and every Theoretic proclaims himself that his theory rests upon a solid basis of fact, sustained by observation and experiment. How rarely facts and experiments are sometimes pretended to accommodate them to various theories, it is not our present object to say. But we do affirm, that we meet daily with instances, and palpable ones too, in which the respective pretences of Reason and of Experience are most ridiculously transposed; the absurdity being enhanced by the entire simplicity and bona fide, the entire unambiguity of the Murder on the part of those who commit it.

Let us take the first example that strikes us. Dr. A is discussing the value of certain remedies in urticaria disease; and concludes by saying, that "he is, at a perfect loss to comprehend the principle upon which tradition of the ancient can be beneficial in dysenteries."

Of course Dr. A. overlooks the palpable identity of this kind of argument with that which is alleged to have occupied the Royal Society when King Charles the Second (of pious memory) met them the 6th. The question to be determined

first is, does tradition of this or that cure, or does it not? and when the fact is settled, it is quite time to discuss the principle. As it is, Dr. A's statement simply proves that he does not understand a thing. The right answer to which is—as much the worse for Dr. A!

Dr. B. tells us, that he cannot see how sulphate could ever be a remedy for diarrhoea. Dr. C. tells us that if sulphate and some diuretics, it must be because it acts as a purgative. Dr. D. cannot agree in the use of minute doses of iodine in cholera, because it may irritate the stomach. Need we, courteous reader, give additional instances of this mode of reasoning, or rather of want of reasoning? of arguing *quia* simply into alleged matter of fact, because those alleged facts do not square with some hypothesis which pre-occupies the mind?

On the other hand, there is the less accused, because less creditable but still common custom, of setting medical doctrine on theory (in plain English, all the use of the collective faculties) in favour of a course and unaided experience, or in favour of that kind of instinct, valuable as it is, which is known by the name of tact and general experience.

It is to combat views such as these, and more particularly errors of the former class, that the great and comprehensive work of Dr. Beaumont is devoted. He seeks to recover observation guided by reflection, and to Theophrastus, the lessons of providence which are now often recorded to theoretical systems based upon an imperfect physiology; and to make thoroughly observed matter of fact, the one thing to be aimed at in Medicine.

If we could afford the space, we should be delighted to follow our author in his account of medical practice and theory from the earliest ages; and to show with him, how Medicine has been reduced, ever and anon, from her sacred and dignified path of observation, by the harkings of prevalent systems of philosophy lately so called. In the rising generation of Physicians, this book may be like the history of the Church of Geneva. On the one side, there is the reduction of speculative philosophy, with its short and pleasant road to knowledge; on the other, there is experimental observation, dark, rugged, and laborious. There can be no doubt as to the right path; and whether Physicians take the right or the wrong is a question very momentous to humanity at large.

A Practical Treatise on Stammering, its Pathology, Predisposing, Exciting, and Proximate Causes, and its most successful mode of Cure, Scientifically Explained, with Accounts of the principles which should guide the Practitioner in the Treatment of all purely Nervous Diseases. By J. H. AUSTIN FOSTER, M.D. Pp. 58. London, 1898.

THE view taken by Dr. Foster of stammering is, that it is caused by an irregular action of the nervous system, and consists "in a convulsive effect of the organs of speech to pronounce a syllable or a word." The best method of cure is to subject the mind of the stammerer to strict discipline, and to teach him to pronounce words in a regular, though unnecessary and drawing manner. We know no limit to deal with either the theory or practice of Dr. Foster in this respect, though it strikes us that we have heard the same views pronounced before; but we must express our regret that he has published his pamphlet in its present form, for it demands in every kind, his physiology and pathology are far behind the knowledge of the present day, and even his composition and punctuation are generally defective.

PROGRESS OF MEDICAL SCIENCE.

Articles from Foreign Journals.

INFLUENCE OF LIGHT ON THE EXHALATION OF CARBONIC ACID.

By Professor HOLMGREN.

In this paper Professor Holmgren details several series of interesting experiments he has performed upon the human subject. Our English space prevents our reproducing his numerous tables, but we may state the chief results. He refers to former papers for an account of the mode he adopted for determining the amount of expired acid, and the manner

constitute or provide for constituting every member of the Corporation of the Faculty of Physicians and Surgeons of Glasgow a member either of such College of Physicians of Scotland or of such College of Surgeons of Scotland, with the same rights, privileges, and advantages as shall be given to members of the said College of Physicians and Surgeons of Edinburgh respectively; and it shall be lawful for the said Colleges and Faculty respectively, under their respective common seals, to accept such new charters, and such acceptance shall operate as a surrender of all charters heretofore granted to the said several Corporations, and thereafter the Members who would have been appointed from time to time under this Act by the Faculty of Physicians and Surgeons of Glasgow shall be appointed in equal proportions by the said College of Physicians of Scotland and College of Surgeons of Scotland.

XIX. Provided always, that nothing herein contained shall extend to authorize Her Majesty to create any restriction in the practice of Physic or Surgery, or to grant to any of the said Corporations any powers or privileges contrary to the common law of the land, or to the provisions of this Act, and that no such new charter shall in any wise prejudice, affect, or amend any of the existing charters or by-laws of the Corporations, in which the same shall be granted further than shall be necessary for giving full effect to the alterations which shall be intended to be effected by such new charters, and by this Act in the constitution of such Corporation.

XX. The President of the Board of Health shall from time to time appoint from among persons qualified to be registered under this Act, a Medical Registrar for the United Kingdom, and one Assistant Medical Registrar for Scotland, and one Assistant Medical Registrar for Ireland, and also shall appoint a Treasurer, and such clerks and other officers as the said President of the Board of Health may deem necessary, and may from time to time remove any Registrar or other person so appointed; and the salaries of the said Registrar, Assistant Registrar, clerks, and other officers shall be fixed from time to time by the said President of the Board of Health, with the approval of the Commissioners of His Majesty's Treasury, and shall be paid, together with all reasonable expenses incurred by the Medical Registrar in the execution of his duties under this Act, out of any moneys which may from time to time be provided by Parliament for that purpose.

XXI. The said Registrar shall keep a general register of Medical Practitioners, in which shall be entered the names and places of residence and date of registration of every registered person, and the qualification or qualifications in respect whereof he is registered; the name and situation of the hospital, University, or College, from which the qualification is derived; and such other particulars in relation to such qualification or qualifications as the Council by their rules shall from time to time direct; and upon notice being given by any registered person of any change in his name and designation or place of residence, the said Registrar shall amend the register accordingly.

XXII. Every person who before the 1st day of December 1858 is possessed of any one or more of the qualifications described in the Schedule (B.) shall be entitled to be registered according to his qualification or qualifications, on producing, before the 1st day of January, 1859, to the Medical Registrar, or to the Assistant Medical Registrar in Scotland or Ireland, the document conferring or evidencing the qualification or each of the qualifications in respect whereof he seeks to be registered; or if he be a person who was actually practising Medicine in England and Wales prior to the 1st day of August, 1818, on signing a declaration according to the form in Schedule (C.) or upon transmitting, before the said 1st day of January 1859, by post, to the Medical Registrar or one of such Assistant Medical Registrar information of his name and address, and of the qualification or qualifications, including such declaration as aforesaid, in respect whereof he seeks to be registered, and of the time or times at which the same was or were respectively obtained: provided always, that it shall be lawful for the several Colleges and other bodies mentioned in the said Schedule (B.) to transmit to the said Registrar before the said 1st day of January 1859 lists containing under their respective seals of the several persons who, in respect of qualifications granted by such Colleges and bodies respectively before the said 1st day of December 1858, are entitled to be registered under this Act, stating the respective qualifications and places of residence of such persons;

and it shall be lawful for the Registrar thereupon to enter on the register the persons mentioned in such lists, with their qualifications and places of residence as therein stated, without other application in relation thereto; provided also, that any person possessed before the said 1st day of December 1858 of any such qualification as aforesaid, who does not make application as aforesaid to be registered before the 1st day of January 1859, and who has not been included in any list transmitted as aforesaid, shall upon such production or transmission by him as aforesaid be mentioned be verified, upon payment of a sum of £1, to be registered according to his qualification or qualifications.

XXIII. Where any person entitled to be registered under this Act applies to either of the Assistant Medical Registrars for that purpose, such Assistant Registrar shall forthwith enter in a local register to be kept by him for that purpose, the like particulars in relation to such persons as are heretofore required to be entered in the General Register, and shall with all convenient speed send to the Medical Registrar a copy, certified under the hand of such Assistant Registrar, of the entry so made, and the Medical Registrar shall forthwith cause the same to be entered in the General Register; and the entry on the General Register shall bear date from the Local Register.

XXIV. No qualification shall be entered on the register, either on the list Register, or by way of addition to a registered name, unless the Medical Registrar or the Assistant Medical Registrar, as the case may be, be satisfied by the proper evidence that the person claiming is entitled to it; and any appeal from the decision of the Registrar or Assistant Registrar may be decided by the Council, or by the several Committees of the Council appointed to sit for that purpose in England, Scotland, and Ireland respectively, and any entry which shall be proved to the satisfaction of such Council or Committees of the Council to have been fraudulently or incorrectly made, may be erased from the Register by order, in writing, of such Council or Committee of the Council.

XXV. The Registrar shall in every year cause to be printed, published, and sold, under the direction of the Council, a correct Register, in alphabetical order according to the names in the Form in Schedule (D.), of the names, places of residence, and other particular particulars required of all persons appearing on the General Register as existing on the 1st day of January in every year; and such register shall be called the "Medical Register," and a copy of the Medical Register for the time being, purporting to be so printed and published as aforesaid, shall be evidence in all Courts, and before all Justices of the Peace, and others, that the persons therein specified are registered according to the provisions of this Act; and the absence of the name of any person from such copy shall be evidence, until the contrary be made to appear, that such person is not registered according to the provisions of this Act: Provided always, that in the case of any person whose name does not appear in such copy, a certified copy under the hand of the Medical or Assistant Medical Registrar of the entry of the name of such person on the General or Local Register shall be evidence that such person is registered under the provisions of this Act.

XXVI. Every person who shall receive a certificate of his qualification to practice under the provisions of this Act shall be entitled to be registered in the Register of Medical Practitioners as "Licentiate in Medicine and Surgery," upon the production of such certificate to the Medical Registrar or to one of the said Assistant Medical Registrars.

XXVII. Every person registered in respect of any qualification possessed by him before the 1st day of December, 1858, shall be entitled in every part of the United Kingdom to practice according to the nature of his qualification.

XXVIII. Every person registered as a Licentiate in Medicine and Surgery shall have the right to practice in Medicine, Surgery, Midwifery, and Pharmacy in every part of the United Kingdom.

XXIX. Every person entitled to be registered in respect of any qualification as a Surgeon, existing on or before the 1st day of December, 1858, and also to be registered in respect of any qualification then existing as an Apothecary, if he shall so require to be registered as Licentiate in Medicine and Surgery.

XXX. Every person who before the 1st day of December, 1858, shall have been registered in respect of one only of such qualifications in the last preceding section mentioned, and

who shall have subsequently passed such Complementary Examination as the Council shall direct before any Professional Board, and have obtained such Complementary Certificate as the Council shall direct, for which he shall pay such fee as the Council shall determine, not exceeding twelve pounds, shall be entitled to give his qualifications in the Register to that of Licentiate in Medicine and Surgery.

XXXI. If any of the said Colleges or the said Faculty at any time exercise any power they possess by law of striking off from the list of such College or Faculty the name of any one of their members, such College or Faculty shall signify to the Medical Register the name of the member so struck off; and the Medical Register shall cause extracts from the Register the qualifications derived from such College or Faculty in respect of which such member was registered, and the Register shall note the same therein.

XXXII. If any registered Medical Practitioner shall be convicted in England or Ireland of any felony or misdemeanour, or in Scotland of any crime or offence, the Council may, if they see fit, direct the Register to erase the name of such Medical Practitioner from the Register.

XXXIII. No person not possessed before the said 1st day of December, 1856, of one or more of the qualifications mentioned in Schedule (B), shall be entitled to be registered under this Act, unless he shall produce the certificate heretofore required, or enable him to be registered under this Act as a Licentiate in Medicine and Surgery.

XXXIV. Every person registered under this Act who may at any time have obtained the degree of Bachelor of Medicine or Doctor of Medicine in any University of the United Kingdom, or become a Fellow or Licentiate of a College of Physicians of the United Kingdom, or a Fellow of a College of Surgeons of the United Kingdom, or a Fellow of the Faculty of Physicians and Surgeons of Glasgow, shall be entitled to have such additional qualification inserted in the register.

XXXV. After the 1st day of January, 1857, no person shall hold any appointment as a Physician, Surgeon, or other Medical Officer, either in the Military or Naval Service, or in any other public or private establishment, or in any Hospital, Infirmary, Dispensary, or Lying-in Hospital, not supported wholly by voluntary contributions, or in any Lunatic Asylum, Mad, Fever, or other Hospital, or in any Dispensary, Parish House, or other public establishment, body, or institution, or to any office, or to any society for affording medical relief to sickness, infirmity, or old age, or as a Medical Officer of Health, unless he be registered under this Act.

XXXVI. After the 1st day of January, 1857, no certificate required by any Act now in force or that may hereafter be passed from any Physician, Surgeon, Licentiate in Medicine and Surgery, or other Medical Practitioner, shall be valid unless the person signing the same be registered under this Act.

XXXVII. All moneys received by the Treasurers arising from fees to be paid on examination, and on registration from the sale of registers, from penalties, or otherwise, shall be applied as follows:

- 1st. For such expenses of registration and of the execution of this Act as are not otherwise provided for.
- 2nd. For the payment of the several Examiners appointed by the Council.
- 3rd. For the division among the several bodies appointing the Examiners of the Professional Boards, in such proportion as the Council, having reference to the number and employment of Examiners by such bodies respectively appointed, shall from time to time determine.
- 4th. For payment in such proportion as the Council shall from time to time determine, in aid of the moneys or other assistance or professional aid of the several Royal Colleges of Physicians in London, and of the Faculty of Physicians and Surgeons of Glasgow.

XXXVIII. It shall be lawful for the Commissioners of Her Majesty's Treasury from time to time to advance and pay out of such moneys as may be provided by Parliament for this purpose, such moneys as may be required for the expenses incurred by or under the authority of the Council in the execution of this Act in the meantime, until sufficient money for this purpose shall be received from the fees payable under this Act.

XXXIX. The treasury of the Medical Council shall enter

in books to be kept for that purpose a true account of all sums of money by him received and paid, and such accounts shall, in the months of June and December in every year, be submitted by him to the Medical Council; and if the said accounts be found to be correct, the President shall sign the same, and they shall be laid before both Houses of Parliament in the month of January in every year if Parliament be sitting, or if Parliament be not sitting, then within one month after the next meeting of Parliament.

XI. The Medical Council shall cause to be published under their direction and authority a book containing a list of medicines and compounds, and the manner of preparing them, together with the true weights and measures by which they are to be prepared and mixed, and containing such other matter and things relating thereto as the Medical Council shall think fit, to be called "British Pharmacopœia;" and the Medical Council shall amend, and cause to be republished such Pharmacopœia as often as they shall deem it necessary.

XII. Every person registered under this Act shall be entitled to demand and receive in any court of law, with full costs of suit, reasonable charges for Medical and surgical aid, advice, visits, and medicines rendered or supplied by him to his patients.

XIII. After the said 1st day of January, 1857, no person shall be entitled to recover any charge in any court of law for any Medical or Surgical advice, attendance, or for the performance of any operation, or for any medicine prescribed, administered, or supplied by him, unless he shall prove upon the trial that he is registered under this Act.

XIV. After the 1st day of January, 1857, the words "legally qualified Medical Practitioner," or " duly qualified Medical Practitioner," or any words importing a person recognized by law as a Medical Practitioner, when used in any Act of Parliament, shall be construed to mean a person registered under this Act.

XV. Any Medical or Assistant Medical Register who shall wilfully make or cause to be made any falsification in any matters relating to the register shall be deemed guilty of a misdemeanour in England or Ireland, and in Scotland of a crime or offence, and shall on conviction thereof be sentenced to be imprisoned for any term not exceeding twelve months.

XVI. Every person who shall wilfully and falsely pretend to be, or take, or use the name or title of a Physician, Doctor of Medicine, Licentiate in Medicine and Surgery, Bachelor of Medicine, Surgeon, or Apothecary, or any name, title, addition, or description implying that he is registered under this Act, or that he is recognized by law as a Licentiate in Medicine and Surgery, Physician, or Surgeon, or Apothecary, or a Practitioner in Medicine, shall, on being summarily convicted at every such offence before any two Justices of the Peace for the county, city, or place, or in Scotland before a Sheriff or Justice of the Peace, or before the Justice of the Peace Court for the district in which the offence was committed, pay a sum not exceeding twenty pounds or less than five pounds, to be recoverable as hereafter described, together with all costs.

XVII. Any two Justices of the Peace, sitting in and for the county, city, or place, or in Scotland, a Sheriff or Justice of the Peace, or the Justice of Peace Court for the district in which the offence has been committed, may hear and determine any complaint made under the next preceding clause, on the oath of one or more witnesses, or by the confession of the accused party, and shall award the penalty or punishment herein provided for such offence; and in every case of the adjudication of a pecuniary penalty and of non-payment thereof, it shall be lawful for the said Justices, or in Scotland, for the said Sheriff or Justice of Peace, to commit the offender to any goal or house of correction within his jurisdiction for a term not exceeding six calendar months, the imprisonment to cease on payment of the sum due.

XVIII. If any person shall wilfully procure or attempt to procure himself to be registered under this Act, by making or producing or causing to be made or produced any false or fraudulent representation or declaration, either verbally or in writing, every such person so offending, and every person aiding and abetting him therein, shall be deemed guilty of a misdemeanour in England and Ireland, and in Scotland, of a crime and offence, and shall, on conviction thereof, be sentenced to be imprisoned for any term not exceeding twelve months.

XIX. Any sum or sums of money arising from con-

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ORIGINAL LECTURES.

LECTURES

ON

GENERAL NATURAL HISTORY.

By THOMAS H. HUXLEY, F.R.S.

Lecturer on General Natural History at the Government School of Mines and Fisheries Professor of Zoology, Department of Science.

LECTURE VI.

(Continued from page 81.)

In special relation with the branched apparatus whose it exists, and uniformly distributed through the body, there is in almost all Annelids a system of vessels containing a clear fluid, which usually possesses either a red or a green hue, and contains no corpuscles of any kind. This system of vessels again is uniformly closed, nowhere communicating with the perivisceral cavity, nor with the exterior. The walls of the vessels are usually thin and delicate, and are in some cases, e.g. *Chironomus*, contractile, even in the very smallest individuals. It is this colored fluid which is generally regarded as the blood of the Annelids, the vessels in which it is contained being described as the "blood-vessels." In all the characters which have just been described, however, this vascular system and its fluid contents differ altogether from the true blood systems, such as we know it in other divisions of the animal kingdom. Furthermore, in some few Annelids, such as those which constitute the genus *Arenicola* of De Quatrefages, there is in some of any such system of vessels, and it is a general result of embryological researches on the Annelids, that they, and the fluid which they contain, only make their appearance at a very late period. That distinct blood-vessels should be absent still at advanced stages of development, or that they should never be developed at all, is nothing extraordinary, but the absence of any fluid which represents the blood under these circumstances, is quite inconceivable with what we know of the functions and uses of blood. My own opinion is that in, that this system has nothing to do with the true blood system, which appears to me to be actually represented by the unperforated fluid contained within the perivisceral cavity. I am aware that this is in entire opposition to the current doctrine, and I shall have to discuss the question of the real nature of these vessels more fully by and by; but in the meanwhile, it appears to me that there can be no possible doubt as to the fact, that whatever the so-called blood-vascular system of the Annelids may represent, it is widely different from what we ordinarily know as a blood-vascular system; and that it deserves a distinct denomination.

I propose, therefore, in order to avoid confusion, and having quite open for the present all questions as to its real nature, to call this system in the Annelids, and its unquestionable homologues in the Echinoderms—the "perivisceral system."

The perivisceral system varies very much in the arrangement of its great trunks; but they commonly consist of one or two principal longitudinal dorsal and ventral vessels, which are connected in such animals by transverse vessels. Where branchial sacs, lungs or processes of one or other of the great trunks enter them, the dorsal and the ventral trunks are usually rhythmically contractile—and contractile dissections at the base of the branchia (*Planorbis*) in portions of the lateral trunks (*Planorbis*), or in those which supply the protocoel (*Planorbis*), have received the name of "hearts." The direction of the contractions is usually such that the blood is propelled from behind forwards in the dorsal vessel, and in the opposite direction in the ventral vessel; but the course which it assumes in the lateral trunks is probably very irregular. In *Chironomus* I have observed several contractile funiculi depending into the perivisceral cavity in which the colored fluid underwent merely an alternate flow and reflux; and an arrangement of a similar kind appears to exist in *Streblospio* and *Limnodynastes* (Planorbis, *Limnodynastes*, p. 113.). The principal trunks give off a great number of branches, which usually vary immensely in some Annelids (*Planorbis*), and may give rise to beds of capillaries

(*Planorbis*); but in many Annelids (*Planorbis*, etc.) there are hardly any branches and no minute capillary ramifications.

In the invertebrate Annelids (*Planorbis*, *Limnodynastes*), long contractile tubes dilated laterally, which have been variously described as glands and respiratory organs, are connected with openings in the ventral, and of their opposite extremities terminate by fine, dilated, porous extremities in the perivisceral cavity. I have observed these dilated canals opening externally upon the ventral surface at the base of the parapodia in *Planorbis* and *Streblospio*, and there are indications of the existence of similar organs in other Annelids. Whether the dilated canals extending along the ventral surface of the limnodynastes, which I have described in *Planorbis*, is a structure of the same order or not, I am not prepared to say.

The nervous system of the Annelids usually consists of a chain of ganglia,—one pair for each somite,—connected together by longitudinal and transverse commissural bands, which diverge between the cerebral ganglia and the ascending one, to allow of the passage of the stomodæum. The most important difference presented by the nervous system of various Annelids, results from the varying length of the transverse commissures. In *Planorbis*, *Streblospio*, *Limnodynastes*, these commissures are very long, so that two distinct and distant series of ganglia appear to run through the body, while in *Planorbis* the two series of ganglia are fused into a single cord prolonged at intervals. Every transitional condition between these is observable in *Planorbis*, *Streblospio*, *Limnodynastes*, and *Aphrodite*. A very extensive series of visceral nerves in most Annelids supplies the different parts of the alimentary canal [?].

The respiratory organs of some in the Annelids are eyes and auditory vesicles. The former are usually very simple, consisting of an expansion of the extremity of the optic nerve, invaginated by pigment, and provided occasionally, but not invariably, with a distinct lens. In *Streblospio*, however, De Quatrefages describes a very well developed and complex eye. The eyes are usually confined to the anterior extremity of the body, and to the prostomium where one exists; but in the remarkable genus *Planorbis*, the same structure observed elsewhere, besides the ordinary ophthalmic eye, a double series of additional visual organs, one pair being allotted to each somite. *Streblospio* has described two ocellar eyes in *Streblospio*, and De Quatrefages has shown that similarly placed eyes exist in some other species of Annelids, two of which are closely allied to *Streblospio*, while the others is an ocean form, near *Limnodynastes*. These organs resemble eyes about with the cornea extremely forward.

Auditory sacs resembling many ocelluses have been observed upon each side of the stomodæum opening in *Streblospio*, and similar organs have been noticed in other *Planorbis*; but whether their structure has not been carefully determined in the *Planorbis*.

The structure of the typical Annelids are exceedingly simple in their structure; indeed, special reproductive organs are hardly to be said to exist in most, the generative products being merely developed from some part of the walls of the perivisceral cavity into which they occasionally freely flow, making their way out in a manner which is not quite understood as generally probably, however, through temporary or permanent openings at the base of the parapodia. As a rule, the Annelids are dioecious, but the *Planorbis* and, as I recently pointed out, at least one species of *Planorbis*, are hermaphrodites. The sex undergo their development within the body of the parent in some species of *Planorbis*, is posterior attached to the body in *Streblospio*, in masses of gelatinous matter which adhere to the sides of the coelom in *Planorbis*, beneath the eyes (e.g. *Planorbis*), while in other cases they appear to become almost immediately free within the coelom. In many Annelids the process of yolk division is followed by the development of a blastoderm, which at once invests the whole yolk, and assumes the form of a sheet and before the appearance of any members (*Planorbis*, *Planorbis*, *Planorbis*); but in other cases the blastoderm takes the form of a disc, which gradually elongates, only partially investing the yolk, and becomes divided into contact with their appendages long before the yolk is completely covered in, or the dorsal surface of the body complete (*Streblospio*, *Streblospio*).

In most cases the embryo leaves the egg uniformly covered

[?] Huxley first described in them all other organs connected with the stomach and proctodæum of the Annelids, the structure of which was generally, however, described by De Quatrefages in the *Planorbis* in *Streblospio*.

with cilia; but these gradually disappear over the greater part of the body, subsiding at the same time a greater size and strength in a narrow band of the circumference just behind the anterior extremity of the body, and immediately in front of the mouth. In *Parabola* a second ciliated cylinder remains upon the ventral segment; and thus we have a larva with two ciliated cylinders, one in front of the mouth, and therefore not traversed by the alimentary canal; the other having the alimentary canal in its axis.

The portion of the body in front of the anterior ciliated cylinder becomes the prostomium, which, however rudimentary in the adult condition, appears always to exist in the larva. That, by which this ciliated cylinder is raised in the prostomium. The posterior part of the body becomes divided into the somites, of which there are at first very few, new ones being continually added between the last somite and the pygidium.

The paraspines and other appendages appear as buds from the sides of the somites, which gradually assume their perfect form. The cephalic tentacles of *Parabola* seem to be repetitions of the prostomial tentacles of *Polysora*.

With regard to the development of the lateral organs, the most noteworthy fact is that the paired-lateral system does not make its appearance until a very late period.

Many *Amœbæ* are now known to multiply by a process of gemmation, which in some cases appears to be a compound form of fission with gemmation; in others, to approach fission or pure fission or pure gemmation. The result is, not infrequently, the formation of long chains of connected cells.

One of the methods of multiplication of *Yucca*, described by G. F. Miller, and that which Dr. Quatrecasles has observed in *Agave confinis*, are acts of nearly simple fission, the axial dividing near its middle.

In *Myriophyllum*, Miller Edwards has described the occurrence of a sort of continuous budding between the ultimate and penultimate segments, where new segments are formed until the stipe has attained its full length. The second method of multiplication in *Yucca*, described by G. F. Miller, appears to be similar to this, or it may be identical with the following. Schimper has observed, in fact, that when a *Yucca* has divided into an anterior and posterior stipe, the last somite of the former gradually enlarges, and becomes divided into two somites, the anterior of which give rise to a head. A new stipe is thus developed between the previously existing ones. This process is repeated in what was the penultimate, but is now the ultimate somite of the anterior stipe; and again in the penultimate somite when it has in the same way become terminal.

Frey and Leuckart and Kröner have shown that *Stentor* multiply in a somewhat similar manner; but, instead of each new stipe being formed at the expense of an entire somite, it is developed from only a portion of one. Finally, I found in *Protella* (Leprieux) that, when the *Protella* had attained a certain length, all the somites behind the strobilus became eventually separated as a new stipe; but the development of the latter is not more limited, as one of the earliest steps in the process is the enlargement of the 17th somite, and its conversion into the head and strobilus of the bud. How long ago I inserted a similar mode of multiplication in his *Polysora* paper, a very clearly defined form.

In *Agave* and in *Protella*, the producing and the produced stipe cilia develop successively produced, but in *Stentor*, Kröner has shown that the primary producing stipe cilia remain normal, the secondary produced stipe cilia assuming a somewhat different form, and cilia giving rise to one and a separate one. This is the only case of "dichotomous" as present known in the *Amœbæ*.

The *Stentor*.—We have just seen that many *Amœbæ* pass through a larval condition, in which the body exhibits some indications of a division into somites, and in which the appendages are mainly absent, the locomotive function being performed by a circle of cilia, disposed around the anterior part of the body. Now, there is a large group of very remarkable organisms, the *Amœbæ* "which resemble" or *Stentor*, whose whole organization demonstrates, not merely their animal nature, but their position among the *Amœbæ*, and which exhibit precisely the same indifferent organization, the same general absence of appendages, and whose means of locomotion are in like manner confined to one or two ciliated circles at the anterior part of the body. The connection between the *Amœbæ* and the *Stentor* is further illustrated by such remark-

able forms as the *Polysiphonæ* of Dr. Quatrecasles, a true *Amœbæ*, which nevertheless possesses on each side of the head a ciliated tube, capable of being voluntarily protruded and retracted, and presenting a close resemblance to the ventral disc of a *Stentor*.

FIG. 1.

*Stentor* cells, after Cohn.

1. *Stentor*. 2. *Stentor*. 3. *Stentor*. 4. *Stentor*. 5. *Stentor*. 6. *Stentor*. 7. *Stentor*. 8. *Stentor*. 9. *Stentor*. 10. *Stentor*.

Stentor cells, one of the largest of the *Amœbæ*, is also worthy of being selected as a typical form on many accounts, and the least important being, that its organization has been repeatedly investigated by the best observers. I will borrow from the excellent monograph of the latest of these, Dr. Cohn, the following account of its structure:—

The female *Stentor* cell has the form of a conical sac, $\frac{1}{16}$ to $\frac{1}{8}$ of an inch long, whose anterior end is broad and truncated, while the posterior end is a folded "lip." The circular surface of the anterior extremity is interrupted below by the oral aperture, and is fringed by a continuous series of cilia, which pass into those lining the mouth. Within this are two other circular series of cilia, the innermost, like the outer, uninterrupted, while the middle set are much longer, and attached five or six together, upon some dozen distinct elevations. By the action of their cilia, not only is the body rapidly propelled, but sensitive motions are brought to the surface. These regularly successive contractions give rise to the well-known appearance of a writhing wheel, in which the *Stentor* owe their name, and from which I proposed, in my monograph on *Amœbæ*, to designate the dorsal anterior extremity of the body, the ventral disc. The body is marked by nine transverse grooves or folds of the integument produced by an inner circular muscle, which appear to be fastened to the surface only at particular points of the circumference. The distance between them is thin, but very elastic; and it is in consequence of the latter property that the body is retained in its proper shape, after the contraction of these circular muscles, and of the longitudinal muscles. Of the latter, Ehrenberg has described three; they act in extension of the flat end of the ventral disc, and in modifying the form of the body. As in the *Amœbæ*, some of the somites contain one or more contractile vesicles in this group, though in others, *Polysiphonia*, *Parabola*, etc., they are distinctly excluded. The oral cavity leads into a muscular pharynx, provided with pseudopodially arranged teeth, of whose general structure in the *Stentor* I will speak more particularly by-and-by. A short oesophagus connects this with the wide and spherical stomach, which passes gradually into a narrower intestine, opening into a valvular cloaca, placed upon the dorsal surface of the hinder extremity of the body (Fig. 1 & 2).

1) Daten der Fortpflanzung der *Stentor*, von Dr. F. Cohn, in *Botan. Beobacht. und Entdeck. Schindler'schen Lab. Wien*, 1862.

Two bodies, called by Ehrenberg the paracardiac glands, are situated one upon each side of the broad cardiac extremity of stomach, into which they probably open.

Connected with the oesophagus in *Mytilus*, as in all *Scaphis*, is a very remarkable system of vessels peculiar to the branchioids—the so-called 'water-veins.' It consists of a large vessel placed in the ventral part of the abdominal cavity, and opening into the oesophagus. From its neck two delicate and transparent canals (α) arise, and pass up upon the right and left sides of the body, to the tracheal disc, in which they terminate in coils or five coils attached to its walls. The lateral canals are much longer than the body, and are, therefore, disposed in coils here and there, pursuing a tortuously straight course in the intervals. Each lateral canal gives off about four delicate branches, which terminate in peculiar hollow conical enlargements, open at their extremities, and lined internally by elastic skin. According to Leydig these dilated short branches are open at their extremities, and the action of the coils gives rise to a current directed towards the lateral canal, and therefore, eventually, towards the stomachic vessels, in the great inquiry of the *Scaphis*. In Leuckert's book Dr. Leydig's observations and my own render the existence of these open terminations doubtful.

The serous membrane contraction, by which its fluid contents are every now and then expelled; how far the three fluid contents are forced out of the oesophagus, and how far into the lateral canals, does not appear to be clear; yet here we, at present, any certain knowledge of the functions of the 'water-veins' system. That they are important can hardly be questioned, inasmuch as an undoubtedly homologous system of vessels exists, as we shall see, a very great development in the *Tremula* and *Turbellaria*, while there is much similarity in Leydig's suggestion (α), that they are also homologous with the 'dilated veins' in the *Amphibia* already referred to. One thing, however, is certain: they have nothing to do with the reproductive system, which are very distinct, and are located in separate individuals. In the female, which is at present under description, the ovary (β) is a cord-like mass, with its open distal end backwards, which lies between the contractile vessels and the alimentary canal. The delicate membrane covering the ovary is continued back into the oviduct, which opens into the oesophagus.

The nervous system is represented by a large hemispherical ganglion (γ) placed at the anterior extremity of the body towards the dorsal surface, and above behind the tracheal disc. Nervous cords run from this ganglion to different parts of the body, and two especially remarkable ones pass to a sharply-striated circular space looking almost like an aperture, but in reality closed, (δ) which has a bundle of muscular fibres, or rather coils, on its inner side. Nervous axils in pass to two other depressions of a similar character. No structure beyond those just described are certainly known to belong to the nervous system.

The male *Mytilus* acule (E) is not more than half the size of the female, to which in general form he is otherwise similar. There is, however, an depression in the margin of the anal disc corresponding with the anal aperture, since this, like all other parts of the alimentary canal, is widely open. Neither, of course, is there any anal aperture, but the contractile vessels of the water-vein system apparently open, in common with the genital apparatus, in the same region as in the female. The water-vein and nervous systems present no essential differences from those of the female.

The testis is a large, oval, thick-walled sac, formed by means of contractile bands to the points of the body, one passing from its apex to the tracheal disc. Posteriorly the walls open into the dilated cavity of a tubular projection of the integument, the penis, which can be protruded or retracted by appropriate muscles, and is usually invisible unless the animal is subjected to pressure. A rediform 'prostate' surrounds the base of the penis.

Such is the structure of *Mytilus* acule. The other forms of *Scaphis*, however various, are all referable to modifications of an addition to the organs which is present. Thus the integument in *Amphibia* is developed into a sort of shield, or leath, which defends and braces the body, leaving only the anterior and posterior extremities free. *Mytilus* and *Leuckertia* possess a gelatinous investment. *Mollusca* strengthen this investment with little plates of bony

matter, as in the case of a strong shell. Again, while most *Scaphis* are free, or at least adhere only for a while by their tracheal processes, those just mentioned are fixed. The tracheal disc undergoes great changes of form. In *Mytilus*, as we have just seen, it is circular, and its margin is skirted by two distinct continuous bands of coils, the one immediately in front of, the other behind the mouth. If a line be drawn through the mouth and anus, representing the axis of the body, then the latter dilated diaphragm will be traversed by this axis, while the former, like the anterior stratum in an *Amphibia*, will be altogether anterior to the axis. If the dilated diaphragm through which the axis passes be called the tracheal diaphragm, *per se* condition, and the other the pre-tracheal diaphragm, then we shall have the anterior face of the tracheal disc as a pre-tracheal region, while the body behind the diaphragm is post-tracheal. In *Leuckertia* both tracheal and pre-tracheal diaphragms exist, and the tracheal disc is wide, and hour-glass shaped. In *Amphibia* the tracheal disc is four-lobed, and in consequence of the curvature of the oral aperture, the plane of the pre-tracheal, and of a great part of the tracheal diaphragm is parallel with the axis of the body when expanded. In *Amphibia* the tracheal diaphragm being the edge of the tracheal disc is hour-glass shaped, but the pre-tracheal diaphragm is produced into three lobes or processes, which stand out particularly on the surface of the tracheal disc. In *Amphibia* the tracheal diaphragm alone exists, and is dilated over upon itself; and in *Mytilus* and *Scaphis* it fringes the edge of a number of transverse processes into which the tracheal disc is produced, so as to give the whole animal somewhat the appearance of a *Polyzoa*.

The simplest and most exactly dilated tracheal disc is that possessed by *Mytilus* *mytilus*, where, according to Leydig, the axis merely cover the oral disc.

The *Scaphis* again, vary much in the details of the structure of their muscular pharynx, or mouth, as it has been considerably treated by Mr. Gosse, and in its structure. In *Mytilus* and *Scaphis*, a pre-tracheal or scoop-like dilatation precedes the mouth. In other cases the oral canal opens directly into it, and the food is immediately subjected to the action of two pairs of strong teeth, moved by the muscles which constitute the chief thickness of the walls of the mouth. Of the four principal pieces, the two large (median), rest upon the two smaller, which constitute the so-called jaws. All these organs are mere thickening of the substance being of the alimentary canal like the pharyngeal teeth of the *Amphibia* (e.g. *Amphibia*) and like the latter have no claim to the title of jaws, which should be reserved for modified limbs.

All female *Scaphis* possess teeth (f), but in those of certain species of *Mytilus*, the incisors terminate in a cusp, and there is no anal aperture. In the males of all *Scaphis* as present known, the alimentary canal is entirely closed. As Leydig has it, they devote themselves entirely to the "Manna-diet."

The nervous system consists in all *Scaphis* of a single "cerebral" ganglion, whence nervous radicles, situated at the anterior part of the body, either on the side, from which the mouth is turned, or in front of the body, or on the same side and immediately behind it, as in *Leuckertia* and *Mollusca*.

Dr. Leydig and I writing contemporaneously upon *Leuckertia* in 1843, described the nervous system differently. In his excellent monograph already cited, however, Dr. Leydig has, with great confidence, withdrawn his own view and adopted mine. I mention this particularly, as Professor Gosse in his *Treatise on the Tremula*, has adopted Leydig's now forsaken view, without any reference to my account of the matter.

The recognized organs of sense in the *Scaphis* are of two kinds, firstly, eyes; and secondly, organs homologous with the sensitive pits in *Amphibia*.

The eyes are masses of pigment usually in close apposition to the ganglion, and are either single or double; in the former case rarely, but in the latter always, according to Leydig, being provided with a rudimentary lens or vitreous humor. In some *Scaphis*, such as *Leuckertia*, the eyes, which are present in the locomotive young, become obsolete with age.

The sensitive pits in *Mollusca*, *Amphibia*, etc., assume the form of an elongated process and project on the so-called upper or outer, of which either one or two may be present.

(3) *Leuckertia* and *Scaphis*, in the *Systematische Zoologie der Naturhistorischen Zeit.* Dr. Franz Leydig, 1843.

A third organ, which I believe to be a necessary apparatus of some kind of valve, is the "dilated sac" which exists in connection with the ganglion in *Laciniaria* and *Delosia*. I hardly think it likely that, as Leydig suggests, this is a structure of the same order as the coelomic pit.

The ova are impregnated within the cavity of the body, the act of impregnation having been witnessed, and bodies which now turn out to be the spermatozoa of the males having been seen floating in the pericelomic fluid. How they came there, if there be really a complete vesical, such as it is said to exist, though, I confess, I could see nothing of it in *Laciniaria*—is a difficult point. In the ordinary run the vesicular membrane is delicate and transparent, and the yolk, after undergoing the ordinary process of division, is converted into an embryo, whose form does not differ very widely from that which it will eventually assume. The males, however, differ not merely in internal structure, but in their form and in their mode of life, from the females; and hence, as the latter in many cases carry about the ova attached to their bodies, it was supposed on one time that the males were the eggs of another species, which the mother had attached, perhaps, via, in a danger.

Under conditions which do not as yet appear to be thoroughly understood, bodies of a very different character, the so-called "wires" or "epitaphial" ova are developed from the ovary. I have seen no evidence as yet brought forward sufficient to shake my conviction, that the description which I gave of the mode of development of these bodies in *Laciniaria* is correct; and, well, this in the case, I must continue to believe that the epitaphial ova are essentially buds. We have nothing at present of the further changes which they undergo.

LECTURES

ON

THE MINUTE ANATOMY OF THE LIVER.

DELIVERED AT

King's College, during the Session, 1885-86.

By LEONEL A. DEALE, M.B.

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LECTURE VI.—[Continued.]

Epithelium of the small ducts.—Dr. Hanfield Jones's views.—General considerations concerning the Liver of Vertebrate Animals.—The Vertebrate and Invertebrate Liver compared.—The Liver and Kidney compared.—The Position of the Liver as a Secreting Organ.—Summary.

QUESTIONS.—When we last met I endeavored to prove that the minute ducts were immediately continuous with the minute network in which the hepatic cells lie, and I also called your attention to the fact, that the diameter of the small ducts was very much less than that of the tubes of the cell-containing network into which it may be said they are prolonged. Now this narrowing of the duct before it becomes connected with the secreting portion of the organ, is seen in other glands; thus in the kidney, the total diameter of the straight and ductal portion of the renal tube is considerably less than that of the convoluted and glomerular part. The same point is observed in many other glands. In the liver where the secretion is highly elaborated, and clearly removed from the secreting structure in a concentrated form, we should naturally expect to find the contract between these two different portions of the gland structure even more remarkable than in the examples referred to. This is really the case.

I hope to-day to be able to finish what I have to say upon the minute anatomy of the liver. The discussion of the subject in detail has been necessarily somewhat tedious, but at the same time I venture to hope that it has not been found altogether devoid of interest.

This large and important organ presents us with an example of gland structure in which the different forms of which it is composed are arranged in the most advantageous manner it is possible to conceive. The secreting cells and the blood being brought into the closest proximity possible. The blood containing the crude elements is separated from the cells where

often it is to elaborate these constituents, only by the intervention of the thin capillary walls a membranous partition, or delicate sheath, is situated in many cases without it. The secreting cells, which serve to support the epithelium of most glands, is low columnar, and the wall of the capillary comes into close contact, and in many instances is incorporated with the thin transparent membranous tube in which the liver cells lie.

Epithelium of the smaller ducts.—The larger ducts, as it well known, have a thick lining of columnar epithelium; but the cells become shorter towards the smaller channels. In the smallest tubes, the cells of epithelium are somewhat flattened, and are of a rhombic or oval form, which, in many instances, is due to the ducts being much contracted in preparing the specimens. These minute cells have a pale, granular appearance, and it is not when that a nucleus can be distinctly seen within them. The quantity of this epithelium in the smaller ducts varies very much; sometimes it completely lines the tube; in some instances it is so abundant as apparently to leave no distinct cavity in the duct. It is possible I have met with in the rabbit, weasel, and list of which it is not uncommon to find some of the finest ducts containing only a very few cells scattered at irregular intervals over the basement membrane of which the small ducts are entirely composed. In a perfectly normal condition, where the minute ducts are unobscured by mesoplasmia and are examined in a proper medium, they are generally seen to be lined by epithelium; but from the extreme minuteness of these ducts, and the tenacity of their walls, it is not surprising that we should fail in making out distinctly their epithelium in every instance in which we search for it.

It is not easy to lay down with precision the exact point at which this change in the character of the epithelium occurs; but it appears to me that the alteration is a gradual one, and that the cells become shorter and shorter as the diameter of the ducts diminishes. In ducts of the size of an inch, and in smaller ones, the epithelium presents the characters above described. My friend, Dr. Hanfield Jones, has arrived at a totally different conclusion with reference to the nature of the smallest ducts, and the epithelium which is contained within them. The latter he regards rather in the light of water, "which can set close together in a subgranular or homogeneous homogeneous substance," and to these he attributes the important office of absorbing the material which is secreted by the liver cells, and which he considers rather the terminal extremities of the ducts in which this epithelium is contained, or with which it is in direct continuity. Dr. Hanfield Jones also considers that there is within any trace of basement membrane to be found in ducts having epithelium of this character, and, the basement membrane imperceptibly ceasing, that the ducts terminate in this epithelium. Upon such a view, however, I should be at a loss to explain a number of appearances which I have often seen; and I have been led to a totally different conclusion upon this point, which I fully discussed when we last met. That view seems to me to be the only one which refers to the termination of the ducts compatible with the facts which have been observed. When the ducts are injected according to the method which I described, you may see very distinctly, with a quarter of an inch object-glass, the epithelium and the injection, in narrow tubes, often not more than the sixth or eighth of an inch in diameter. Still the investigation is a difficult one, and the question of size of such a delicate structure that it would be wrong in me at this time to speak too confidently in favour of the results of my own work, or in the least degree to appear to disparage the conclusions which other observers have arrived at,—no matter how reasonably these conclusions may be at variance with my own, or how strongly I may feel convinced in my own mind of the truth of my own deductions, and the correctness of the data upon which they have been founded. I shall only ask you to bear in mind some of the points to which I referred in the last Lecture, and compare the diagrams which I show you with the actual preparations which you have had an opportunity of seeing.

To return to the consideration of the nature of the epithelium lining the smallest ducts. We shall find that this ductal epithelium does not pass by lateral projections into the secreting epithelium or hepatic cells, but ceases abruptly at the point where the narrow duct becomes continuous with the wide secreting cell-containing network. Nowhere, that I know of, can be seen, in so small a space, a more striking

contact between adjoining epithelium, and that which lies in contact with it. The large characteristic coil of phanero-epithelium occurs at the point where the small coil of proterio- or dorsal epithelium commences.

The arrangement here referred to is very similar to that which is met with in the gastric gland. It is only in the lower part (stomach tube) that the coil of epidermal epithelium, which alone there is every reason to believe, takes part in the secretion of the gastric juice, are found. The upper portion or duct (stomach coil) is lined with columnar or tubular epithelium (2). In these glands the adjoining coils are not arranged with any order or regularity round the basement membrane of the tube, as in the case in the kidney, but appear in the ordinary state of the parts to fill its cavity, so that the secretion having escaped from the coils, must pass off by the slight interstices which exist between them. As I have before observed, the same irregularity occurs in the arrangement of the adjoining coils in the lobes of the liver, and also, but to a less remarkable degree, in the ascending portion of many other glands, as the pancreas, the salivary glands, and several others.

The epithelium of the small ducts presents with the same character in all the animals which I have examined. In the cut it is shown in this diagram; and in this one in the lobe. Here you have a good opportunity of contrasting the character and size of these small granular cells with the large hepatic cells.

Before I conclude the subject of the arterial anatomy of the liver, permit me to draw attention to a few general considerations which seem to me of some interest.

The vascular tree.—The vertebrate liver may be looked upon as consisting essentially of two distinct systems of channels arranged so as to form networks which mutually interlace with each other. In one of these networks lie the secreting coils, often arranged so as to form only a single row, which in themselves, regarded on all sides by the blood containing the elements from which the bile is formed. The third line, occupying into the network of tubes, flows towards the surface of the lobule where the ducts lie. In the other network flows the blood, but in a precisely opposite direction to that which the bile takes.

The portal blood reaches the capillaries of the lobule at numerous points of its surface, and all the blood from these numerous sources as the circumference must pass through capillary vessels which converge towards the single radicle of the hepatic vein in the centre; and hence it follows that the circulation of this blood must be much more rapid in the central part of the lobule than near the portal surface. This partially harmonizes with many anatomical points which I have before alluded to. The blood which has just arrived from the intestine, loaded with recently absorbed nutriment, flows very slowly, in order to give time for the action of the liver cells upon it, and for the removal of some of those substances from it. When these have been separated, its flow must be no longer necessary, and as it becomes purer it flows with increasing velocity.

By the very simple and beautiful combination of the elementary tissues of the liver, as so to form minute portions resembling each other, or lobules, the most complete changes in the circulating blood are effected, while the circulation is retarded in the liver, possibly, degree compatible with the situation, through the intervention of which these changes are effected, are combined in such a manner as to occupy the smallest possible amount of space.

The coils in all parts of the network have no doubt the power of forming bile, but in different degrees, and even those quite close to the centre of the lobule, have others been observed to be filled with yellow granules. There is no reason for supposing that the secretion is passed from cell to cell, and at last into the duct. No, if this were the case, we should at least expect to find greater differences in the cells near the duct than in those more remote; and it must be remembered that in many animals in a state of perfect health, no difference whatever is to be discerned. The cells at the circumference usually contain a much larger quantity of all those things nearer the centre, which is just what we should anticipate when we recollect that the portal blood, rich with the freshly absorbed nutriment of the food, first reaches these marginal cells. The direction of the circulation is therefore of that which we should expect to find if the nutrition were transmitted from

cell to cell, as food nutriment in the present day belief upon. For if this were really the case, it seems to me that we should be forced to admit that the blood flows through the superficial part of the capillary network to no purpose. On the other hand, the anatomy of the organ almost forces upon us the conclusion, that the cells nearest to the duct take the most active part in the secretion, and that the blood gets gradually rendered more free of substances from which the bile is formed, as it travels along the capillary tubes from circumference to centre, with a gradually increasing rigidity of movement. Lastly, the marked absence of any channel in which bile could flow, seems to be a terrible objection, since it has been shown to be comparatively rare, provided that certain precautions be observed in conducting the operation, to have openings into a channel which does exist. For if, by artificial means, fluid can be made to pass in an opposite direction, within the tubes of this cell-containing network, up to the hepatic vein, how very rare may we find of the existence of such a channel along which the bile flows during the life of the organ.

The direction in which the coils may be made to undergo by artificial means, indicates how very simply a channel may be produced where the organ is in its natural condition. The two sets of tubes naturally adapt themselves to each other; if the secreting tubes be unusually empty, the vascular tubes almost move back, and it has been already pointed out what a very large quantity of fluid the capillary vessels of the liver are capable of containing even and there what may be assumed to be their normal quantity, and also how the distention of the vessels, by forcing in fluid in one direction, promotes the passage of liquid through the cell-containing network in an opposite direction. Careful reflection upon some of these points will assist us in comprehending many of the morbid changes which take place in the liver.

The bile having arrived at the excretory ducts, without doubt undergoes further changes. It is not improbable that the corpus brought by the arterial blood, which flows in the vascular network, through the medium of which the ducts pass, exerts some influence upon it. This, however, has not been proved. The most important alteration which the bile now undergoes, is concentration. Water is removed, and the proportion of solid constituents gradually increases as the bile passes slowly along the thin-walled, tortuous ducts. It is this change which serves to explain the comparatively slight increase of diameter of the ducts, in proportion to the great number of branches which they receive. Thus the great apparent discrepancy between the vast amount of secreting structure and the small excretory ducts, vanishes, when we recollect how highly concentrated the bile becomes before it reaches the large duct. This contains a larger proportion of solid constituents than any liquid secretion.

The manner in which this concentration is effected has been alluded to. In those animals provided with a gall bladder, it has been shown experimentally by Bidder and Schmidt that much fluid is absorbed while the bile remains within this vessel. It is interesting to observe, that the arrangement of vessels and lymphatics in the portal canal and numerous branches of the liver, is similar to that which is met with in the gall bladder. The bile is brought into very close contact with the vessels, by entering the little canaliculi, percolating around, in the coats of the ducts, and in the vein themselves, which are always surrounded by numerous branches of the vein and artery, and by lymphatic vessels.

In those instances the impaction of the bile is caused in an abnormal extent, and usual, probably hard granules of biliary matter are constantly produced. These often form the nuclei of gall-stones, and sometimes accumulate in great numbers in a branch of the duct. Although a calculus might become impacted in a duct, the free transmission of the bile is fully provided for by the numerous communicating branches which were described in my third lecture, just covered by the duct itself.

The Vertebrate and Invertebrate Liver compared.—It has been remarked by many writers, that there is a great difference of structure between the livers of the vertebrate and the invertebrates; but the more carefully the vertebrate liver is examined in its minute details, the stronger becomes the evidence that both resemble each other in many essential particulars. Nay, in some of the lowest of the invertebrates, the general minute anatomy of the liver closely resembles that of

the organ in the highest animals. In the large intestine of the common frog, a small extension of the Trepanulae order is very often met with. In some of these, which were taken from the body of a starved frog, the solitary tubules and their ducts were very distinct. The cells in their interior contained coloring matter, but very little oil, consequently the tubules were somewhat shrunken, and could be examined very successfully. The tubule terminates in a coiled extremity, but is prolonged at the opposite end into a very narrow duct, which is soon joined by the ducts from other tubules. Suppose the coiled extremities extended, communicating with each other, to form a network, and an apparatus closely resembling the drawing of the connection between the ducts and cell-containing network would result. The cells appear to contain coloring matter and oil, either in a granular state or in the form of distinct globules, in all classes of animals; their general character is very similar, and they lie in the tubule or tubules which contains them without order or regularity, their form being influenced to a considerable extent by mutual pressure.

In the different members of the animal creation, the liver still preserves certain constant characters; and, in the development of the young animal, this cell soon attains the characters which it bears throughout life, except that it contains a great number of nuclei in this early period. The comparison is exceedingly interesting, as showing the great similarity in the essential arrangement of the liver in animals occupying such opposite positions in the animal scale.

The liver and kidney compared.—The liver and the kidney, the two most important excretions in the body, have often been compared, and their opposite or complementary nature has been pointed out. It is interesting to compare the anatomy of the glands which secrete these dissimilar fluids.

The kidney is an organ destined for the rapid removal of substances, the most important of which, at least, exist profusely in the blood, highly diluted with water. A basement rate of basement membrane, closed at one end, lined by the interior with cells, but leaving a free central cavity, is the essential apparatus by which this is effected. At the closed extremity of this tube is a special provision for the separation of water, which, as it passes down the central cavity, readily dissolves away the soluble matters which the cells have separated from the blood. The solution passes down the tube, not without undergoing any further change, is very soon removed altogether. So very important is the rapid removal of these substances from the organism, that in those animals in which a sufficient quantity of water for their complete solution cannot be afforded, there exists a most perfect and beautiful arrangement by which this object is attained. Not only is there a cavity throughout the entire length of the tube, but the cells around it are furnished with vibratile cilia, by the action of which even solid particles are whirled down the tube with a velocity greater than that of the circulation of the blood in the capillaries.

In the liver, on the other hand, we have an organ not only for the separation of substances very readily introduced into the organism from the portal blood, but for the slow elaboration and conversion of these into very different products which serve very important ulterior purposes in the economy, and which are principally re-absorbed into the blood, while, at the same time, it is probable that a change occurs in other constituents of the blood in its passage through the liver. A network of delicate tubes containing large covering cells in their interior, arranged irregularly, and nearly filling the cavity, without leaving any well-defined channel for the passage of the secretion, is the essential apparatus for the formation of the proper secretion of the liver. The secretion, when formed, may remain for some time in the tubes, but slowly makes its way in an opposite direction to that in which the blood flows, through very narrow channels, either between the cells themselves, or between these and the walls of the tube, and it arrives at the narrow tubular duct. Well passing slowly along these tubular tubes, it becomes exposed to the influence of arterial blood, while much of its water, probably holding in solution substances capable of penetrating the basement membrane in this direction, is re-absorbed by the veins and lymphatics, which form an intricate plexus round the ducts. It has been shown how essential is the provision for the concentration of the bile throughout every part of the ducts from their commencement to their termination. Unlike the urine, the bile

undergoes important alterations after it has been set free by the cells in its course along the ducts.

Position of the liver as a secretory organ.—The liver, then, is to be classed with the true glands. In all classes of animals it consists of a laminate portion and of an extensive duct, the epithelium in these two situations presenting wide and characteristic differences. It contains both absolutely and relatively a greater proportion of true covering structures than any other organ. Its secretion is of the most complex chemical composition, and differs more widely from any known constituent of the blood than any other secreted product; to this it seems to serve a greater number of important purposes in the economy, while from the most recent experiments it appears that the amount of bile excreted by the liver in twenty-four hours is larger than that of any other liquid secretion, and at the same time it contains a higher per centage of solid matter.

The early appearance of the liver,—the large size both in the embryo and in the adult, its almost universal presence and general similarity of structure in all classes of animals, the complex and highly concentrated nature of its secretion and its large quantity, justify us in regarding the liver as the most important glandular organ in the body. The large size and vast number of its cells, their close proximity to the blood, and the beautiful arrangement of the other anatomical elements of which it is composed, render it, I think, the most perfect example of gland structure with which we are acquainted.

Before we leave the subject of the minute anatomy of the liver, let me very briefly recapitulate some of the most important points which I have brought under your notice in the last few lectures, for we shall find them of the first importance when we come to consider the nature of the morbid changes which this organ undergoes.

SUMMARY.

The livers of all vertebrate animals are penetrated in every part by two sets of channels, which anastomose with each other. One series, *portal vessels*, contains a branch of the portal vein, hepatic artery, and hepatic duct, subintestine; and the other series, *hepatic vessels*, which is supplied by a single branch of the hepatic vein, intraintestine.

The vessels ramifying in the portal vessels are ultimately diversified in such a manner that they serve to divide the organ into little masses, and these may cut square, or tubular, cells of which contains all the structural elements of the organ, and may be regarded as an elementary liver.

In the intervals between the masses by which the portal vein, artery, and duct are conducted to the lobule, its capillary vessels and its secretory structures are continuous with those of adjacent lobules.

The size and form of the lobules differ much in different animals; but their essential structure is the same in all, except in the pig, in the Polar bear, according to Miller, and in the mink (Cunningham) (one of the weasels,) according to Hyal.

In the pig each lobule is provided with a separate *Stroma* capsule of its own, and is, therefore, completely isolated from its neighbours. The portal vessels, artery, and duct run between them, and give off branches to contiguous lobules. In the intervals between the *Stroma* capsules another tissue can frequently be demonstrated.

In all cases, upon a section, the lobule is seen to be bounded externally by branches of the vein, artery, and duct, and in the centre is situated a small branch of the hepatic vein.

In the liver of the human subject, and in that of vertebrate animals generally, with the exceptions above mentioned, the lobules are not separated from each other by any *Stroma* partition, and there is no another tissue or prolongation of Gillson's capsule between them, or in their interior.

The vessels at their entrance into the liver, and as they run the some distance in the larger portal vessels, are surrounded with much smaller ones; but the disposition of this tissue about the vessels of the liver is very similar to its arrangement about the vessels distributed to other organs.

The lobule itself is composed of a solid capillary network, and of another network composed of a delicate tubular membrane, in which the liver cells are contained.

These networks mutually anastomose with each other.

The capillary network is directly continuous with the smallest branches of the portal vein, distributed upon the circumference of the lobule on the one hand, and with the small interlobular vein arising in its centre upon the other. The vessels of the network converge towards the interlobular vein.

Small branches of the artery open into the venous capillaries of the lobule, near its circumference, and the diameter of these small branches is considerably less than that of the venous capillaries into which they open; the former not more than $\frac{1}{1000}$ th of an inch in diameter, the latter about the $\frac{1}{1000}$ th.

In all cases, the blood, enriched with constituents recently absorbed from the intestine, flows with a gradually increasing rapidity from the circumference of the lobule towards its centre, while the bile flows in a precisely opposite direction.

The cell-containing network is directly continuous with the most minute ducts, which usually at the circumference of the lobule, and it terminates in the centre by loops, which lie close to the interlobular vein.

The liver-cells lie within a tubular network of basement membrane, which separates them from the walls of the capillaries. In many cases, however, these thin membranes cannot be separated, and are, no doubt, incorporated with each other.

The cells are not attached to the basement membrane of the tube, but lie in its cavity. Among them few oil globules and granular matter are often found. Usually, there is only room for one row of cells, but sometimes two or more lie across the tube. In the canals, in young animals, and in fishes, there is room for several rows to lie transversely across the tubes of the cell-containing network.

The cells near the margin of the lobule take the most active part in the formation of bile. The secretion passes along the tubes in the slight indentures between the cells and the basement membrane, and coloured fluid can be forced along these same indentures in a direction the opposite to that in which the bile flows during life, and, therefore, at a great dead weight. The amount of space is in great measure determined by the quantity of blood in the vessels, and it is liable to great alterations.

The secreting tubes of the network are many times wider than the narrow thin-walled ducts with which they are directly continuous.

The smallest ducts are lined with a very delicate layer of epithelium, composed of flattened cells of a circular form, containing sensibly with the large secreting cells, which are not arranged in any definite manner within the tubes of the network.

The tubes of the cell-containing network are about the $\frac{1}{1000}$ th of an inch in diameter, or more, but the finest ducts are not more than $\frac{1}{1000}$ th, and they are often more even less.

The smallest ducts in some animals branch very freely, and the branches communicate with each other at intervals. In others they pass a long course without branching, and in the pig they form an lacinate network upon the surface of the lobule. In both lives of the pig, however, this ductal network often contains liver cells loaded with oil globules.

As the ducts increase in size they are provided with a fibrous coat, and the epithelium in their interior becomes columnar.

The interlobular ducts do not anastomose.

When the fibrous coat reaches a certain degree of thickness, it contains numerous little canals or pores, arranged regularly round the tube in the pig and in most animals, but forming two parallel rows, one on either side of the duct, in the human subject.

These little canals often communicate with each other in the course of the duct. The smaller branches of the ducts also anastomose frequently either in the coats of the duct or just external to them.

The smallest appear to serve the purpose of bringing the bile to the thick-walled ducts into closer relation with the vessels which surround them, and especially with the branches of the artery which are distributed to their coats.

In the transverse fissure of the human liver and some others,

and in the large portal vessels, we found some peculiar branches of the duct, near elements, with numerous anastomoses on their walls, which anastomose with each other and form a network.

In the same localities in the human subject, and in the gall bladder, a very peculiar arrangement of the vessels occurs. Both arteries and veins form a network, and each branch of the artery is accompanied with two branches of the vein, one on either side of it.

The vertebrate liver is to be regarded as a true gland, its secreting structure consisting of a lacinate portion taking the form of a network, and of a system of very narrow afferent ducts directly continuous with it. The secreting cells lie within a delicate tubular network of basement membrane, through the thin walls of which they draw from the blood the materials of their secretion, and they are thus brought into closer relation with, and are more nearly surrounded by the blood than the cells of any other secreting gland.

ORIGINAL COMMUNICATIONS.

A CASE OF TRACHEOTOMY, PERFORMED SUCCESSFULLY AFTER THE PULSE AND RESPIRATION HAD CEASED.

By CARL BÄDER, M.D.

Assistant Surgeon to the British Hospital of Berlin.

On the 26th of April last, at 1.40 p.m., being On-duty Officer of the day, I was hastily called to the barack-room to see a man 29 years of age, who was said to be in a fit. I found him lying on the floor in a state of unconsciousness. His comrades told me that he had made a lot to eat a large quantity of meat in a very short time, and in the midst of his exertion to fill down and made signs to those about him to stop him on the back, which they did. When I saw him he had been unconscious for about five minutes. I found his skin cyanotic, the superficial veins swollen, and all the muscles spasmodically contracted. No respiratory movement was perceptible. The pulse could scarcely be felt, and the pupils were contracted.

Striding immediately for tracheotomy instruments, in the mean time I opened the mouth, but with great difficulty, by forcing a ruler between the teeth. Examining the mouth and fauces, I passed my finger as far as the upper edge of the vocal chords, but found nothing to obstruct the passage of air. About two or three minutes were thus lost. Although the mouth was kept open no respiratory movement ensued. The pulse disappeared altogether, while the cyanotic appearance and the muscular spasm increased. The instruments were arrived, and I proceeded to operate, more to satisfy my surgical curiosity and to comply with the urgent wish of my colleague Mr. Din, who was present, than with any hope of saving the patient, as I believed him to be quite dead. We put him on a table, and I made an incision about an inch long, beginning at the external cartilage. I arrived at once at the trachea, and thrust in the trocar at the lower edge of the cartilage, withdrawing it immediately and pushing in the cannula and along on both of it was in the trachea. Several seconds passed. The patient then made one inspiration, and with the expiration a quantity of frothy blood-stained mucus escaped from the canula. The inspirations then became deeper, and followed each other at shorter intervals. I ceased expiration by pressure on the abdomen. After every fourth or fifth expiration a quantity of mucus was thrown up, and after some three inspirations the pulse re-appeared. In about half-an-hour the respiration and pulse became regular, and we removed the patient to a ward. He had an involuntary motion and also vomited, among a quantity of mucus, a piece of meat the size of a man's fist. After this vomiting, the breathing and circulation underwent no change. He was put to bed, quite calm, with the head raised.

At 3 p.m. Mr. Spenser Wells, the Chief Surgeon, saw the patient in consultation, and as he was completely conscious and the surface of the body was still cyanotic, it was determined to take the excess of blood from the arm. The pulse, which had been small and very feeble, immediately became fuller and rose to 96. The head and chest were repeatedly sponged

with cold water, and an attendant constantly cleaned away the frothy mucus escaping from the nostrils during the whole night. The man remained quite unconscious, the respiratory movements of the thorax inconsiderable, the pulse 98 and full, and the muscular spasms continued.

April 12.—Mr. Sprague Wells again saw him with me, fifteen hours after the operation. The spasms and cyanosis continued. I had before this been obliged several times to free the passage from air by passing a small piece of sponge through the nostrils into the trachea. This was always followed by the ejection of a large quantity of mucus and greater freedom of respiration. The current of air through the tube was strong; pulse 60, regular and full. The mouth was spontaneously closed, but on applying the nozzle with the finger the air was felt to escape between the teeth. We therefore determined to remove the nozzle, and I did so. After withdrawing it, the air escaped by the wound, which formed a hole two lines in diameter. It was left unattended, and an attendant continually wiped off the mucus which collected. During the day, some wine and an egg were forced into the patient's mouth and he swallowed them, but with violent coughing. The unconsciousness and muscular rigidity continued. The noise from the escaping air, and the state of the patient rendered conversation impossible. Permission normal. Discharge from trachea and larynx profuse (foetid).

13th.—Unconsciousness, and spasmodic muscular contractions continued. Eyes still shut, and pupils contracted. Egg and wine given as before.

May 1.—The patient was very restless during the night, rolling from one side to the other. This morning he had an epileptic fit, which lasted half-an-hour. After it the rigidity of the muscles returned. The breathing was short and laboured, partly through the mouth. Pulse 90. I could not discover whether the fit had been caused by any momentary obstruction to the passage of air. During the fit the patient, who had remained constantly stiff before, made violent movements with weak and convulsive. Towards evening he became more conscious, opening his eyes, and manifesting feebly what was given to him.

2nd.—Has sleep a little. Towards morning another epileptic fit lasted a few minutes. The trachea has disappeared; so has the muscular spasm, so far as to be followed by breathing of the nostrils whenever he attempts to move them. He answered questions slowly. Towards evening he was able to put out his tongue. The edges of the wound were purple, but appeared healthy and freely suppuring. The opening was covered by a piece of wet linen. Most of the air escapes by the mouth and nose. The movements of the chest are hardly perceptible. Pulse 80. Consciousness.

3rd.—Has passed a quiet night. An nervous quiver. Complaints of dizziness of sight, and pain across the temples. Respiration regular and easy. Pulse 76. Trembling of the muscles prevents him from executing movements with precision. Consciousness. Some wine given, also egg and milk.

4th.—Has slept well. Is able to sit up with one support. Ears and drinks well. The retching of the muscles prevents him from using his hands. Sight still dim. He is perfectly conscious. Breathing and heart's action normal. In the upper and anterior part of both lungs the breathing is weak; in the remainder only a dull humming can be heard. Permission normal. Conversation. An orange and purging pills having had no effect, a drop of croton oil was given. Wound appeared healthy and granulating, a hole of the size of a pin's head remaining in the middle, but hardly any air escaping through it.

5th to 7th.—Dimness of sight and pain in head disappearing. Pronunciation of words improving. The trembling and twitching of the muscles ceases, yet the patient is able to sit and sit up without assistance. He sleeps all night, and most part of the day. Pulse regular, 78. Respiration, in the anterior parts of both lungs and in the posterior part of the upper lobe, weak; in the remainder indistinct. A little cough without expectoration. Appetite very good. Constipation. Takes soup, eggs, wine, and milk. The wound almost healed. The small hole in the middle remains, but no air escapes through it. Water drinking.

8th to 10th.—The larynx of the patient restored. More activity in his movements, but they are still very slow. No dimness of sight, or pain in the head. An orange pill, Bowles' breathing regulator. Wound completely healed. Pulse 78, weak. No cough now. No expectoration. Barking in the

lower lobes of both lungs. All these phases the breathing is hoarse; in the remainder regular. No pain.

11th to 13th.—The patient walks about. Head and intention normal. Movements still very slow. Both lungs normal; weak, vesicular breathing all over. Pulse 78, full. The wound is completely healed, and the patient is in all other respects in quite as good health as before the operation, and has continued so since.

Remarks.—The peculiar features of this case are, in the first place, the recovery after apparent death, the pulse and respiratory efforts having quite ceased; and, secondly, the slow recovery of the intellectual faculties. The patient was completely unconscious for three days after the operation. He had two severe epileptic fits, and after these was in a condition resembling extreme delirium tremens. Even after complete recovery a remarkable slowness of movement remained. In a surgical point of view, it may be remarked that, although the trachea was removed fifteen hours after the operation, and the open wound continued to suppurate freely, yet the pus which must have entered the trachea produced no kind of irritation on the respiratory organs.

British Hospital, Kentish, Park-lane, June 14, 1888.

JERBY HOSPITAL REPORTS.

FRACTURE WITH DISPLACEMENT OF THE FIFTH AND SIXTH CERVICAL VERTEBRÆ.

REMOVAL BY OPERATION OF THE FRACTURED PORTIONS OF VERTEBRÆ—HEALING OF THE WOUNDS HAS AFTER THE ACCIDENT AND THE FIFTH AFTER THE OPERATING.

By G. M. JONES, Surgeon.

J. G., aged 46, a tall and remarkably muscular man, by trade a carpenter, was brought into the Hospital at 2 p.m. on the 29th February, 1888, in consequence of an accident he met with three-quarters of an hour before his admission. While employed on the dock of his vessel his foot slipped, and he was precipitated into the hold, his head, at the same time, coming in contact with a block; he was taken up in a perfect state of insensibility, and slowly afterwards was seen by Dr. Mason, who accompanied him to the Hospital, where he was immediately attended to. It was evident that he then laboured under the effects of liquor; the breathing was rather stertorous; pulse 118, soft and feeble; pupils natural; insensibility persistent. With the exception of a slight abrasion over the right eyebrow, there existed no signs whatever of external injury; the extremities were cold, so that hot water bottles had to be applied to them. When seen at 7 p.m. he had entirely regained consciousness, and complained of pain in the neck, and great tenderness between the shoulders; the slight pain in the head; had weakness along the arms, but not in the fingers; there was marked paralysis and loss of sensation from the sternum downwards; breathing was consequently performed by the diaphragm alone. Pulse 114; irregularity in the line of the epineuric process was perceptible; the head was thrown backwards, and the integuments at the back part of the neck presented three or four folds running transversely. A strong odour was at once noticed, and grey, of healthy-looking colour was shown by means of the catheter. From this date up to the 15th evening after the accident, no medication took place; on the contrary, the patient slowly, but gradually, became worse; the catheter had to be introduced three and four times in the twenty-four hours, as all power of voiding urine was completely lost; the bowels were only acted on by means of rectum oil, assisted by enemata; the pulse varied from 10 to 60; and, notwithstanding the provisions taken, a large area on each of the sides had already commenced sloughing. On the 16th March the catheter was placed under the influence of chloroform, in order that a more minute examination of the spinal column might take place; the result was as unsatisfactory as the first. When seen on the 16th, at 5 a.m., a marked change for the worse had evidently taken place; a great tenderness in the larynx, which had never before manifested itself, was apparent; and when raised, the countenance expressed considerable anxiety; the sensation along the arms was more declined, speech thickened; and the pulse subsided at every third or fourth beat. Under these most unfavourable circumstances, the

following operation was performed, the patient having first been rendered insensible by means of chloroform:—

An incision, about four inches in length, was first made on each side of the spinous processes of the third and fourth dorsal vertebrae, and were then connected together in the form of the letter H, by a transverse one. As much of the muscular structure, together with their insertions, as the nature of the case would allow, were then reflected upwards and downwards. The muscular mass on each side of the spinous processes, and that occupying the vertebral arches, had to be cleared away, in order to expose these parts; this accomplished, the arches of the third and fourth dorsal vertebrae were sawn through close to their pedicles, and their intercostal attachments being loosened, were removed, so that the cord, covered by its meninges, was exposed, but little effusion of blood was found here, and no fracture could be detected; the incisions were, therefore, prolonged upwards, and, on exposing the laminae of the fifth and sixth cervical vertebrae, a small osteophyte was discovered, and the fracture detected. The same proceeding was adopted over these vertebrae as in the first instance, and the cord and its meninges exposed; the arches were fractured across; the meninges were not incised, but completed; and there was much blood effused between them and the vertebral canal. After the removal of the fractured portions, the lips of the wounds were approximated by means of adhesive plaster, and water dressing, &c., applied. The hæmorrhage was very abundant, though not serious, and chiefly of a venous character. The pain after the operation rose to 30, and no longer subsided. At 3 p.m. the patient had entirely recovered from the effects of chloroform; merely complained of aching pain in the neck and back; was perfectly cheerful, and had recovered sensation as low down as the umbilicus. The arms, too, which before the operation could only be drawn upwards, were now raised as pleasure, and could, without inconvenience, be drawn across the chest.

24.—Slept comfortably during some parts of the night; pain 20, and regular sensation as low down as the umbilicus natural; has on several occasions felt the desire to void water, and has acted for the actual two or three times; the pain is, however, still existing, and the urine has been drawn off. (It may here be stated that, from the time of the accident till the patient's death, this secretion was always sufficient, natural in character, and never once exhibited the slightest abnormal colour.) On the 7th and 8th the improvement was gradual; and, at 1 a.m. on the 9th, I had some reason to hope that recovery might take place. I found he had slept well for two hours. He expressed himself as refreshed, was very cheerful, denied death, and gave it as his opinion that the catheter would not again have to be employed. Pain was then 20, soft, and regular. At 5, his bowels were freely acted on from enemata given, taken the preceding evening. His throes were then changed by the nature, when almost immediately afterwards some came on, and he expired at 7½'clock the same morning. As the patient's relations were anxious to remove the body as soon as possible, the post-mortem examination was of necessity a partial one, and, consequently, by no means as satisfactory as could have been desired. It showed the spinal cord to be entire and unaltered in its posterior aspect. To the left side, opposite the pedicles, and passing obliquely across, and corresponding to the seat of the fracture through the bodies of the fifth and sixth cervical vertebrae, the cord bore the appearance of injury. Much blood was found in the neighbourhood of the fractured parts, and so complete was the injury and displacement, that the bones were preserved in their natural position almost entirely by the integrity of the anterior common ligament. The roots of the spinal nerves on the left side were in a great measure severed from the chord. There was considerable effusion at the base of the skull, and the muscles and structures on the back were compressed.

Remarks.—Although the termination of this case was fatal, the operation must not be regarded as having either accelerated the event, or as falling altogether in procuring the desired result. It is one which presents considerable interest in many points, and holds out encouragement to a bolder line of practice in injuries of the spine than that which is usually followed.

The first, and certainly the most important point to be considered, is, the justifiableness of operative interference in those cases in which either fracture or displacement, or both, are to be met with in the vertebral column.

When, in common parlance, it is said that a man has broken his back, or such, the words are at once regarded as synonymous with his having met with his death; and less the experience we may have derived from our own practice since leaving the schools enabled us to arrive at a different conclusion to that impressed on our minds by our able teachers, that fracture of the body, or displacement of any of the spinal processes, is an accident, not only fraught with the greatest danger to life, but is, as a general rule, almost invariably to be regarded as the forerunner of certain death. It is true, that a very few instances are recorded in which patients thus laid off after the accident for months or even a year or two; but these cases must be regarded as exceptional, and when accidents of this nature come under our observation and treatment, and really tower on our minds the painful conviction, that the duration of our patient's life is not to be measured by years or months, but by days, perhaps by hours only. Taking these considerations into consideration, it appears that we are perfectly justified in operative interference. "To give the patient the advantage of this poor chance," are the words made use of by one of the highest authorities of the day; and this chance, however "poor" it may seem, is to my mind preferable to the "do nothing" system.

To obtain support as to the propriety of resorting to operative measures in cases of injury of the spine (without which support my own opinion would carry little weight), it is necessary to resort to the writings of some who, in an earlier day, held an undeniably prominent position in their Profession, for if we are satisfied with merely consulting the latter writers on Practical Surgery, we shall find but little encouragement given to pursue the course I am anxious to recommend; some do not so much as offer one word on the subject, while others barely state, "such has been proposed," and Miller remarks, that "reason and experience have decided against the procedure." We, however, find it stated in *Chittani's* system of Surgery, edited by South, that the younger Cline was the first to propose and perform this operation in the spring of 1814; and Cooper observes, "that if any good ultimately results from it, Henry Cline has the merit of proposing it." Cline undoubtedly performed unsuccessfully this operation at St. Thomas's, but it is altogether a mistake to suppose that he was the first either to propose or perform it, as the following passage from Dr. J. Ferriar's "Medical Dictionary," published upwards of one hundred years ago, evidently shows. There are his words:—"If the spinal marrow is wounded death follows inevitably; though, as it may now exist not to attempt the relief of one under these unhappy circumstances, the Surgeon should fix the injured part low by the hands, and elevate the fragments which press upon the medulla in a proper manner, so when they are quite loose, extract them. There let him cleanse the wound thoroughly, and apply balsamic medicines, using the needle and scalpel. He must continue this till the wound is healed or the patient dies." After Cline's case, Mr. Tynd on two occasions performed the same operation, but unhappily with the like result. One or two others have followed in their footsteps; and Sir Astley Cooper, in a case which he regarded as fracture with displacement, operated also; but it was found that the spinous process was alone fractured, and not the arch. Here, then, we have sufficient authority for operative interference; and surely the labors of two, three, or even half-a-dozen cases should not suffice to make us abandon an operation which cannot, I imagine, destroy life, while it may, in some instances,—very rare ones, perhaps,—not simply prolong it, but effect a cure. Sir Astley Cooper's final rule, after trying the acids, did not prevent Murray and James attempting a like operation, nor will these additional failures deter others from pursuing a similar course if similar cases present themselves.

Mr. Lawrence, in his admirable Treatise on Hæmorrhoids, makes use of the following words:—"No great inconvenience can arise from cutting open an enlarged gland, while the patient's life would be endangered by putting off the operation to a case of hæmorrhoids." This axiom might be extended with advantage to injuries of the spine, without increasing the danger which invariably accompanies them. Most authors agree that local abstraction of blood is often necessary in these cases; throughout the last sleep in the operation, that is, the motion of incisions made, will answer this purpose; nor are they to be regarded as the certain means to further explication; the Surgeon's judgment has then to decide whether other steps

are justifiable. I have witnessed several post-mortems of patients who have died from injury of the vertebra; and through a very large majority thereof such an immense amount of mischief, that human skill, however judiciously directed, could not possibly have effected anything, still, in some rare instances, it appeared to me that nature might, perhaps, have removed the evil. "If we could save one life in a hundred by it we should deserve well of mankind," is the written opinion of one well known as an authority; and in this opinion I must cordially concur.

A difficulty presented itself in my case which I do not remember to have seen mentioned by any of my predecessors, arising from the impossibility found by my friends and myself to diagnose the exact nature of the accident, or even the precise spot which was the seat of injury. Dr. Martin's belief that an evident projection of either the third or fourth dorsal vertebra was observable when he first saw the patient, determined me to cut down on both; and the not discovering any injury in these parts led to a much more tedious and exhausting operation than would have taken place under other circumstances. I merely mention this fact to show that an operation of this kind, if carried on with ordinary precaution, is more dangerous in appearance than in reality; for, notwithstanding its seeming severity, the well-managed horizontal effect it produced formed a most striking contrast to the patient's former condition. The anxious, begged expression gave place to one of calm, and peace and tranquillity to throbbings and heave. I am by no means prepared to say that, under any circumstances, recovery might have resulted; still the neglect of two points of the utmost importance lessened the chance of a more favorable termination. One was the length of time allowed to intervene between the accident and the operation, it being as established fact in all cases of injury, that inflammation increases in proportion to the delay, and with it a consequent increase of unfavorable circumstances for operating. The want of suitable appliances to keep the head and spinal column immovable, hindered the second important point; and, too, which I now feel to be most essentially necessary after similar operations. It will be seen in the history of this case that it was only after the patient had more moved that unfavorable symptoms manifested themselves, producing a state of coma, which shortly afterwards terminated in death. Might not this have been obviated by the application of some well-constructed apparatus?

There is another point, which at first sight may appear of little moment, but which is too interesting to be passed over altogether in silence; that is, the administration of chloroform in this case. My friends were unanimous in their opinion that it might not be to give, and their arguments certainly carried much weight; it was, however, given at first for a short time only, but afterwards during the whole of the rather protracted operation. Whether it has been administered in any other case of the same nature I am not prepared to say; but, should it not have been so, I am far from proposing this as an instance as a rule; it merely shows that, although the intercostal muscles were perfectly paralyzed, and the breathing ceased, if not entirely cut off by the diaphragm, the agent employed to produce anaesthesia, did so with as much advantage as in other operations, in which no doubt relies as to its efficiency and harmless properties.

POST-MORTEM APPEARANCES

OF A CASE IN WHICH

TRACHEOTOMY HAD BEEN PERFORMED THREE YEARS PREVIOUSLY.

By HENRY SMITH, Esq.

In the *Medical Times and Gazette* for July 4, 1858, will be found the particulars of a case in which the operation of tracheotomy was performed for urgent dyspnoea, the result of acute inflammation of the larynx. The patient, who was at that time a few hearty young men, aged 35, recovered from the effects of the operation, but he was not able to dispense with the tube. This circumstance was, of course, a source of considerable anxiety to himself and his friends, although he was comparatively comfortable, and was enabled to attend to his duties; nevertheless, when he made any unusual exertion, or was exposed to cold, he suffered from diffi-

culty of breathing and irritation; he was, however, enabled to pass away many hours together with the tube corked up, and this circumstance induced me to think that it might be dispensed with.

With a view to obtain sanction for withdrawing the tube, the majority of the most eminent Physicians and Surgeons in London were consulted at various times, and the greater number considered that the patient might be able to breathe through the natural aperture. One distinguished Surgeon, however, with whom I had a consultation on more than one occasion strongly urged, both upon the patient and myself, the imprudence of closing the artificial opening, and this advice, complied with the nervous timidity of the patient, prevailed; the tube was always retained.

I had but slight notice of this patient, professionally speaking, for nearly three years after the operation, when, on the morning of June 25, I was hastily summoned to see him with Dr. Tansley, who had been called to him a few hours previously, in consequence of an attack of dyspnoea with which he had been somewhat suddenly seized, and which was dependent, not upon any mechanical obstruction to the tube, but upon a general congestion of the lungs, at first unattended with any exertion, but in a short time accompanied with a profuse discharge from the air passages. Both Dr. Tansley and Dr. Watson, who had seen him some few days before this attack, had diagnosed a diseased condition of the lung on the left side; this was more well marked. The symptoms under which the patient now laboured were most severe—irretrievable attacks of apnoea succeeded one another, and he died from exhaustion in forty-eight hours.

In conjunction with Dr. Tansley I examined the body next day, and the following were the post-mortem appearances presented:—

The epiglottis was free from disease, but swollen, and could with difficulty be made to clear over the larynx. The entrance into this portion of the tube was as constructed that a small open spot would hardly pass it, and on laying it open great thickening in the submucous texture of the whole of the interior of the larynx was observed, but there was no disease of the mucous membrane, which was at this point smooth and shining, and presenting no cicatrix of previous stricture.

The artificial opening was just below the cricoid cartilage, and beyond this the whole of the inner surface of the trachea was not only most intensely inflamed, but at several points it was deeply ulcerated; the inflammation extended to below the bifurcation, and the bronchial tubes were much dilated.

Both lungs were greatly congested, but in addition, the upper and back of the left was indurated almost solid, a great number of tubercles being scattered here and there. On the right side there was less disease, but in the middle lobe a large mass of solid tubercular tissue was observed.

Independent of its intrinsic features of interest, this case is worthy of record, for it was well known to the majority of the more eminent Physicians and Surgeons in London, and some were consulted by the patient on various occasions, and some of whom will doubtless recognize it, and will be interested to know the result, and the pathological condition of the parts, respecting which there was much discussion during life.

The examination fully reveals the fact, that had this patient survived the tube must have been worn for life, and not nearly every one consulted on this point, either recommended that the artificial opening should be closed, or held out every hope to the patient that he would some time or another get rid of the tube, and he was only prevented from making the attempt by the opinion of one distinguished Surgeon who strongly insisted upon the danger of such a proceeding. That this advice was correct, the condition of the trachea in the larynx fully demonstrated; still those able men who gave a contrary opinion, had good grounds for doing so, for the patient could remain many hours when tranquil, breathing with the tube stopped up. And as during the last few months of the patient's life it was evident that mischief was being set on in the lungs, it was thought that the continued presence of the tube might have caused this. I must confess, that after having had opportunities of seeing the state of the patient under various conditions, and when he was breathing both with and without the use of the artificial opening, I was strongly inclined to agree with the majority of those who urged the patient to remove the tube. Such a case as this will probably not often be met with; under similar circumstances, however, there would always be a difficulty to decide

whether the patient might or might not safely dispense with the tube, and it appears to me that the particulars of the case may serve to throw some light upon this point.

There is one circumstance connected with the case which must not be omitted. In the Spring of 1858, Dr. Thompson saw this patient, and after making a most thorough examination, diagnosed pneumonia tubercular deposition in the left lung; moreover, he made the following note with reference to the condition of the windpipe, and with which he was kind enough to furnish me.

"Very little attention to pass the globe; there is no granular state of fauces; a similar condition in the larynx might explain the deficient passage of air, except that the vocal cords give the idea of simple narrowing, rather than constriction."

The post-mortem appearances show how correct was Dr. Thompson's view.

Carlisle-street, Bedford-square.

THE LONDON PRACTICE OF MEDICINE AND SURGERY.

THE LONDON HOSPITAL.

SYMPTOMS OF DISEASED ELBOW-JOINT.—INTENSE PAIN.—OPERATION.—ANÆSIC IN THE OLDER CRANES, WITH NEGLECTED BONE.—RECOVERY.

(Under the care of Mr. CHELSEA.)

Benjamin Smith, aged 58, by trade an engraver, of steady habits, and usually enjoying good health, was admitted on March 29, 1858. The particulars of his affection both in its history and subsequent progress, were carefully recorded by Mr. John Langdon, one of Mr. Curling's clerks, of whose notes the following is an abstract.—

March 29.—He applies on account of what looks like disease of the left elbow-joint. There is some swelling around the whole joint, but it is chiefly limited to the posterior part, where the integuments are tense and red. The arm is held rigidly flexed at a right angle, and there is exquisite tenderness about the joint, more especially from the olecranon, down the course of the ulna, the slightest touch on which causes him to flinch. He states that for some weeks past he has had most severe and constant pain in this part, and his haggard appearance fully corroborates his account. He states that he was in usual health up to January 15, and had but recently returned from a voyage to the Cape of Good Hope. On the day mentioned, he was attacked by what seemed to be acute rheumatism which confined him to bed for more than a week, and during which several of the joints were much swollen. The general symptoms subsided under treatment, and with these the pain in all the joints, excepting the left elbow, in which it steadily increased. At first there was hardly swelling nor redness about this joint, but very an insupportable aching pain. For a week or two before admission, he had attended at an out-patient, under the care of Mr. Wood, and iodine paint had been applied to the part. There were two circumstances in the account of his previous illness which were of importance to be borne in mind in connection with his present affection, viz., that he had on two occasions prior to the one just mentioned suffered from acute rheumatism, and that at the age of 2, he had, in consequence of a severe fever, had an attack of acute inflammation about the same elbow as that now affected. This attack had been sufficiently urgent to necessitate his attendance for some time at an out-patient at a Hospital. Leeches and blisters were applied, and an abscess opened, but eventually he got quite well, and had perfect use of the joint. From the state of the parts and the character of the pain, Mr. Curling inferred that his disease was rather in the bone (and thus the joint), so no sedatives or manipulation could, however, be borne, the diagnosis was only conjectured.

Ordered six leeches, followed by poultice. Low diet.

March 31.—The pain continues as severe as ever, but with some perceptible abatement of severity. It allows entirely previous sleep. He is to have half-a-grain of the acetate of morphia every night at bed-time.

April 1.—No relief. He has lost appetite, and is rapidly losing flesh and strength. It now appears that, prior to admission, he had of his own accord taken large doses of

belladonna for the relief of the pain. Under the influence of chloroform, Mr. Curling this morning made a deep incision over the olecranon, but no pus was obtained. It was found that the joint had perfect mobility while the patient was unconscious, and no signs of disease within the articulation could be discovered. Two leeches were to be applied every other night, and the dose of morphia increased to a grain.

11th.—The severity of the pain and its nocturnal exacerbations have so far deflected the patient that he is now scarcely able to stand without assistance. Nothing whatever has been gained by the treatment. He is to discontinue the leeches, and have a strong opiate lotion applied to the part.

12th.—A blister over the external condyle is to be applied. Morphia in grain doses every six hours.

13th.—It has been determined in consultation to make more free incisions over the ulna.

14th.—This morning Mr. Curling made a free incision along the course of the ulna, from above downwards, for a length of nearly two inches. No pus was obtained. The limb is confined to an angular splint, and the man is to have six ounces of wine daily. Continue the morphia.

15th.—There has been a slight relief, in some respects, until to-day, when the pain is as severe as ever. The wounds are healing, and do not discharge more pus than their own surface supply.

16th.—A general consultation was held on the case to-day. Mr. Luke suggests, and Mr. Curling is inclined to agree with him, that there is probably matter pent up within the bone. Others are of opinion that the intense pain depends upon some morbid alteration of the articular cartilages, and advise a course of mercury. As the patient has been a little better during the last week it is decided to wait.

May 1st.—The pain has been very intense ever since the last visit. The first decision is to give plunging a number of months into the part. A course of the iodine is to be tried. *ij* Pot. iodid. *ss*. *ij*. *div*. *ss*. *ss* *ter* *die*.

11th.—The dose of the iodine is to be increased up to 4 grains.

12th.—Catastrophic symptoms from the iodine have set in with some severity. The dose is to be taken but twice a-day.

14th.—Catastrophe more severe. The iodine is to be suspended.

15th.—No permanent relief whatever having been obtained by any of the various plans of treatment which have been tried, he was at length here decided to explore the head of the ulna. The condition of the part is much the same as at the time of admission, excepting that the swelling is now decidedly limited to the head of the joint, and the parts overlying the ulna. The incisions made have wholly healed, excepting one small sinus which leads down to the bone; but from this there is very little discharge indeed, and the surface of the bone is not bare in any extent.

Operation.—The man having been put under the influence of chloroform, an incision two inches long from near the extremity of the olea downwards, and a second upwards at right angles with the first, were made. The skin having been dissected up, the bone was laid bare. On examining the part to which the olea led, a very minute opening was discovered, leading into the bone. This was taken as a guide for the application of the trephine, and a small circle having been removed by the latter, the cavity of an abscess containing some necrotic fragments was opened. From this cavity two portions of dead and perfectly loose bone—one about the size of a nut, and the other that of a hazel-nut—were removed. This seemed satisfactory; and, as the cavity very nearly opened into the joint above, no prolonged exploration was made. The olea was wrapped in wet lint, and the arm confined in an angular splint.

16th.—The man has had excessive pain, and, in spite of increased doses of morphia, has had no sleep.

17th.—No rest has been obtained. The elbow is positioned.

18th.—The severe pain continues. A drastic dose of ipecacuanha is to be taken every four hours, instead of the morphia.

June 1.—The pain is greatly abated; the patient has had good sleep, and is much improved.

11th.—Rapidly improving in every particular, and now able to walk out in the garden. Wound healthy in appearance, and discharging freely.

16th.—The wound is now nearly healed, and the patient is free from pain. The arm is cast, however, kept in the flexed position, though it is quite certain that the joint is not diseased.

pling chain. He was brought to the Liverpool Royal Infirmary immediately on the 16th of October, 1885, and placed under my care. There was slight abrasion of the skin of the neck, slight tenderness, and slight emphysema; he spoke in a subdued tone of voice; there was also slight paralysis of the arms. He was able to walk; when I saw him he was sitting in a chair. I examined the trachea as carefully as I thought justifiable, and so much as the state of the parts permitted, but detected no asperities or lacerations; but concluded, from the nature of the accident and from the emphysema, that such must be the case. In the evening of the same day some difficulty in breathing took place, with considerable tenderness and pain in the neck. The *Reform-Surgeon*, Mr. Hatfield, applied six leeches on each side, and on the following day, the 17th, the same number was again applied. On the 17th I found him much better. When I visited him, he was sitting up in bed, and talking some French; his breathing, however, had a raspy character, and his voice was raucous. Early in the morning of the 18th, I was sent for, the message being that the man was dying. He was, it appears, in the act of taking a dose of house medicine when symptoms of impending suffocation came on. When I arrived at the Infirmary, I found him in the same state as when I saw him on the 17th. At once the same thing again occurred, but, on my arrival, I found him as I left him in the morning. I ordered him a full dose of jalap and calomel, his bowels being confined. In the evening another message arrived. I found the man sitting on the night-chair, his bowels more freely purged; he breathed better, spoke more clearly, and expressed himself as feeling better than he had done since the accident. His expression was, "I am all right now." At 11 p.m. he was perfectly quiet, and slept tranquilly. At 8 a.m. of the 19th I was again suddenly summoned. I found him lying on his back, his head thrown backwards, his face livid, eyes turned upwards, lower jaw depressed, in fact in certain moribund. I immediately made an incision in the median line of the neck, over the site of the laceration, introduced my finger into the wound, among a mass of clotted blood, but could find no trachea; on turning out the blood I perceived a bubble in two or three inches from the lower part of the wound on the left side, just above the sternum. This was found to proceed from the lower end of the trachea, which was pushed aside, possibly by the effused blood. The trachea was drawn into the median line. I then passed my finger upwards into the larynx, the lower end of which was at least two inches distant from the separated trachea below. All connection between the two was completely gone. Air began to enter more and more freely into the trachea, which, however, was stopped up with blood. Attempts were made to live it by position and a syringe, but these failing, Mr. Hatfield applied his mouth, and sucked up a considerable quantity of blood. This proceeding was repeated several times during the day by my dresser, Mr. Roberts, when dyspnoea became urgent, and each time the man was relieved of a portion of blood. A tube was introduced into the open end of the trachea, which was on a level with the upper border of the sternum, and the man's head was inclined downwards, so as to diminish the extent of the gap as much as possible. On November 3 the trachea tube was removed, and a double piece of gauze placed over the opening. On the 24th, having inadvertently exposed himself to a cold wind in the yard, he was seized with acute bronchitis of both lungs; the amount of sputum mucous expectorated was enormous; it all came through the opening, and had to be constantly dragged out, so that he required incessant watching. This attack gradually subsided, and on December 1 the wound was quite closed. On the 11th he went home; after this he had another attack of bronchitis. He called upon me on April 18, and again on the 26th of last month.—*Terre*. I examined him carefully, and noted—He had a ruddy complexion, healthy, a depression exists in the throat just above the sternum, capable of holding a walnut; this is increased forcibly in depth and width during each inspiration, showing the use of the deep cervical bands, in reference to the trachea, when the parts are in their natural state. A fragment of trachea can be felt attached to the lower part of the larynx; below this nothing is felt like tracheal rings, but merely a fibrous tissue; his voice is hoarse, like that of a person suffering from the commencement of a cold, and when he breathes quickly and deeply the sound produced is that of air passing through a narrow tube. I presume, therefore, that a Struss tube has been developed in

the space existing between the upper and lower ends of the divided trachea.

I suspect in this case the following was the course of events.—The trachea was in the first instance partially torn across; bleeding took place gradually, the effused blood coagulating around the lacerated part. He never expectorated any blood; this arrested the emphysema, and preserved the continuity of the tubes; that, owing partly to the elasticity of the trachea, and partly to the movements of the neck, the separation became greater, coagulated blood still blocking up the aperture; that the effort to bring medicine caused the displacement to become greater still, and the separation of the two ends to be complete; the coagulated blood still forming a continuous channel for the air; that a slight lateral displacement occurred twice after this, the lower end of the trachea each time returning to its natural position; that on the morning of the 19th the displacement was such that the trachea could not regain its former position; and the coagulated blood, instead of forming a channel for the air, blocked up the end of the tubes, and the man would, unless immediate assistance had been given, have died.

Medical Times & Gazette.

SATURDAY, JULY 24.

THE CASE OF WILLIAM DOVE.

WHERE the murder of Cook by strychnia still remains deeply impressed upon the public mind, a second case of poisoning by the same powerful agent has been tried at York, but with a very different result from that which occurred at Palmer's trial. In the first memorable case, the ingenuity of Chemists, and of Medical Practitioners, was severely taxed in bringing to light the fact that the death of the murdered man was really caused by strychnia; but in the case just ended at York, the fact of poisoning by strychnia was at once conceded, and the point to be determined by the jury was the extent or intensity of the morbidness.

We shall here offer a few observations upon some features similarly, and some of contrast, which characterize these two remarkable trials. The similarity of the symptoms in the cases of Cook and Mrs. Dove must be apparent to all. Without adhering to the previous attempts at poisoning made in both instances, we may remark that the fatal doses were followed in each by symptoms almost precisely similar. William Palmer administered some pills to his friend Cook, and soon afterwards Cook is seized with tetanic convulsions, his body becomes arched, and he dies in frightful torment; William Dove mixes some medicine in a glass, gives it to his wife, and the same symptoms supervene—the tetanic convulsions, the arching of the back, the final agony of death. William Palmer and William Dove are both proved to have had strychnia in their possession; they both administered according to their victims; both the deaths were those which might be expected to result from strychnia poisoning. But in Cook's body no strychnia was found after death, in Mrs. Dove's the poison was easily discovered. It must be remembered, however, that in Cook's case a minimum dose of the poison had probably been administered; that the stomach of the deceased had been cut open, and its contents allowed to escape; and that strychnia was sought for only in one poison among many others; in Mrs. Dove's case, a large quantity of strychnia had certainly been given, the stomach and its contents were carefully preserved and examined; and strychnia was expressly sought for as the poisonous agent.

These cases, also, seem to show that the spirit of imitation has a large share in the commission of certain criminal

acts. The horrible accounts of the Ropley tragedies reveal the fact that strychnin is a most fatal poison—the accidental circumstances that, in Cook's case, no traces of it were discovered, leads to the erroneous inference that it is a poison, incapable of detection; and forthwith William Dove procures a portion of this deadly drug, and poisons his wife. But we are not called upon to consider the case of William Dove in its chemical or physiological aspects, as the evidence is too conclusive to admit of the slightest doubt; we are invited to examine the psychological features which have very recently been developed, and to inquire whether the prisoner in the Leeds murder was, or was not, accountable for his actions.

We have examined with great attention the arguments and the evidence adduced for the defence, to prove that William Dove was of unsound mind, and was therefore irresponsible; but we are compelled to admit, that we have not yet been convinced that the plea of insanity has been adequately sustained. It is indeed proved abundantly that the prisoner was a cruel, mischievous, idle, and wasteful person; that he was irreverently addicted to drink; that he possessed no definite notions on the subject of religion; that he was fond of self-indulgences; that he followed no useful employment. He had turned cows and ewes, he had threatened to shoot his father; he had put a loaded pistol into his own mouth, and had committed many other cruel and foolish acts, for some of which he might, and ought, to have been severely punished; but, unless crime and insanity are convertible terms, such acts do not necessarily indicate insanity. He also entertained a belief in spirits, and goblins, and wizards, and other superstitious agencies; but there are too many weak persons who entertain similar delusions to allow us to admit that this is a decided proof of unsoundness of mind.

Again, the mysterious act which he committed was not performed in a moment of sudden frenzy, or of uncontrollable impulse; but it was conceived and executed with all the cunning and tact which characterise the deeds of the cold-blooded assassin. Nor was motive wanting for the murder; for he was a bad and brutal husband, and had often expressed his intention of destroying his wife and marrying some one else. His conduct, too, after her death, was certainly not that of a madman, but of one who had committed a crime, and was anxious to conceal it. He is very much arraigned in a post-mortem examination of his wife's body, as might have been expected, although he had entertained the hope that strychnin was incapable of detection. He does not admit that he administered the poison to his wife, as a lunatic would probably have admitted; he does not offer any explanation of accidental administration, like a sane, innocent man, who finds his wife suddenly carried off with the symptoms of poisoning. He adopts the silent system, which succeeded so well in Palmer's case, and gives no clue, in any expressions which he lets fall, to the unravelling of the dreadful mystery.

The psychological evidence brought forward on the part of the prisoner was, in our minds, not satisfactory; and we cannot but agree with the Judge who tried the case, that Medical evidence which depended to these was far more valuable than that which consisted merely of the expression of opinion. Examined by this test, the evidence of Dr. Caleb Williams, the highly-esteemed Physician to the Retreat at York, could not be said to serve the prisoner; for although he had carefully examined Dove since his commitment to prison, he deposed to no facts indicating his insanity. He merely gave it as his opinion that the various acts of cruelty to which we have alluded indicated an unusual state of mind; but when re-examined on this point, he evidently began to regard crime and insanity as synonymous terms; at least such is the conclusion which we have been constrained to form by the perusal of his evidence.

We would beg particularly to call the attention of our readers to our abstract of the Trial printed in another part of the Journal, where we have brought together, in a condensed form, all the important evidence, and the reasoning of the Judge and the Counsel upon the question of the prisoner's state of insanity.

On the whole, then, we consider that the verdict of Guilty is one that is fully borne out by the evidence; that the recommendation to mercy is founded on a mistaken notion on the part of the jury as to the limits between insanity and crime; and we must express our hope, that the miserable wretch, Dove, if he is not hanged, will be at least sent to expiate his guilt upon some distant shore, and be doomed to hard bodily labour for the rest of his life. Sympathy would be thrown away on such a criminal.

THE WEEK.

Two questions at King's College Hospital have terminated in the choice of Dr. Charles Macfarlane and Dr. Conway Evans as Assistant-Physicians, and Messrs. Wood and Hulse as Assistant-Surgeons. We understand that considerable dissatisfaction has been expressed by some of the old students of King's College Hospital at the non-election of Mr. Henry Smith, who was one of the candidates for the post of Assistant-Surgeon. This gentleman is well known as a most zealous cultivator of the art and science of Surgery, and has filled the post of House-Surgeon to King's College Hospital. Without the least disparagement to the gentlemen who have been elected to the vacant posts, we cannot but think that Mr. Henry Smith's claims have been somewhat unduly passed over. We learn that the appointments of Assistant-Physicians and Assistant-Surgeons at this Hospital are only for a limited period, and that they render no absolute claim to the same appointments, when the latter may become vacant.

We beg to call attention to a Report (which is published this day in our columns) upon the Medical Department of the Army, to which it is intended to introduce some beneficial changes. We are glad to find a recommendation that the principle of competition or of special examination is to be recognized, as far as possible, in future appointments of Medical Officers to the Army. Another beneficial movement in the recommendation to appoint properly trained persons as dispensers and compounders of medicines as members of the Medical establishment of every regiment. The duties of Pharmacists are at present performed by persons who have received no previous education whatever to qualify them for the task.

A case involving some features of psychological interest has lately been tried at Winchester. A person named Mansel, possessing some little property, appears to have displayed, to say the least, very great eccentricities of character; he was very silly in his habits, allowed his beard and his nails to grow, exhibited a great aversion to washing himself, and entertained feelings of hatred against his nearest relatives, and, as it would appear, without any cause. He was, moreover, afflicted with paralysis, of which he eventually died. There was an undoubted taint of insanity in his family, and two of his brothers had been inmates of lunatic asylums. His mother and sister and a lunatic brother were all in bad circumstances, yet he left them nothing by his will, but divided the whole of his property to be divided among the members of a family who appear to have lived with him in the capacity of servants, and who acquired a great influence over him. He was a very voluminous writer, and was continually quarrelling with his pen; and he was also a great reader. A considerable number of letters were read which indicated an

6133

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ORIGINAL COMMUNICATIONS.

Case in Fracture, with Dislocation of Clavicle. By C. F. Moore, M.D., L.R.C.S., etc. 125

Acute Maxillary Sinusitis. Its Causes in the West Indies, 1864. By George Clouston, M.D. 126

THE LONDON PRACTICE OF MEDICINE AND SURGERY.

Practical Remarks on the Pathology and Treatment of the Diseases of the Heart.

Lectures—Lithotomy in the Female.

Editorial Notices.

EDITORIAL ARTICLES.

Meeting of the British Medical Association at Birmingham.

Two Cases.

Original Lectures of Liverpool—Children in London. 127

REVIEWS.

An Exposition of the System and Principles of Preparation, with a Practical Treatise on the Preparation of Medicines, by W. P. Woodhouse, M.B., M.S., M.D., etc. 127

PROGRESS OF MEDICAL SCIENCE.

Advances in the Practice of Medicine. 128

GENERAL CORRESPONDENCE.

The Double Question. 128

Is Death a Continuous Process? 129

Illustrations of Pathology with the Microscope. 129

Is Death a Continuous Process? 129

Respiratory Apparatus of the Head and Neck. 130

THE BRITISH MEDICAL ASSOCIATION—GENERAL MEETING. 130

MEDICAL NEWS.

Reports of the Progress of the "Lancet"

Medical News.

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Lecturer on General Natural History at the Government School of Mines, and Fellow of the Museum of Zoology, Royal Institution.

LECTURE VII.

Two *Stenobothris* or loach-like are usually supposed to form a link between the *Stenobothris* on the one hand, and the *Trematoda* on the other, but their affinities are closer with the latter than with the former. Totally deprived of the characteristic arms of the *Stenobothris*, and exhibiting no division into definite coenites, they are provided with the coenites so constantly possessed by the *Trematoda*, and present no small resemblance to them in their reproductive organs. On the other hand, in the arrangement of their nervous system and in their vascular system the *Stenobothris* resembles the *Aspidogaster*. The recent descriptions of the anatomy of this group are so numerous and accessible, and there are so many other forms of far more importance as modifications of the Annelid plan to be dealt with in the course of the present Lecture, that I prefer to refer to them to the *Trematoda*.

FIG. 1.



4. *Aspidogaster megalobothris*, with. Arrangement of the alimentary and reproductive organs. Part of the animal in section. a. Stomach. b. Muscular pharynx. c. Stomach. d. Esophagus. e. Intestinal caecum. f. Coenite containing eggs. g. Vitelline. h. One of the testes. i. d. Sperm. l. Uterus. m. Vagina. n. Vagina. o. One of the numerous suckers. p. One of the suckers. q. One of the lateral contractile vessels. r. Muscularities of the dilated coenite.

Aspidogaster megalobothris, which I select for description as the type of this group, was discovered by Van Ben and described in his "Reizings van Koninkrijk der Nederlanden Tijdschrift" [Nova Acta, 1838]. The animal lives in the peritoneum, kidney, and liver of the fresh-water mussel (*Felis, Stenobothris*) and rarely attains a length of 1/8 of an inch. The body is oval and elongated, rounded posteriorly, but anteriorly produced into a neck, terminated by the sucker-like mouth, which is capable of great elongation and very flexible. Attached to the greater part of the middle of the body is an oval disk or sucker, of much larger proportional size than is usually the case in the *Stenobothris*, and presenting the further peculiarity of being divided by longitudinal and transverse ridges into four series of quadrate compartments upon its outer surface. This great sucker is the principal organ of attachment and of locomotion. By its means, the animal adheres freely to the

walls of the chamber in which it resides, or by giving the sucker a hollow beat like form, it floats at the surface of the water.

The cup-like mouth communicates by a very narrow passage with the cavity of an oval muscular pharyngeal bulb, from which a short oesophagus is continued posteriorly to open into the stomach. This organ is a single proventer moved one, wider posteriorly than anteriorly, and extending through the greater part of the length of the body. The walls are very contractile, and, though thin and delicate, very distinct. They are connected with the pharynx by a sort of network of rudimentary connective tissue, which traverses the proventerol cavity. The stomach is usually full of soft, strongly retreating granules (very similar in appearance to those which we shall find in the *Stenobothris*) which are kept in constant motion by the contractions. There is no trace of any intestine or anal aperture—the "terminal pore," which Van Ben described as such, belonging to a totally different apparatus—the vascular system.

This terminal pore (Fig. 1, d.) is, in fact, the aperture of a small sac, very similar to the muscular vessels of the *Aspidogaster*, and, like it, undergoing incessant contractions and dilatations—by which, as Van Ben states, a little pellucid mucus is sometimes forced out. Two wide vessels with *annulate* and slightly wrinkled paries (Fig. 1, k.) pass from the anterior extremity of the sac along each side of the lower region of the body, to the anterior extremity of the sucker, where they terminate blindly. These vessels are highly contractile, more especially in their posterior part, and, like the terminal sac from which they open, they are entirely devoid of cilia. A thin lateral vein likewise, each lateral vessel gives off a much narrower branch (l.), which passes at first upwards and then forwards, to a level with the anterior extremity of the pharyngeal bulb. Here it bends back upon itself and runs parallel with the great lateral vessel to the posterior extremity of the body, giving off numerous branches in its course, which ramify and anastomose extensively, and terminate in very delicate branches in the paries (Fig. 1, l.).

These vessels differ from those in which they took their origin in several respects: they are non-contractile, and they are abundantly provided with long undulating cilia, set at pretty close intervals along the walls of the larger trunks, but becoming more sparsely in the finer ramifications.

FIG. 2.



4. Vascular system of *Aspidogaster megalobothris*. a. Terminal pore. b. Lateral vessel. c. Lateral vessel. d. Lateral vessel. e. One of the larger and f. one of the smaller lateral vessels.

The left main trunk of the non-contractile dilated vessels differs from the right in giving off almost the middle of the body a branch which suddenly dilates (m), and then narrows again so it passes downwards towards the sucker, in which it divides into three principal branches for the supply of the middle and posterior regions of that organ, and of the genital organs lodged in it. The further sub-branches are attached to the inner surface of the left lateral contractile trunk, but, so far as I could see, does not open into it.

Like Mr. Asher (a), I have been unable to detect any trace of a nervous system in *Aspidogaster*, but I can hardly doubt that it will be eventually discovered.

a) On the Nervous System of the Trematode *Stenobothris*, the *Aspidogaster* and the *Platyhelminths* in General. *Philosophical Magazine*, London, Vol. 8, 1841.

b) On the Nervous System of the Trematode *Stenobothris*, with a description of the same in the *Aspidogaster* and *Platyhelminths*. *Philosophical Magazine*, London, Vol. 8, 1841.

FIG. 3.



FIG. 4.



FIG. 3.—Reproductive organs of *Apidaphne* on a larger scale. Letters as in Fig. 2.

FIG. 4.—Diagram of the structure of the Oviduct. a. Head and neck. b. Forepart of the body corresponding with a proleglarium. c. Forepart of the body corresponding with a proleglarium. d. Forepart of the body corresponding with a proleglarium. e. Forepart of the body corresponding with a proleglarium. f. Forepart of the body corresponding with a proleglarium. g. Forepart of the body corresponding with a proleglarium.

As in most Trematodes the genitalia form a large part of the viscera. They consist of—1. The ovary. 2. The vitelliferous (V.). 3. The oviduct. 4. The uterus. 5. The common duct. 6. The vagina. 7. The vas deferens, internal and external. 8. The penis and its sac. The ovary (O) is the anterior of two rounded masses lying in the center. At first sight it appears to be oval, but it is, in fact, pyriform, the larger end being anterior, while the posterior narrower extremity is bent backwards beneath the anterior. Before it reaches the anterior extremity of the mass, however, it is bent sharply back again, parallel with itself, and so passes into the oviduct. The ovary is surrounded by a delicate, but strong, fibrous-looking coat, enclosing a mass of homogeneous transparent matter (prolegaria). At the anterior end of the ovary minute granules (prolegaria) are scattered through this substance, and are occasionally surrounded by a faint, clear zone. These are the rudimentary prolegaria upon and outside of the female ova, the course of whose development may be readily traced by working from the anterior to the posterior extremity of the ovary. The genital spots become larger, and gradually assume the appearance of vesicular nuclei; while the clear zone around them in like manner becomes larger, and acquires more and more the appearance of a cavity. While this cavity is small, it has no distinct wall, but as it enlarges the interior of the wall becomes distinctly marked, and the genital vesicle is converted into a "ciliated oval." In the larger genital vesicles, a minute spot, like a granule, makes its appearance upon one portion of the periphery. This appearance was constant in one ovary, but in the others I failed to find it so regularly developed. On examining the ovary close to the commencement of the oviduct, a division of the periphery into areas surrounding each genital vesicle becomes obvious. On the application of pressure, the prolegaria breaks up into masses corresponding with these areas in size, which are very brittle, but when left to themselves assume a rounded or oval form, and have all the appearance of perfect ova, except that they possess an vitelliferous membrane, and that the yolk, instead of being granular, is perfectly clear, and comparatively small. These primary ova, if I may so term them, become detached, and pass into the oviduct. Here they are fragmented, and, becoming surrounded by a great mass of accessory yolk, and a shell, gradually acquire the appearance of the complete ova.

The accessory yolk is the product of the vitelliferous—a large double gland (V.), consisting of a number of oval, pyriform, or irregular granular masses placed on each side, at the junction of the center with the body.

These masses appear to be quite independent of one another; and as they at first, possess any obvious communication with the genitalia; but if the oviduct, just after it becomes free

from the ovary, be examined, it will be found to contain a short duct, filled with strongly refracting granules of the same nature as those in the vitelliferous. This duct is enlarged posteriorly, and then divides into two ducts filled with the same matter, which take a direction towards the vitelliferous, but can be traced no farther than they contain granules. By the careful application of pressure, however, the granules may be forced from the vitelliferous, through an anterior and posterior branch upon each side, into these ducts.

The oviduct is richly ciliated internally; almost first applied to the outer surface of the ovary, and when it becomes free it receives a canal, which I traced back to the penis, and which would appear to correspond with the lateral vas deferens discovered in other Trematodes by Van Beneden. This canal, however, presents no dilatation, or internal convolutions, and then becoming much convoluted, and rapidly widening, passes into the uterus, a wide tube, which runs forwards, dilated in many undulating curves through the perivisceral cavity, or terminates on the left side of the anterior part of the body, in common with the male organ. Posteriorly, the walls of the uterus are thin; but anteriorly they become thick and muscular. The genital vesicles are very small.

The penis (P) is an oval body of the same size as the ovary, and situated just behind it. Minute water-veins ramify upon it, so upon the ovary; and it contains a granular and vitelliferous mass, but no spermatids. The external vas deferens is a delicate duct, which passes forwards and comes into contact with the ovary, without, however, as far as I could observe, communicating with it or with the oviduct; it then bends back towards the yolk, passing over the anterior between the anterior vitelliferous masses into the body. Here it evidently becomes about twice as wide as before, and runs forwards, as an undulating thick tube, to the penis, a short and conical body, occupying the bottom of a large aperture on, which opens in common with the uterus. The spermatids are none.

The development of the ova presents many very interesting particularities. Above the junction of the duct of the vitelliferous with the oviduct the contents of the latter were pale and clear, and presented no distinct particles besides the prolegaria which had just been detached from the ovary. Below the insertion of the vitelliferous duct, however, the oviduct was full of granules like those in the vitelliferous, mixed up with ova in a more advanced state. In the smallest of these which I found, (Fig. 4 B), the shell of the ova had commenced, but was incomplete at one end. At the opposite extremity it enclosed a mass of irregularly aggregated vitelliferous granules, which covered almost one-half of a fixed pale mass, not larger than one of the primary ova; in which, however, I could distinguish three prolegaria, two of which were very close together, as if they had just divided. In more advanced ova the shell was complete, but either colorless or of a very pale brown hue. In some of these the primary ova contained many prolegaria, and were indented in and surrounded by, a confused mass of accessory yolk granules; while in others these granules were aggregated into a number of regular spheroidal masses (R).

FIG. 5.



Apidaphne ciliolata.—a. Section of the OVIDUCT. b. A primary ovum. c. Young stage of a complete ovum. The primary ova are partially surrounded by yolk granules and a shell. d. Prolegaria contained in the accessory yolk, paracrystalline into spherules. e. Unincubated embryonic ova. f. Embryo.

As development proceeds the accessory yolk masses gradually disappear; the *proliferative-ovum*, now become the homologous of the blastomeric disk or vesicle in other animals, in all appearance increasing at their expense. At the same time clear rounded vesicles in various numbers appear in the substance of it; but the nucleolus of the germ, though very minute, can, with proper care, be readily detected between these. In the final stages the shell becomes brownish, the nucleolus and granules disappear, and the substance of the embryo appears homogeneous. But, if carefully examined, the nucleolus subsists, and becomes visible, especially if water be allowed to act on the tissue; and, if the shell be broken, and its contents poured out, they readily break up into minute but well-marked "cells," each with its "nucleolus" or nucleoplasm. At the same time, the embryo takes on a form distinctly resembling that possessed by the adult; form which, as Dr. Asher has shown, is eventually passed without any metamorphosis.

It appears, then, that in *Aspidoporus* the earliest form given to primary ova (see Asher, l. c. p. 161.) which pass down the vertical, and become surrounded by the operations conveyed by the lateral vessels: (1) that then the essential part of the process of "yolk-division" takes place, the nucleolus or germinal spot dividing and subdividing, and the primary ovum becoming in this way converted into the spheruloid blastoderm; that, contemporaneously, the blastoderm becomes invested by the accessory yolk granules poured in by the vertical duct, and by a shell; that the accessory yolk granules break into spheruloid masses, which probably supply the blastoderm with the means of its constant enlargements; that, finally, the accessory yolk disappears, and the blastoderm becomes converted into the embryo. The fully developed ovum would thus correspond very nearly to that of the bird, in which the accessory yolk is supplied by the walls of the *Stratium follicle* instead of by a distinct vitelline.

The Trematode present a considerable variety in the details of their organization. In some, such as *Platostomum*, *Polystomum*, *Chelobdella*, &c., the number of suckers is considerably increased; in *Chelobdella* and *Aspidomus*, a horny framework supports some of them; and in *Cyrtostephanus*, and some species of *Platostomum* and *Platostomum*, they are provided, in addition, with an apparatus of strong hooks.

In the majority of the Trematode the intestine is double, and its branches frequently ramify, as in the *Flukes*, *Dicæna*, *Aspidomus*, but in no one has any real aperture been found. In *Macrorostomum* and *Campylodermis polycephalus* the oral aperture is (Van Beneden, Wagener) situated in the middle of the ventral surface, while in the *Aspidoporus* series of *Aspidomus* there would seem to be no alimentary canal at all. A nervous system, consisting of two ganglia, united by a transverse commissure above the oesophagus, and sending off cords posteriorly to the hinder end of the body, from which lateral branches are given off, has been observed in many Trematode, and in some forms oval papillae and pigment spots have been interpreted to be organs of sense.

The water-vascular system is always well developed; but great confusion has arisen in consequence of the very different appearance, in some cases, of the two portions which I have distinguished in *Aspidoporus* as the contractile and non-contractile vessels. In many Trematode, in fact, the vessel or vessels corresponding with the contractile portion are filled with a granular matter, which is from time to time excreted from the terminal pore, while the part of the vascular system is entirely free from such granules. Until Van Beneden demonstrated the contrary, it was supposed that these "excretory vessels," as they were called, formed a system completely distinct from the others. Van Beneden's observation of their continuity in *Stelasma contractile* has, however, been confirmed by Asher, and I have observed in the clearest manner the continuity of the two systems in *Stelasma contractile* (from the *Macchabæi*). In this worm the terminal pore is the aperture of an elongated strong muscular sac, from whence a

wide tube runs up the middle line of the body, almost as far as it occupies the ventral surface. Here it divides into two branches, which incline to the sides of the body, and apparently terminate in oval expansions, just behind the oral sucker, on the ventral surface of the body. The whole of this great bifurcated tube was usually full of contents, strongly resembling granules. A very distinct part of water is placed in the point of bifurcation; but there was no appearance to be doubtful, as the contractions of the tube thrust them upon sometimes backwards and sometimes forwards. Close to the anterior dorsal vein of these "excretory" vessels two tubes commenced, whose filaments contractile walls, and whose strongly reflecting, and elastic (?) contents, gave them quite the aspect of the vessels of the *Ascidaria*. If careful management was only made the dorsal continuity of these tubes with the "excretory" vessels be made out, but the granules could be pressed from the one into the other. These must, however, be some arrangement by which this is normally prevented, for not a trace of any granules can ordinarily be detected in the contents of the tubes. They run back along the sides of the body, and give off numerous branches, which eventually form a network over its whole surface.

The ultimate granules have a diameter of not more than $\frac{1}{100}$ th or $\frac{1}{200}$ th of an inch. I could find no cells in any of these vessels in the body; but in the head I found a few reflecting cells lodged in pyramidal terminal enlargements of the blood ramifications. These appeared to be cilia, but it would be very hazardous to assert that they really are so. In *Stelasma contractile*, *prolepis* and *notolæpis*, and in *Aspidomus polycephalus*, according to Asher, certain small water vessels form part of the water-vascular system; so that in these Trematode, in condition it, as it were, dissimilarly opposed to that which it exhibits in *Aspidoporus*.

The reproductive organs in the Trematode present great diversity in arrangement; but, in almost all, it is so essentially similar to that which obtains in *Aspidoporus*, as to obviate the necessity of entering into further details. It is necessary to remark, however, that in the ordinary description, the vitelliferium is confounded with the ovarium.

The Trematode are very rarely diocious; but Professor Kützing has described a species, *Stelasma thomæi*, the male and female of which, very different in appearance, inhabit, in pairs, cysts attached to the gills of *Strombæ* fish. Dr. Billard has discovered another very remarkable unisexual Trematode, *Stelasma thomæi*, in the portal vein and other organs of man.

FIG. 5.



A. *B. Stelasma contractile*. A. The bifurcated embryo (a) containing the nuclei of reproductive cells. B. *Stelasma contractile*. C. *Stelasma contractile* (a) showing the portion of the reproductive system containing granules of other cells. D. *Stelasma contractile* (a). E. *Stelasma contractile*. F. *Stelasma contractile* (a).

It is in the manner of their development, however, that the Trematode present the most remarkable differences from one another. *Aspidoporus*, as we have seen, undergoes no metamorphosis; but in many Trematode, the embryo leaves the egg as a ciliated larva. In such a larva (A), proceeding from the egg of *Stelasma contractile*, a Trematode parasite of water-birds, Van Beneden discovered that a very peculiar body was

[12] I cannot help thinking that it is those which have hitherto been regarded as the "contractile," the aggregation of the contents upon the left system having been associated with yolk-division, and the contents of the right system being the result of the division of the contents of the left, and also of those of the *Polystomum* apparatus, *Stelasma contractile*, 1858.

[13] In *Stelasma contractile*, also, according to Van Beneden, platebook p. 161, the contents of these vessels are ciliated.

continued and eventually, by the meeting of the water-collected filament, become free (B). The further fate of this larval form has not been traced in *Monostoma*; but Rejzinger discovered, in fresh-water Diptera, peculiar parasitic organisms of a previously similar structure, which, from their colour, he termed "king's-yellow" worms. These king's-yellow worms (C) have the form of cylindrical sacs, tapering posteriorly into a tail, and provided with a little process on each side, where the body joins the tail. At the anterior extremity is a mouth, opening into a short cylindrical coecal intestine; but there is no trace of any other organs. Nevertheless, rounded germ-cases, which must be regarded as free bodies, make their appearance in the cavity of the body, in which they float and become metamorphosed either into a new brood of king's-yellow worms, or into what are called *Cercaria*, creatures resembling *Distoma*, but without reproductive organs, and provided with a long elastic tail. The *Cercaria* becomes free, and swims about in the water until they meet with some animal, such, for instance, as an insect larva, in which they can undergo their further development; they then lose their way through the integument, and in so doing lose their tails, and become converted into ordinary *Distoma*, which may either develop reproductive organs or may become castrated, to avoid the transmission of their host to the favour of some higher animal.

The first generation of king's-yellow worms in Stenstrup's peculiar nematocystæ called "parvo-cercaria," the second, "cercaria," but it will be observed that parent worms, cercaria, and *Cercaria*, are all so-called forms produced by a sort of larval generation. M. de Filippi, in a recent interesting memoir (7), describes many forms of the genus, and pointing out that some are provided with a mouth and intestine, while others have neither, but are more rare, he proposes to distinguish the former as *Stadia*, the latter as *Sporegans*. The series of small forms through which these *Distoma* pass, then, would seem to pass in,—larva, infusoid larva, tadpole, *Stadia*, or *Sporegans*, tadpole, *Stadia*, or *Sporegans*, truly *Cercaria*, *Cercaria*, *Cercaria*. But it must be remembered, that although no one *Distoma* has been traced through all these stages, and that *Distomum* itself alone has been found in the first and second; still, as it is known how many successive developments of *Stadia* or *Sporegans* may take place between the second and the fourth stage.

Again, as Dr Filippi has shown, considerable variations exist with regard to other points. The *Distoma* of the *Lymnaea castrata*, and of *Paludina* species, are developed directly, the former within sporegans, the latter within *Stadia*, without the intervention of the *Cercaria* stage. The *Stadia* of *Cercaria* sometimes does not appear to develop secondary tails at all, but to give rise at once to *Cercaria*, among which, however, are occasionally found quite distinct Trematodiform organisms, called *Nematoidæ*, which Dr Filippi imagines to be the equivalent of the secondary *Stadia*. The sporegans of *Cercaria* sometimes multiplies by division before developing *Cercaria*.

A similar, but perhaps still more singular, case of acoel development is to be found in the *Strophilus polycephalus* of Van Bie. If a number of fresh-water animals be examined, one or two may pretty soon be found in a very strange condition, the abdomen appearing to be stuffed with a white, filamentous, cottony-looking substance. If some of these *Stomata* (Fig. 7 A.) are placed under the microscope, they will be found to be tubes irregularly constricted at intervals, and consisting of a delicate structureless wall, lined by an internal richer and granular substance. In some parts the *Stomata* are empty, but in others they contain free, rounded masses of the same substance as that which constitutes the soft lining of the *Stomata*. These masses further can be observed in all stages of development up to the form represented in Fig. 7 D., which is a Trematode, provided with two very long everted appendages. Now, the structure of these caudal appendages is precisely similar to that of the *Stomata* tubes; and I believe that the latter are, in fact, nothing but these caudal appendages enormously elongated, and then developing new caudal by internal generation. What is the origin of the *Strophilus*, and what its ultimate fate, are problems yet requiring solution; but Van Nieldoff has suggested that it is derived from *Distomatodæ*.

A third mode of acoel development is that observed by Van

Nieldoff in *Ophrotrocha*, which gives rise to young *Ophrotrocha*, by a process of internal generation within a cavity in the body of what appears to be the perfect form of this Trematode.

FIG. 1.



Strophilus polycephalus. A. Hatched sporegans. B. Portion of the mouth (arrow indicated). C. Outer coat. D. Intestine. E. Caudal region in course of development. F. One of the germ-cases. G. *Strophilus* in a *Stomata*. A. Clear view of caudal appendages.

Finally, the occurrence of the process of acoel development takes place in Stenstrup's famous *Distomum paradoxum*, perhaps the only true double animal in nature. Van Nieldoff having discovered that it is the product of the conjugation of two original separate *Distomata*, belonging to the genus *Lymnaea*. The *Distomæ* approach and adhere by their ventral suckers, which eventually coalesce, so that no trace of their original distinctness is discernible. The alimentary canals of the two communicate through the left-hand, and it is only after conjugation that the genitalia are developed.

(To be continued.)

LECTURES ON ORTHOPÆDIC SURGERY,

DELIVERED AT THE

ANATOMICAL DEPARTMENT OF THE ROYAL COLLEGE OF SURGEONS,

(COMMENCED ON WEDNESDAY'S EVENING.)

IN THE

SESSION OF 1884-85.

By WILLIAM ADAMS, F.R.C.S.

Assistant Surgeon in the Royal College in England; Lecturer on Surgery at the Lancaster Medical School; and Demonstrator of Medical Anatomy, etc., at St. Thomas' Hospital, etc.

LECTURE VIII.

CONGENITAL TAMPON VARUS.

MORRIS ANATOMY.—Continued from page 4.

Ligaments.—The condition of the ligaments in cases of club-foot has been very much overlooked by the majority of writers on this subject, and in some of the principal works on Orthopædic Surgery, no allusion whatever is made to their condition. Dr. Little does not describe any structural alterations in the ligaments, either in infants or adult cases of club-foot. And Mr. Tappin observes:—"The construction of the ligaments does not apply to infants (a)," and again, at page 44—"The increased severity in an infant is dependent solely on the greater amount of contraction of the muscles themselves; not so, however, in the adult. In these, the severity will be greatly increased by the contraction of ligaments from position."

Nevertheless, it is certain that these structures play a most important part in maintaining the deformity, and in increasing the attempts of cure, both in infantile and adult cases. In proportion to the length of time the deformity has existed previous to birth, and also in proportion to the severity of the muscular contraction, which determines the external form of

the foot, the ligaments gradually adapt themselves in length and form to the altered position of the bones they naturally serve to connect, and maintain them so firmly in the deformed position in some cases at birth, that the foot cannot be restored to its natural form and position even after division of all the tendons. The rigidity, however, with which the foot is held in its deformed position at birth, depends, not only upon muscular contraction, but also upon the extent to which this adapted shortening of the ligaments has taken place during the latter part of the intra-uterine growth of the bones. Now, it is an ascertained fact, that club-foot sometimes occurs so early as the fourth month of pregnancy. Huxley (b) says that these distortions are not infrequently witnessed in embryos of three or four months; and Dr. Little (c) tells us that he has successfully examined several cases of talipes varus in four-month fetuses. During the remaining five months of uterine development, this process of adapted shortening in definite growth of some of the ligaments must be taking place, and we know that in the case in which there is good reason to believe that the deformity did take place at this early period, as in some associated with spina bifida, of which the case from which the osteopod, figured in No. 19, was an example, the rigidity of the foot, from adapted shortening of the ligaments, is met with in extensive degree. In that case the foot could not be restored to its normal position even after division of all the tendons. The most obviously shortened and relaxing ligaments were the deltoid on the inner side, the anterior portion of which prevented the metatarsal bone being drawn much onwards from the inner malleolus; and the posterior ligamentous bands of the ankle-joint, which prevented the os calcis being depressed to its normal extent. All the ligaments in the sole of the foot—the calcaneo-cuboid, calcaneo-navicular, and the other ligamentous bands passing between the tarsal bones, were also shortened; as also was the plantar fascia to a very marked extent. The shortened condition of the deltoid ligament is described by Mackenzie (d), who states that, in the talipes varus of an infant, in whom the scaphoid and lateral calcaneal bones were drawn close to the internal malleolus, he could not abduct the foot until he had divided this ligament.

As the ligamentous structure above mentioned are found in a state of adapted shortening in all severe, i. e. rigid, cases of infantile varus; as, also, are the opposing ligaments found in a state of elongation, more especially the outer portion of the ligament passing between the neck of the astragalus and the scaphoid bone, by the displacement of which the ligament is stretched over the exposed portion of the head of the astragalus; and also the anterior portion of the capsular ligament of the ankle-joint, which is stretched over the external portion of the superior articular surface of the astragalus. In the fatal specimen I have examined, the ligament passing between the os calcis and cuboid bone has not appeared to be materially elongated, nor have any of the other ligaments on the dorsal or convex surfaces of the foot, though they become so at a later period.

The ligamentous alterations which I have detailed are only to be met with in very severe cases of infantile club-foot, which are fortunately the exception, and not the rule in point of numbers; and I may mention that we judge of the severity of the case in proportion to the ligamentous rigidity, rather than the external form. In many cases of this deformity which would be described as severe from the external form, there is but slight ligamentous rigidity, the foot being held in its deformed position, by muscular contraction. In such cases the foot can be carried half-way or more towards its normal position, and the extension of the anterior process can always be carried comparatively further than the depression of the heel. In some cases of less severity, there is no ligamentous rigidity at all, and the foot can be restored by manipulation quite to its normal position. In these cases the deformity has probably taken place at a much later period of intra-uterine, than the rigid cases previously described, and muscular contraction alone maintains the deformity.

Myositis.—In slight, and even moderately severe, cases of congenital talipes varus, I believe that, as a rule, all the muscles are in a healthy condition, and developed to very nearly, if not quite, their normal size at the time of birth; but, if the deformity be allowed to continue, the muscles

do not grow above their state of inaction—as in healthy limbs, but remain of small size. I have dissected and examined microscopically all the muscles in several cases of talipes varus infantile curvus, in which ligamentous adaptations existed in some extent, and in which the atrophy exhibited in a marked degree the deviations in form above described, thus proving that the deformity had existed several months previous to birth; but in these cases the muscles did not exhibit, other to the naked eye or the microscope, any abnormal condition. It is, therefore, an established fact, that appreciable changes in the muscular structure are not essential to the production of talipes varus; and that such changes do not necessarily exist at the period of birth, even in cases which would generally be considered as severe. This is in accordance with the general opinion, based on dissections, and the successful results of treatment.

My dissections, however, in some very severe cases, lead to a different result; and in two instances I have met with very extensive and important structural changes in the muscles. These may happen to be very rare and exceptional cases, but the frequency of such deviations remains to be proved by future dissections, and I am not aware that they have been hitherto described by any writer on this subject.

One of these cases was the child from which the osteopod, Fig. No. 24, was taken. It was affected with spina bifida in the lumbo-sacral region, and lived only a few hours. Both feet were contracted in the position of talipes varus of the most severe degree, and were drawn inwards and upwards beyond a right angle with the legs. For this specimen, which is now in my collection, I am indebted to my friend, Mr. Gordon. Upon dissection the muscles, &c., of both legs presented unusual appearances.

The posterior crural was large, but unproportionally developed, the internal head and half of the muscle being very much larger than natural, and the external head and half of the muscle imperceptibly developed; so that, instead of their being a central right-angled division from the tendon-Achilles, the tendinous line passed towards the small external head. The inner half of the muscle could be easily divided as described, its surface being smooth and plump, as in well-nourished species of the same nature; while the outer half could not be divided from the quantity of the mixed up with, and dipping between its muscular fasciculi, its condition entirely opposing that of the extensive longus digitorum. The tendo-Achilles was of large size, and extremely tense.

The tibialis anterior and tibialis posterior muscles were fully developed, if not somewhat hypertrophied, and their tendons extremely tense. These three muscles were considerably shortened in their entire length, and after removal of the skin, &c. were capable of being elongated only to a slight extent. The anterior peroneus pedalis was absent, or rather below its normal size, and its tendon was tense, but to a less degree than the anterior and posterior tibial tendons.

The anterior deepus digitorum and peroneus tertius might almost be said to be absent, as far as their muscular fibres were concerned; their tendons existed, but were of very small size, and connected above with an extremely attenuated layer of muscular fibres representing three-tenths muscle. The muscular fasciculi were intermixed with the slipping between them, so that their division could only be restricted to a very limited extent, and it was impossible to trace them to any connection with, or origin from, the bones, or intermuscular ligaments. The space between the outer border of the tibialis anterior and the flexor, which should be occupied by the longus digitorum of the external longus digitorum, was entirely filled with fat, in which no muscular fibres were traceable, even with the microscope. The anterior portion of the calcaneal portion of the external muscle above described, was only demonstrated by the most careful dissection from below upwards, beginning from the deltoid tendons on the dorsum of the foot. The anterior deepus digitorum was in the same condition as the long extensor, those of its muscular portion being found only in the most careful dissection.

The peronei muscles were moderately well developed.

Of the deep posterior muscles, besides the tibialis posterior, the fully developed condition of which has been described, the flexor digitorum profundus and flexor digitorum profundus were developed to about the normal size.

The tendons were somewhat displaced in adaptation to the altered position of bones; but I shall presently advert to the deviations of tendons in fetal and adult cases of varus.

(b) Physiology, 5th Ed., p. 220.

(c) Op. cit. p. 178.

(d) Edinburgh Medical Journal, Vol. 2, p. 192, 1820.

The entire dissection of this specimen I have detailed in the Third Volume of the *Pathological Society's Transactions*. I examined microscopically the rudimentary portion of the extensor longus digitorum muscle, in conjunction with my friend Dr. Quain, whose investigations of the fatty degeneration and other abnormal conditions of muscular tissue, have thrown so much light on this interesting subject. The muscular fasciculi were larger than the fasciculi of the healthy muscles of the corresponding limb; the transverse markings were very indistinct, and in many parts not traceable; the sarciniferous containing a granular material, situated in some parts with contracture of oil.

The second case of this kind which I examined was in a child, aged 14 weeks. The specimen is in Mr. Thompson's possession, and exhibits very similar conditions to that which I have just described, but the arrest of muscular development was more extensive, involving all the muscles on the anterior part of the leg, and also the peronei. The only trace of muscular fibre in the situation of these muscles was in a very thin layer of tissue connected with the tendon of the extensor longus digitorum. A careful microscopic examination of this specimen was made by Mr. Cheek and myself in December, 1851. We found no trace of muscular structure in the situation of the tibialis anterior, extensor proprius pedinis, or peronei muscles, and only a few small fibres connected with the tendon of the extensor longus digitorum. The place of the muscular structure by the above situation was occupied by fibrous and adipose tissue. The posterior muscles were well developed. The fibres of the tibialis posterior were larger than in any other specimen examined. The muscular fibres in the external half of the extensor tendis were in a state of granular and fatty degeneration. Mr. Guetzl and myself examined two specimens of this kind.

From the examination of the specimens which I have now described to you, it is certain that in some severe cases of talipes varus, there is at the period of birth a very defective condition of some, or it may be of all, the muscles on the anterior aspect of the leg, essentially depending upon an arrest of development of these muscles, and a degeneration of such portions as have been formed; that the same condition may exist in the peronei muscles; and that in these cases the outer portions of the gastrocnemius and soleus muscles are found in more or less advanced stages of fatty degeneration. It is also certain, that in these cases, the tendons or portions of muscles which may be considered as more immediately concerned in the production of the deformity, viz., the gastrocnemius and soleus (their lateral portions most especially), the tibialis posterior, and the tibialis anterior (where it crosses the arrest of development met with in the other anterior muscles), are found to be well developed in their structural microscopic characters, and even hypertrophied as to their actual-size proportional development. There are facts of which I am not prepared to offer you any explanation, but to which I shall hope to discover some-time in future dissections. In reference to my observations, however, Dr. Little has remarked [p. 12], "Mr. W. Adams has witnessed changes of the extensor longus digitorum muscle. The author (Dr. Little) has never observed greater deficiency of this than other muscles. He (Dr. Little) has even found the long and short extensors well developed. The author (Dr. Little) believes, that the deficiency or atrophy and degeneration of muscles is in a greater ratio in the extent of the deformity, and the measure of stricture existence at which the deformity is produced. The fact of hypertrophy of the part of the gastrocnemius, observed by Mr. Adams, is an important contribution to the pathology of varus, since it shows another analogy with congenital talipes, in which sometimes hypertrophy of the contracted muscles exists."

Now, I cannot but doubt the correctness of the explanation here given by Dr. Little, of the condition of the extensor muscle above described, because if the cause were traceable solely to the influence of a long retained position, the same condition, or at least an approach to it, should be found as a constant appearance in all severe cases of fetal and infantile varus in which there is reason for believing from the well-known condition of the navicular and other indications, that the deformity had existed several months previous to birth; but this is certainly not the fact, as in several of such cases which I have examined—submitting every muscle to microscopical examina-

tion—I have found the extensor muscles perfectly healthy and well developed. There can be no doubt that the altered form of the navicular is directly dependent upon the severity and duration of the deformity; but I have observed that when the deformity has existed long enough to alter the form of this bone by adapted growth, the muscles are sometimes found to be perfectly healthy. I have not yet made out any essential connection between the abnormal condition of the muscles above described and any abnormal condition of the nervous centres or nerve-trunks; but further observations are necessary in this direction. Possibly they may be found to exist in the relation of cause and effect. The arrest of muscular development may possibly depend upon some abnormal condition of the nervous centres, and the deformity in these cases would be severe in consequence of its taking place at a very early period, viz.: between the third and fourth month, when the muscular tissue is in process of development. The degeneration may be traced partly in the same sense and partly to the influence of long continued inaction; but neither alone would not sufficiently explain the conditions I have described.

However difficult it may be to explain the arrest of development and degeneration of certain muscles, or portions of muscles in some cases of talipes varus, the occasional existence of such conditions must be borne in mind when giving a prognosis in any severe case. The frequency of the existence of these conditions, the possibility of their improvement by the development of muscular tissue after five months of the ankle-joint has been obtained by division of the contracted tendons, and their influence in respecting or preventing the perfect cure of the cases in which they exist, by the necessarily defective power of maintaining the bones in the normal position, have yet to be ascertained. The existence of these muscular imperfections, when present to the extent described in the above cases, may be diagnosed by the total absence of the power of extending the toes, or the feet, or in paralytic cases; and when present in a less degree, by a deficiency in this power to a corresponding extent. Possibly these cases may have been occasionally mistaken for examples of congenital paraplegia.

TENDONS.—In fetal and infantile specimens of talipes varus, I have always, in my dissections, found the tendons somewhat displaced in adaptation to the altered position of the bones of the foot. The deviations of the tendons are in proportion to the severity of the case, and affect, more or less, all the tendons passing from the leg to the foot; but it is only necessary at present to refer to those of practical importance, viz., the tibialis anterior, the tibialis posterior, and the tendo-Achillis. The deviations of the other tendons will be alluded to in the description of the severe adult deformity. (See Figs. 37, 38, and 39.)

The deviations of the tendons relate in these directions, their relations to each other, and to the bones. All the tendons in front of the ankle-joint are inclined to the inner side of the leg; and the tendon of the extensor anterior muscle, as it crosses the ankle-joint (the point we select for its division) is placed very much to the inner side. In cases of extreme severity this tendon passes obliquely downwards across the inner malleolus, with an inclination backwards towards the inner condylar bone, which, in consequence of the altered position of the metatarsal bone, occupies a lateral position with respect to the leg; and in these cases it must be remembered, the toes have an inclination rather behind than in front of the transverse median plane of the leg.

The tendon of the tibialis posterior muscle does not occupy its normal position, either with respect to the inner malleolus, or in its course between this process and the navicular bone. In severe cases, this tendon is less distinctly placed behind the inner malleolus than in the healthy foot, and is sometimes described as being situated on, rather than behind, this process. To some extent this is certainly correct, but the appearance is very much altered by the lateral obliquity of the os calcis, the tuberosity of which is directed towards the fibula, so that the inner malleolus itself is relatively more forwards; in fact, the posterior surface of the tibia is thus more or less brought into what might be regarded as the lateral aspect of the foot. The general result is, that the situation of the posterior tibial tendon, at the point we select for its division, viz., just above the malleolus, is relatively much more forwards than in the healthy foot; hence the practical rule given by Dr. Little, that when neither the tendon nor the inner edge of the tibia can be felt, or in commonly the case in fat infants, a paravascular "snare" midway between the anterior and posterior

border of the leg, on its lateral aspect, will be a true guide to the position of the tendon." (2)

In reference to the second part of the course—between the malunion and its insertion into the articular bone—it is very important to observe that the posterior tibial tendon does not pass beneath the lower malunion, and then obliquely downwards and forwards, in front of this process, towards its insertion into the articular bone, as in the healthy foot, because the articular bone itself is displaced by the contraction of the thickened posterior muscle so as to be held in contact with the lower malunion. This tendon, therefore, in all severe cases of varus, and even in cases of a moderate degree of severity, passes directly downwards from the lower malunion to its insertion into the articular bone, which it immediately reaches.

This fact, which, so far as I know, has not been pointed out by previous observers, is of the utmost importance in determining the position in which this tendon must be divided, and will be hereafter alluded to. At present, I will only remark that the extent to which this tendon admits of being drawn by manipulation into its normal position, must depend upon the severity of the case, and the ligamentous rigidity of the parts, from adhesion shortening of these tissues during the progress of the deformity, which I have already described. To this I allude again when speaking of Mr. Syme's method of dividing, rather, attempting to divide—the tendon, "a little below and in front of the lower malunion."

The Tendo-Achillis, in severe cases of infantile varus, does not occupy its normal position with respect to the axis of the leg, or its relation to the malleolus. I have already explained to you that, in consequence of the lateral obliquity of the os calcis, the tuberosity of this bone inclines towards the tibia, and is sometimes even in contact with it; it was so in the severe case from which the fatal strabismus (Fig. No. 24) was taken; and I believe this deviation, constantly taken, in a degree proportionate to the severity of the deformity.

It follows, therefore, that the tendo-Achillis, as it passes towards its insertion into the tuberosity of the os calcis, must incline towards the tibia, in a degree proportionate to the severity of the case, and this I have found in every dissection I have made. There is some difficulty in judging of the exact relation of this tendon by external examination, in consequence of the diminished prominence of the lateral malleolus, the reason of which I have already explained to you. In a superficial examination during life you may even suppose this tendon to deviate to the inner, rather than the outer side of the leg. I have frequently heard it described as holding this position, but have never been able to satisfy myself that it is so placed. It always seems to me that the appearance is deceptive, and depends upon the diminished prominence of the lower malleolus, and thus the relatively more forward position which this process occupies in consequence of the lateral obliquity of the os calcis, which, as I have described, tends to bring the posterior surface of the tibia into what might be regarded as the lateral aspect of the foot. If the position of the tendo-Achillis be judged of by its relation to the outer malleolus, which can always be felt, the difficulty disappears, and I believe it will always be found deviating towards the tibia in proportion to the severity of the case. This tendon is, therefore, further removed from the posterior tibial artery, than in the healthy foot.

TENDON OF THE PERONEUS.—As the vessels and nerves in their course from the leg to the foot follow the direction of the deformity, they necessarily deviate, to a corresponding extent, in their general direction and relations; but, possibly, these deviations are of little importance, as they do not very materially alter their relations with respect to the tendons.

The observation made by Mr. Smith's with respect to the vessels and nerves in deformation is, that the arteries become circumartally shortened, and, therefore, frequently tense and prominent, like the tendons; while the vessels retain their normal length, and are found to be somewhat tortuous, but still holding their deep relations, and not becoming superficial or prominent. I suspect, however, that this difference between the arteries and nerves is not well founded, but that both undergo circumartal shortening in cases of long-standing deformity, and adapt themselves to their required length. It is undoubtedly true that, in cases of long-standing contraction of the knee-joint, the peroneal nerve is tense and

prominent; so that, without the greatest care, it may be wounded in dividing the ilio-peroneal tendon; moreover, if the tendon has been divided, the nerve escapes up, as it is usually in place, and feels as true as the divided distal tendon division. This may divide the interperoneal space, and lead him to think the tendon has not been completely divided. Under these circumstances, the knife has been introduced, and the nerve divided, much to the astonishment and discomfort of the operator. To me, however, it appears that the prominence of the nerve in the leg may be explained by its superficial course, not being bound down by any dense structures, like the artery which covers this space deeply by a strong tendinous canal, and is also held close to the level of the tibia by the arrangement of the structures at its bifurcation, and the course taken by the anterior tibial artery in its passage between the bones, which materially contributes to fix the artery in this situation.

In my dissections of several severe infantile cases, and also of several non-congenital cases of club-foot in the adult, I have not found the posterior tibial artery and nerve exhibiting any disproportion in length; and I may observe that in the most severe infantile specimens the arteries were well injected; but I should consider them back to be equally and proportionably shortened. I have not seen the posterior tibial nerve become so ill-positioned or altered in its relation to the artery as and, as in club-foot both these structures are at a depth from the surface, and the close to the centre of motion, the shortening cannot be considerable or of any practical importance, even in adult cases.

I have now, Gentlemen, described to you the morbid anatomy of talipes varus, as I have found it at the period of birth, and you will observe that this deformity is by no means so simple and unaccompanied with organic lesions as the writers on this subject would lead you to infer. It is not simply a displacement of certain bones, whether from muscular action or impaction on nerve, which have pertinently been well formed, as few taught by theory, and since adopted by nearly all the authorities on this subject, accompanied with contraction and structural shortening of certain muscles. But, on the contrary, malformation—constriction of aligned malformation it may be called, the nature of which I have explained to you—the strabismus is always present, in a degree proportionate to the severity of the deformity. Very important ligamentous alterations from adapted growth are also present in severe cases. Deviations in the direction and relative position of the tendons are constantly present; and a variety of abnormal conditions in the muscular structures are sometimes met with.

I hope the observations I have made will stimulate you to a further and more minute investigation of this subject by your own dissections, as it is only upon an accurate knowledge of the pathology of this deformity that we may hope to base a scientific and successful method of treatment.

In the next lecture, I propose to proceed with the description of the same deformity, viz., talipes varus, as met with in the adult, noting the characteristic changes which occur in advancing age, and assuming more especially the mechanism of the deformity, in reference to the principles of treatment, the details of which I shall then lay before you.

ORIGINAL COMMUNICATIONS.

CASES, IN PRACTICE, WITH REMARKS ON CLIMATE (24).

CLASS NO. 1.—SUNSTROKE AND VARIOUS FORMS OF ILLNESS APPARENTLY INDUCED BY A HIGH TEMPERATURE.

By G. F. MOORE, M.D., F.R.C.S., &c.

October 11, 1881.—A woman, aged 51, heavy-looking and of powerful frame, was seized with faintness after laboring for some hours at the pumps, washing decks, under a hot sun, in Malta Harbour, on board the steam ship *Forting*.

Her tongue insensible; eyes closed; circulation cold;

(24) I have been applied to lately to advise upon the profile of Augustus, and Augustus, but consider them worthy mention of the *Illustrations*.

suspended; half of the shops being shut up, as well as a great part of the dwelling-houses. The streets were empty and silent, the only sound to be heard being the wailing wailing of the dead carts, carrying the victims of the pestilence to their last resting-place. The shops, and other places of business which remained open, were almost devoid of customers; and the public offices, in like manner, although of necessity kept open, were deserted by the absence of the clerks, who, like almost every one else, were either sick themselves, or were in attendance on their sick or dying relatives. At least the restaurants were full, and incapable of receiving any more of the still numerous dead, and it became necessary to open two new separate places of sepulchre on the seashore.

The epidemic raged with constantly increasing violence all over the town until the 15th of June, when it ceased to decline, there being on that day 243 deaths. It then began to decline; the deaths on the following four days respectively being 188, 182, 113, and 91. On the 19th, the mortality rose again to 113, but on the following day it fell again to 82, and on the 21st, it was 119.

From this day a constant and rapid diminution took place until the end of the month; and, on the 29th, the number of deaths from cholera was only 7. In July, the mortality was confined to the suburbs of the town, and amounted to 64; the last case in Port Louis occurred on the 1st of August.

The course of the disease, in the town of Port Louis, was most irregular, and incapable of being explained by any reference to the comparative sanitary condition of different parts of the town. Generally speaking, the disease was most prevalent at the two opposite extremities of the town, towards Grand River and Rochefort; while the neighbourhood of the harbour, and the upper part of the Champ de Mars, were less severely affected; but in this there were numerous exceptions. Parts of the town, where partial matters were abundant, and the houses situated in unhealthy places, often suffered less than others in better circumstances.

The establishment of the Mauritius Dock, situated on a low mud flat at the edge of the harbour, suffered very little, but it is to be observed that the labourers there employed were nearly Chinese, whose comparative immunity from the disease was very remarkable. The neighbourhood of the barracks, although extremely crowded, and abounding in animal and vegetable matters more or less decayed, suffered less than the healthier part of the town. A singular result occurred in the establishment of the Indes Company, whose business it is to collect the night soil, and prepare it into artificial manure. In this establishment being 150 Indians, of whom 90 are constantly employed in collecting the refuse of the streets, and at night, the night soil from the privies; of these 90 men, 18 had cholera, and 15 died. Of the remaining 62, who are employed on the premises of the company outside the town, in the manipulation of the manure, only 2 were attacked, and these men all were out men. It is probable that the former class of labourers got the disease from being obliged to penetrate into the ponds of infected houses, but it is remarkable that they did not, either by their own persons, or by the old dishes, soiled discharges, and other infected matters, which they collected and brought with them, communicate a greater amount of disease to their fellow-labourers working outside the town.

In the Camp Denis, a collection of Indian huts close to Grand River, (where the disease was very severe), and in the worst possible sanitary condition, very few cases occurred, which may perhaps be attributable to the fact that about 100 of these Indians are Christian labourers, of whom it is said, not one suffered from cholera, and it appears also that the disease did not penetrate into any of these houses in Port Louis, where deaths of cholera are kept.

The Champ de Mars and Champ de Lest suffered as much as any other part of the town, although they are the best situated, the best ventilated, and might, from the social position of the inhabitants, be in the best sanitary condition.

The comparative immunity from cholera enjoyed by the numerous Chinese resident in Mauritius, is very remarkable. There were in Port Louis, during the epidemic, about 1800 Chinese, of whom 120 were both labourers. The total mortality among this body of men was 1, although they lived in Port Louis—in the midst of the epidemic, and their habits, and the condition of their dwellings, would seem to predispose them to the disease.

A Chinese Doctor, holding a diploma obtained, as he said,

after a course of study at Hooan, and who practised among his countrymen during this epidemic, stated that, in all, 45 Chinese were attacked by cholera, of whom one died in Port Louis from an impetuous consultation during convalescence, and the other died in France. He inserted, that one of 224 persons he attended in cholera, he treated, he lost only 7; and that he had already seen four epidemics of cholera in China. When questioned as to the habits of the Chinese, he stated that they did not drink anything but tea, and ate animal food freely; that they smelt a great quantity of spices, and that this habit was the great preservative, although, if practiced in after the commencement of the disease, it was equally certain death. Whatever truth there may be in these statements, there is no doubt as to the extremely small mortality among the Chinese during the epidemic.

It is singular, that in October, two months and a half after the final cessation, in Port Louis, of the epidemic, three fatal cases occurred in that town, viz. Mr. Assistant-Surveyor-General Arkroyd, who died on the 19th, and two of his children, one who died on the 17th and 23rd. It is to be observed, that the house inhabited by Mr. Arkroyd was in the immediate vicinity of a large building which had been employed during the epidemic as a Chinese Hospital, and which still contained a quantity of infected clothing; otherwise, the appearance of the disease in his family at this time is inexplicable.

Mr. Arkroyd himself was attacked on Friday morning at 5 o'clock, by diarrhea and rice-water dejections, which continued until between 11 and 12, then ceased, and did not again occur. About 10 o'clock he vomited for the first time; at 11 he had the first attack of cramps; and after this the symptoms of malignant cholera, redness of surface, shivering of hands, whispering voice, blue colour, &c. &c. and he died about 2 in the evening. Within three days after his death, two of his children were seized with the disease, of whom one died in the stage of cholera, the other in the convalescent typhoid fever. Of the remaining three children, two had slight symptoms of the disease. It is difficult to account for the severe outbreak of cholera in this family, at a time when there had been no other case of cholera in the town for more than two months; more especially as, during the epidemic, the whole family had been freely exposed to the emanations from the bodies of cholera patients, where they had a European servant, who died of the disease in their house; and when they also received from the children of a family of whom several had died of the disease.

In the end of May and beginning of June the disease began to appear in the country districts, radiating from Port Louis, as its original focus, and gradually advancing over the country, so as to arrive at the most distant parts of the island in about a week from Port Louis. It is true that, in almost every district, some cases occurred in a shorter time than this; but these were persons newly arrived from Port Louis, who had received the poison there, and the epidemic did not become general for some days afterwards, when the disease, in its regular advance from Port Louis, reached that part of the country; and then cases occurred in people who had never been in the neighbourhood of an infected person. Thus, in the district of Black River, the disease appeared on the 1st of June at Petite Riviere, on the 4th at Reunion, and on the 7th at Plaines St. Pierre, steadily moving forward from Port Louis. In like manner the disease became general at Mahaboug and Stevance on the 15th of June, having previously appeared in the intermediate places in the order of their vicinity to Port Louis. In other districts, as Riviere de Kourou, the progress of the disease exhibited the same rapidity irregularly, but less in those characterized it in European countries, some of the estates being affected at a very early period; others, at no great distance, several weeks later; and many ceasing altogether.

The medicine most extensively adopted presented the same local characteristics as those places which have always suffered more severely in European epidemics of this disease, viz.—places with a low site, in the vicinity of the sea, or large streams, with a humid climate, a dense population, and immemorial activity. The town of Port Louis itself presents all these characteristics; so do also, more or less, the neighbouring localities of Grand River and Roche Bleue; the village of Plais, which suffered very severely; and the fishing villages on the coast, at Staps, Poudre d'Or, &c. The different degrees in which different spots obtain suffered from the

epidemic are very remarkable, a large number having escaped altogether without a single case, while some suffered with excessive severity, as, for instance, the estate of Fort Royal, in Rivière de Bonapart; so which, in the month of June, there were 187 cases and 32 deaths in a population of 655. On the estate of La Caroline, in Flacq, 120 cases and 123 deaths occurred in a population of 418 persons.

2. The presence of water, particularly of running streams, seemed everywhere to increase, in a marked manner, the prevalence of the disease; while those places in the neighbourhood of which there was no running water, almost entirely escaped. Thus, in the district of Rivière de Bonapart, those estates which were supplied with water by means of artificial canals, suffered severely from the disease; those that drew their water from the river suffered in the next degree; while those properties which were supplied with water from wells, in most cases escaped altogether, and never had more than two or three cases.

In the extensive Plaines de Papayev, in the Plaines du Cap district, in which the water supplied is by means of wells, there was no cholera; while near the borders of the canals, the disease was very severe. In Flacq, scarcely a case of cholera occurred on any estate supplied by wells, while those that were dependent on artificial canals suffered with great severity. In Plaines Williams, I know of only one estate supplied by wells, and this was escaped, while the neighbouring properties were severely visited. It thus appears that the presence of water, in whatever way it may operate, has a marked effect in increasing the prevalence of cholera; and this also indicates that the ordinary progress of the disease is determined by other causes than human intercourse.

3. Both in Port Louis, and the colony generally, the African race suffered infinitely more than any other. The greatest mortality of all was in Port Louis; and, next to that, the disease was most destructive in the Creole villages; that is, aggregations of cottages or huts inhabited by natives of the colony of African descent.

4. As in other countries, the disease was not universally diffused over every part of a district at once, but, while some localities escaped altogether, others were attacked, not simultaneously, but in succession, the disease, in many cases, wandering about in a most unaccountable manner, being almost unknown at one place, while others, at no great distance, were particularly free from it.

5. In every district of the Island, many properties escaped altogether, without a single case of cholera occurring on them. Very many of those which thus escaped are unknown, but the following properties are accounted to have remained free from the disease, viz. La Plaines du Cap, 7 estates are known to have escaped altogether; in Rivière de Bonapart, 17; in Grand Port, 8; in Savanne, 13; in Black River, 18; in Plaine Williams, 4; and in Flacq, 14.

6. The disease seemed to be especially severe in those public buildings in which the residences of the inmates were arranged in the form of closed courts or yards, surrounded by dwelling-houses. The prison of Port Louis, where the epidemic first appeared, is a signal instance of this, and the case of the Lunatic Asylum at Grand River is equally remarkable. In this institution, the male patients were lodged chiefly in the upper floor of the main building, which is of two stories; while the dormitories of the females were in houses of one story, ranged around small yards. In the upper floor of the main building, not a single case of cholera occurred, while in the female wards it was so severe that half of the inmates perished. In a private residence, five miles from Port Louis, where the stables and lodgings of the garrison and others were arranged in the form of a close court, no less than sixteen servants died during the epidemic.

It appears that the stagnant atmosphere necessarily existing in such courts, is most propitious to the rapid increase and concentration of the poison.

7.—On the symptoms and treatment of the disease, there is scarcely anything to be said, as the cholera in Mauritius presented precisely the same symptoms which are now, unfortunately, so well known in almost every part of the world; and, with regard to the treatment, nearly all the means that have been had recourse to elsewhere have been tried in Mauritius, and, except in mild cases, with the same want of success. From all that I have seen and heard of the treatment of the disease here and elsewhere I believe that the most successful employed is the most simple; that is, the

treatment being begun by the administration of an emetic followed soon afterwards by a purgative, and then the usual application of stimuli, externally and internally, but very little opium.

8. There seems to be considerable doubt, whether this disease originated in this Island, arrived here by atmospheric transmission, or was imported by a ship. It is commonly supposed in the Island that the cholera was imported by a ship named the "Sulway," which left Calcutta on February 31, 1817, with a crew of 60 men, and 270 passengers, and, after a voyage of 34 days, arrived at Mauritius on March 24. Many ships conveying immigrants from Calcutta, have I would guess of cholera, while still in the Bay, but no more afterwards; but, in the case of the "Sulway," this was reversed, for no case of cholera occurred on board this vessel until the 10th day from the Sand Heads, when the disease broke out suddenly, at one corner of the "Green Yard," and gradually spread to the rest of the ship. 30 of the passengers died of cholera before the arrival of the ship at Port Louis, while 4 more died at the Bell Bury, from cholera and dysentery. The ship then proceeded, on April 7, to Flat Island, where the 100 immigrants were landed, and remained in quarantine, till May 1, during which time no case of cholera occurred among them. It is tolerably evident that the disease was not introduced by these immigrants; because, if it had been so, it would have broken out in some of the estates in the country to which these Indians were sent. It did not do so; Port Louis having been the only focus of the disease, from which all the other parts of the Island received it. It is, however, alleged that the quarantine of the ship while at the Bell Bury, was inefficient, and that the crew frequently communicated with the shore. On the other hand, it is to be remembered that various cases of cholera occurred in Mauritius shortly before the arrival of this ship, as elsewhere stated; and, in the neighbouring island of Bourbon, in the beginning of May, it appears there were a few cases of cholera, and an unusual epidemic of diarrhoea, which were reported in the newspapers of that Island, before the outbreak of cholera in Mauritius was known there.

In Bourbon, a long and strict quarantine was established for all vessels arriving from Mauritius, and Bourbon escaped an epidemic of the disease; but it is singular that Madagascar in like manner escaped, although there was uninterrupted communication with Port Louis throughout nearly all the epidemic; deaths from cholera even occurring on board vessels coming from Mauritius, and quarantine was not put on Madagascar until near the termination of the epidemic at Mauritius.

9. As to the mode of diffusion of the disease, it appears evident to me, from the manner of its progress over the Island, that the ordinary and normal mode of the propagation of cholera is by diffusion through the atmosphere; but special cases are not wanting to prove that it may be, and in some cases is, carried from place to place by human intercourse. If this be admitted, it follows that cholera might, practically be treated as being essentially contagious, although there is no reason to believe that it is reproduced in the bodies of the dead.

10. In considering the extent to which the troops were affected during the epidemic, it is to be observed that they were likely to suffer in a high degree, the quarters being all arranged in localities very much exposed to the ravages of the pestilence. Thus, more than two-thirds of the entire garrison of Mauritius were, during the epidemic, posted in the town of Port Louis, where the disease was more severe than in any other place. The other portions were, all of them, in small sea-port villages, and the disease has been very severe in all such places.

It is, then, matter of contemplation that the loss of the troops in this terrible and almost unexampled epidemic has been less than what is usually experienced among them in any ordinary outbreak of the disease occurring within the tropics.

As the epidemic broke out during the dull season, the number of troops in Port Louis was unusually great, and the barracks somewhat crowded. The first measure adopted, therefore, on the appearance of the disease, was to give more room and better ventilation, by occupying a part of the troops in the barracks-square, which, fortunately, was very extensive. The soldiers were then marched to barracks, and arranged in the best way of the barracks. The windows of the bar-

rolled well, and, although no symptoms of gangrene in either extremity were apparent, yet he sank and died about thirty-two hours after the operation. At the autopsy the ligature was found to have been clearly placed on the artery just above its bifurcation. The prosthesis had not been opened. The necrosis, which was apyemic, had commenced in the external iliac, and had extended up the side of the common iliac to the level of the fourth lumbar vertebra. The lungs were very much congested.

TREPHINING OF THE SKULL.

St. George's: Mr. Johnson.—A lad, aged 13, was admitted with an extensive compound and comminuted fracture of the skull. The dura mater was torn, and the brain injured. The trephine was used, and the depressed portions of bone removed. *Meningitis cerebri* followed. Death on the fourth day.

RESECTION OF JOINTS, etc.

Case 1.—**St. George's: Mr. Tatum.**—A lad, aged 19, under care on account of strumous disease of the knee-joint. Resection of the articulating ends of the bones was performed. Death from pyæmia followed. At the autopsy, the maximum thickness of the tibia was found infiltrated with pus, and there were purulent deposits in several places.

Case 2.—**The Metropolitan Free: Mr. Hutchinson.**—A woman, aged 38, in fair health, was admitted on account of a very large tumour, apparently growing from the head of the right humerus. The history was, that the disease had followed a fracture four years ago. There was a large mass of diseased glands below the axilla. The tumour of the tumour developed the axilla, and end of clavicle above, and below belonged into the axilla. In many parts it was hard, as if surrounded by bone. Amputation at the shoulder-joint was advised, but the patient obstinately refused to submit. Under these circumstances, Mr. Hutchinson, exposed the articular head, and about a fourth of the shaft of the humerus. The extremities of the acromion, of the clavicle, and of the coracoid process were removed, in order to give more room; but they were not diseased. The whole mass was considerably larger than an infant's head, and consisted of a central soft fibrous tumour, developed both within and externally on the bone. The mass of enlarged glands was dissected out at the same time by a distinct operation. The arm was subsequently kept well up, and the healing progressed most satisfactorily. All was healed at the end of six weeks, excepting one small stone. The arm, although nearly a third shorter than the other, proved to be a very useful one, and the patient could already use her hand a little. Very soon after the operation one of the cervical glands behind the sternocleidomastoid began to enlarge, and about two months afterwards the disease re-appeared spontaneously at the extremity of the humerus, and in the cellular tissue of the subcutaneous apices. At present these three distinct growths are rapidly increasing, and all further interference with the disease is hopeless. The woman is in fair health, and able to walk about.

Case 3.—**St. Thomas's: Mr. Solly.**—A woman, on whom several previous operations had been performed for diseased tibia. Some carious bone was scraped out. Doing well.

Case 4.—**St. Bartholomew's: Mr. Stanley.**—A girl, aged 24, under care on account of diseased tibia. A few incisions were made over the lower aspect, and the opposed surfaces of the tibia and scapulae found to be carious. No bone was removed. Under treatment.

Case 5 and 6.—**St. Bartholomew's: Mr. Stanley.**—In each of these the disease was exposed and scraped on account of superficial caries. Both the patients are now, one aged 24, the other 25. Under treatment.

Case 7.—**Guy's: Mr. Hilton.**—A boy, aged 13, of strumous constitution, and worn down by disease of the elbow-joint. He had been kept in bed, and the limb confined in splints, but with no benefit. The alternative being between amputation and excision, the latter was preferred. The disease had followed a blow with a stick, five months before. The joint was laid open by the T-shaped incision, and the extremities of the three bones cut away. The boy did well afterwards, and is now in improved health and able to walk out; there is still, however, much swelling of the soft parts.

Case 8.—**St. Mary's: Mr. Wilson.**—A lad, aged 18, in poor health, who had suffered from disease of the elbow-joint for two years, consequent on a sprain. There had been extensive absorption of the soft parts, and the suppurated had

also been very profuse. An H-shaped incision was practised, and the extremities of the three bones were swept. Everything lay clear thus remarkably well. The lad is gaining flesh, and the parts are fast healing.

Case 9.—**University College: Mr. Erichsen.**—A child, aged 5, under care on account of diseased elbow-joint. The extremity of the tibia was excised. Violently inflammation followed, and amputation had to be performed, since which the case has done well.

AMPUTATIONS.

Of the Thigh. **Case 1.**—**St. Bartholomew's: Mr. Paget.**—A middle-aged man, aged 25. Diseased knee-joint of three years' duration. Amputation in lower third of thigh. Recovery. **Case 2.**—**The London: Mr. Colclough.**—A boy, aged 9, under care on account of strumous disease of the knee-joint of two years' duration. Doing well. **Case 3.**—**University College: Mr. Erichsen.**—A man, aged 25. Disease of the knee of one year's duration. Amputation. Recovery. **Case 4.**—**University College: Mr. Erichsen.**—A man, aged 47. Diseased knee-joint of three years' duration. Amputation. Recovery. **Case 5.**—**St. Mary's: Mr. Wm.**—A lad, aged 19, admitted on account of a severe contusion of the leg. Sloughing followed, and the shaft of the tibia became extensively exposed. His health failing, amputation through the thigh was performed six weeks after the accident, and ten days after an acute aggravation of the inflammation about the leg, in which the knee-joint was also involved. The stump healed to a small extent, but a good recovery followed. **Case 6.**—**St. Mary's: Mr. Graham.**—A woman, aged 27, on whom four operations with the gouge had been performed, on account of various disease in the head of the tibia. The knee-joint had at length become involved; an artery was the constitutional disturbance that amputation through the thigh had to be performed. She remained very feeble some time after the operation, but is now well. The recovery of the bone was probably excellent.

Case 7.—**Guy's: Mr. Erichsen.**—A catholic man, aged 48, was admitted on account of amputation and extensive sloughing of the soft parts of the right leg. The knee-joint was un-affected. While under care the gastro-intestine sloughed. Amputation through the thigh was performed. The stump sloughed, but the man is now well. **Case 8.**—**Guy's: Mr. Erichsen.**—An unhealthy woman, aged 49, the subject of an aneurism of the right femur, and disease of the knee-joint of two years' duration. Amputation. Recovery. **Case 9.**—**Guy's: Mr. Cook.**—A man, aged 23, admitted on account of his leg having been crushed by a railway accident. Primary amputation. Not a bad symptoms occurred for two weeks, when suddenly the man had a severe rigor. Symptoms of pyæmia thereupon developed themselves, and death ensued eight days later. Acute pyæmia-æmia was discovered at the autopsy.

Case 10.—**St. Bartholomew's: Mr. Lawrence.**—A boy, aged 14, the subject of a tumour in the left calf, of two years' growth; some glands in the popliteal space were diseased. He had not suffered much pain and was in fair health. Amputation was performed, and the tumour found to be a large growth of medullary cancer. Death from pyæmia on the thirteenth day. No autopsy was permitted. **Case 11.**—**University College: Mr. Mackintosh.**—A man, aged 21. Primary amputation on account of compound fracture. Death on the seventh day.

Of the Leg. **Case 12.**—**St. Mary's: Mr. Wm.**—A woman, aged 55, under care on account of disease of the ankle-joint following an injury. Amputation. Under treatment. **Case 13.**—**St. Mary's: Mr. Wm.**—A man, aged 45, of broken down constitution, under care on account of diseased ankle-joint, the result of injury. Amputation. Under treatment. **Case 14.**—**St. Bartholomew's: Mr. Stanley.**—A man, aged 39, in good health, under care on account of diseased tibiae bones after a Chapman's amputation. Amputation in lower third of leg. Recovery. **Case 15.**—**St. Bartholomew's: Mr. Stanley.**—A man, aged 41, under care on account of diseased ankle-joint. Amputation. Recovery.

Of the Upper Extremity. **Case 16.**—**Guy's: Mr. Erichsen.**—A delicate looking woman, aged 17, the subject of aneurism involving the bones of the forearm, and of 5 years' growth. The circumference of the affected forearm was 15 inches, that of the healthy being 8. Amputation through the mid-humerus. Recovery. **Case 17.**—**The Metropolitan Free: Mr. Hutchinson.**—A woman, aged 44, of very feeble constitution, whose elbow-joint had been excised four months before. The parts about the joint remained much swollen, and there was still

much discharge. Her health falling, amputation . . . of the upper arm was necessitated. Recovery. Case 18.—University College: Mr. Robinson.—A child, aged 5, for whom amputation of the elbow-joint had been performed. Tubercular inflammation having supervened, amputation through the upper arm was necessitated. Recovery. Case 19.—University College: Mr. Quain.—A woman, aged 33, under cure on account of diseased corpus. Amputation through the forearm. Secondary hæmorrhage on the 7th day. Recovery. Case 20.—University College: Mr. Quain.—A woman, aged 74, under cure on account of disease of the corpus. Amputation through the forearm. Recovery. Case 21.—St. Thomas's: Mr. Le Gros Clarke.—A healthy man, of middle age, had sustained a severe compound fracture of the right arm, in addition to which he had fractures of several ribs, dislocation of the clavicle, and severe laceration of the left leg. Amputation a little below the shoulder. For a fortnight after the operation he remained in a state of low delirium, and there was no attempt at healing in the stump. A severe attack of secondary hæmorrhage then occurred. Under the free use of stimulants, the patient, in spite of sloughing of the integument, at length recovered. Case 22.—St. Thomas's: Mr. South.—A young man admitted on account of having had his arm amputated by the removal of a gun which he was holding. Primary amputation at the shoulder-joint. Recovery. Case 23.—St. Thomas's: Mr. McMurdo.—A boy, aged 13, admitted on account of severe laceration of the forearm and elbow. An attempt was made to save the arm, but the wound doing badly, secondary amputation had to be resorted to ten days after the accident. He gradually sank, and died three days after the amputation. Case 24.—St. Thomas's: Mr. Hilton.—A man, aged 37, in good health. Primary amputation through the forearm on account of a crush sustained in a railway accident. Four days after the operation, delirium tremens set in, from which he died on the day following. Case 25.—St. Bartholomew's: Mr. Stanley.—A man, aged 49, of intemperate habits, admitted on account of phlegmonous erysipelas of the forearm. Sloughing ensued, and the wrist-joint was opened. Several courses of leeches of secondary hæmorrhage followed, and for the arrest of these, amputation through the upper arm was performed. Death. Case 26.—University College: Mr. Robinson.—A man, aged 41. Amputation of arm, on account of diseased elbow. Death from exhaustion on the 7th day.

REMOVAL OF MALIGNANT TUMOURS.

Case 1.—Guy's: Mr. Roberts.—A woman, aged 31. An epithelial cancer of the left tibiae pushed of three months' growth was excised. Recovery. Case 2.—The Metropolitan Free: Mr. Hutchinson.—A woman, aged 53, admitted on account of most extensive epithelial cancer of one year's duration, involving both tibiae posteriorly, the tibiae, and encroaching the upper part of the vertebral column. Its surface presented a large, dry, strongly lobed. In the left groin was a mass of enlarged glands the size of a fist, attached to the skin, but not adherent, and lower down in the thigh was a single gland the size of a walnut, and deeply placed in the inner side of the vein. The whole of both tibiae and their adjacent parts were dissected away, about half-an-inch of the upper surface of the tibiae being required. In one part of the wound, the syphilitic patch was all but exposed. The whole of the diseased glands were removed. The patient had a long convalescence, being almost reduced by the profuse suppuration from the large wounds. She ultimately recovered well. Case 3.—St. Thomas's: Mr. Simpson.—An elderly man. Excision of a small epithelial cancer from the lower lip. Recovered. Case 4.—Guy's: Mr. Cook.—A woman, aged 38, under cure on account of cancer of the tongue. The tongue had been sore for a year, and a rough patch was believed to be the primary cause. The disease involved the tip and left side of the tongue, and was easily excised; not much difficulty was encountered with hæmorrhage. The part healed well. There were no enlarged glands. Case 5.—Guy's: Mr. Cook.—A man, aged 46, a gas worker, much exposed to heat and dust, was admitted on account of cancer of the scrotum (Chinney-sweep's). Nine years before, a similar growth had been removed by the late Mr. Kay. The present one was very large and of six months' duration. The whole was freely excised, and the wound healed well. Case 6.—St. Bartholomew's: Mr. Lawrence.—A man, aged 62. Epithelial cancer of the lip of a year's growth and of small size. Excision. Recovery. Case 7.—Guy's: Mr. Cook.—A man, aged 46, under cure on

account of epithelial cancer of the lip of a year's duration. Excision. Recovery. Case 8.—St. George's: Mr. Prescott Hewett.—A man, aged 49, under cure on account of epithelial cancer in various parts of the body. There were two large ones in the groin, and at the patient's request, one of these which was growing rapidly was excised. The wound healed, but the other tumours continued to increase.

EXCISION OF THE BREAST, AND OF TUMOURS CONNECTED WITH IT.

Case 1.—The London: Mr. Ward.—A woman, aged 35. Tumour of large size and very rapid growth, having existed only three months. The gland adjoining to it was removed with it. The growth, which was of the mammary glandular kind, weighed five pounds and a quarter. It had been developed behind the breast. The wound healed well. Case 2.—The London: Mr. Cushing.—A woman, aged 63, under cure on account of a large cystic tumour in the breast. A similar one had been removed three years before. Excision. Recovery. Case 3.—St. Bartholomew's: Mr. Lawrence.—A girl, aged 19. A small mammary glandular tumour was excised. Recovered. Case 4.—St. Bartholomew's: Mr. Lawrence.—A woman, aged 33. The whole breast was removed on account of cancer of moderate duration. Recovery. Case 5.—St. Mary's: Mr. James Lane.—A woman, aged 43. The whole breast was excised on account of cancer which had existed twelve months. Recovery. Case 6.—St. Bartholomew's: Mr. Stanley.—A woman, aged 50, under cure on account of a scirrhous tumour of small size and of eighteen months' duration. Excision. Recovery. An enlarged gland in the axilla excised, but was not removed. Case 7.—St. Bartholomew's: Mr. Stanley.—A woman, aged 39, who had been subjected to several previous operations. From her left breast scirrhous tumours had twice periodically been excised, and from her right two of cystic character. On the present occasion a removed scirrhous mass the size of a nut was excised from the left, and one of cystic character the size of half an orange from the right. Under treatment. Case 8.—St. Thomas's: Mr. Kelly.—A woman, aged 64. The whole breast was excised on account of a large growth of very malignant character. Recovered. Case 9.—St. Thomas's: Mr. Macfarlane.—A woman, aged 33. The whole breast was removed on account of scirrhous. Recovered. Case 10.—University College: Mr. Robinson.—A woman, aged 35. The breast was excised on account of cancer of a year's growth. Recovered.

AMPUTATION OF THE PENIS.

Case 1.—University College: Mr. Robinson.—A man, aged 44. The subject of ulcerated cancer of the glans. The whole organ was removed, the urethra being divided further forwards than the rest of the part, and its mucous membrane afterwards stitched to the skin to prevent retraction. Recovery.

TRACHEOTOMY.

Case 1.—St. Bartholomew's: Mr. Paget.—A woman, aged 20, admitted on account of epithelial ulceration of the larynx and pharynx. Great difficulty of breathing existed, and it gradually increased to such an extent that tracheotomy had to be resorted to. Difficulty to swallow afterwards occurred, and the patient required to be fed with the stomach pump. Death from exhaustion seven days after the operation. Case 2.—The Metropolitan Free: Mr. Hutchinson.—A boy, aged 3, an ear-potter, suffering from croup. Difficulty of breathing gradually increased, and for 14 hours before the operation suffocation had appeared constantly imminent. When seen for the first time by Mr. Hutchinson, on the eighth day of the disease, he was too ill to permit of any delay, or to allow even of his removal to the Hospital. The operation was accordingly postponed at his own home. Not before its completion he became deathly pale, and both prostration and pulse quite ceased. The tube having been inserted, the operator worked up a large quantity of thick mucus which clogged the trachea, and thus constituted artificial respiration. In a minute or two there were signs of returning life, and a quarter of an hour afterwards the boy was breathing tranquilly. Complete relief was afforded by the operation, and he passed a comfortable night. On the following day, about sixteen hours after the operation, great dyspnoea again suddenly occurred, and in the time that was lost in waiting for surgical assistance, the child died. The tube was found blocked by a plug of mucus as tightly as if it

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SEVENTH YEAR.
Volume 16, No. 10.

Page.	General Medical Reports.	Notes—Death of Dr. Parkes.	of Children—Extracts from
	Original Lectures.	Continued in Continuation of	1856
125	Lectures on General Medical History. By Thomas H. Green, F.R.S., &c. Lecture II. With Engravings. 125	OUR GREAT CASE OF THE YEAR.	PROVINCIAL CORRESPONDENCE.
	Original Communications.	Case of the Nervous System: Richard Watson	GENERAL CORRESPONDENCE.
128	Notes on the Nervous System: Richard Watson	REPORTS OF SOCIETIES.	THE PATHOLOGICAL SOCIETY
131	Case of a Foreign Body in the Stomach. By George Leonard, Esq., &c. 131	PROGRESS OF MEDICAL SCIENCE.	Medical Society
134	THE LONDON DIRECTORY OF MEDICAL AND SURGERY.	OUR OLD and NEW VOLUMES	Medical Society
134	EDUCATIONAL ARTICLES.	On the Management of A-poplexy. By Philip James	Medical Society
137	On a New Instrument for Measuring the Expansion of the Chest in Respiration. By A. Wilson, M.D., &c. 137		Medical Society
141	On a New Instrument for Measuring the Expansion of the Chest in Respiration. By A. Wilson, M.D., &c. 141		Medical Society

WITH TITLE AND INDEX.

MR. CHURCHILL'S PERIODICAL WORKS FOR THE 1st OF JANUARY, 1857.

The Microscopical Journal, No. 18. Edited by H. L. CAVEY, Esq., F.R.S., F.L.S., and G. HENK, F.R.C.S., F.R.M., F.L.S.

The British and Foreign Medical-Chirurgical Review, No. XXVIII.

The Journal of Psychological Medicine and Mental Pathology, No. 7. New Series. Edited by FREDERICK WELDON, M.D., &c., &c., &c.

The Medical Directory for 1857.

The Pharmaceutical Journal, No. 187. Edited by JAMES HALL, F.L.S., &c.

Half-Yearly Abstract of the Medical Science, Vol. XXV. Edited by DR. HALLIDAY and DR. SANDERSON.

The Medical Times and Gazette; the SEVENTH NUMBER OF THE NEW VOLUME.

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ORIGINAL LECTURES.

LECTURES

ON

GENERAL NATURAL HISTORY.

By THOMAS H. HUXLEY, F.R.S.

Lecturer on General Natural History at the Government School of Mines,
and National Professor of Zoology, Royal Institution.

LECTURE IX.

(Continued from page 412.)

The general arrangement of the subdermal vascular system has been already sketched. In the *Ichthyoids*, the circulatory vessel which lies between the mesopneustes and the dorsal, is usually provided with five or six radiated "polar vessels," and there is a single mesopneustic canal, membranous in *Ichthys* but calcareous in *Cypris*, which extends nearly in the axis of the body from the circulatory vessel to the mesopneustic tubercle. Fine, radial vessels run up the middle of the inner surface of the subdermal plates, which they reach by passing beneath the scutula, when these exist, and then through the arch of the *Stomatium*; these give off branches on each side to the feet. The circulatory subdermal vessel of the *Stomatium* has no polar vessels, and no vascular appendages; in the *Cyprina* there are many vascular appendages, but no polar vessels. In most *Ichthyoids* all the feet are expanded into webbing disks at their extremities, and are less strengthened by a calcareous plate or plates, but in *Ichthyoides* and some other *Ichthyoids* the feet of the oral portion of the subderma only have this structure, while those of the apical portion are perforated, flattened, and gill-like. Again, in the *Ichthyoides* and *Stomatium* of the *Cyprina* and *Stomatium*, the form of the feet very much. Thus *Miller* distinguished four kinds of feet in the *Stomatium*—simple sensitive feet, without any webbing; locomotive feet, provided with terminal webbing, and containing a skeleton; tactile feet, whose expanded extremity is papillose; and gill-like feet, triangular, flattened, more or less perforated lamellae. Two or three of these kinds of feet may occur in any given subderma, and those which he called a *scutula* (*scutula*) are always different from the others.

In the *Cyprina* the peritrid portions of the subderma possess branched feet, interspersed with delicate locomotive webbing feet, provided with a calcareous skeleton. The latter kind alone extend on to the oral portions of the subderma.

In the *Opilichites* and *Cyprina*, and in the *Ichthyoid* without anal appendage, the feet are tetradactylous, but in the *Ichthyoid* possessing an anus, they are provided with a terminal webbing, without any skeleton.

In the *Opilichites* and *Cyprina* there are no vessels at the bases of the feet, while in the *Ichthyoid* they are well developed, but simpler than those of the *Ichthyoid*.

The mesopneustic canal in the *Ichthyoid*, strengthened by a remarkable calcareous framework, which has given rise to the notion that it is filled with sand, and is the same "sand-canal," which has been applied to it. The canal terminates in the mesopneustic tubercle, which is always placed laterally on the subdermal surface of the scutula. In some genera (*Ichthyoid*, *Opilichites*) there are many canals, and many tubercles. In the *Opilichites* the mesopneustic canal, whose walls are strengthened by perforated calcareous plates, ends upon the inner surface of one of the scutula lamellae, which usually presents a boss or knob externally. The vessels of the subderma run in the narrow canal, between the scutula of ventral scutula and the ventral plates of the anus. There are four Polar vessels. In the *Cyprina* the structure of the subdermal vascular system is but very imperfectly made out, neither the circulatory vessel nor the mesopneustic canal having been exactly determined. The subdermal vessel is supported by the scutula of sub-dermal plates, already described in the *Cyprina* portion of the subderma, in *Pericardium*.

The circulatory subdermal vessel of the *Ichthyoides* surrounds the mesopneustes, below or deeper than the oral skeleton, and sends up five longitudinal branches, which increase number as

loins in five of the pieces of that skeleton. These, therefore, correspond with the scutula of *Ichthys*, while the intermediate pieces occur in the stomach. The longitudinal vessels, just before they traverse the calcareous plates, send branches to the tubercles, which, as they enter the latter, give off long canals, which lie on the outer side of the calcareous ring; they then pass on to the surface of the body, and end along the subderma, supplying the feet with branches. In some *Ichthyoides* the feet are traversed over the whole subdermal region, as well in the inter-subderma as in the subderma. In *Cypris* (*Procha*) feet are developed only from those of the five subderma, while in the *Stomatium* and *Ichthyoid* there is only a circle of feet around the mouth. In these latter cases, however, the scutula of the subderma exist, although they supply no feet. One or many Polar vessels and mesopneustic canals are connected with the circulatory canal, and the latter organ presents the remarkable peculiarity of not being in any way attached to the surface of the body, but hanging freely down into its cavity, like the Polar vessels, from which they are distinguished by the calcareous skeleton which they contain.

Now from what has been stated it will be observed, that, as *Miller* has particularly shown, the relations of the subdermal vessel to the subdermal skeleton are very different in different orders of *Ichthyoides* (Fig. 1, P. 3, H.). In the *Ichthyoid* the subdermal plates of the skeleton are altogether external and superficial to the subdermal vessel and nerve. Nevertheless, in the *Ichthyoid*, in the incomplete subdermal processes of *Cypris*, and in the complete internal arches of the subdermal plates of *Opilichites* we have, as it were, rudiments of a skeleton internal to, and deeper than, the vessel and nerve. In the *Ichthyoid* this internal portion of the subdermal skeleton is alone developed, being represented by the subdermal scutula, the subdermal vessel and nerve, covered only by muscle and integument, lying in the groove which these enclose them by the apposition of their inner ends. The ventral scutula of the *Opilichites* are, as it were, the subdermal scutula of the *Ichthyoid*, united in pairs, fixedly instead of movably; the vessel and nerve lie external and superficial to them, but are covered not movably by integument, as in the *Ichthyoid*, but by a calcareous plate, developed in that integument. They are thus treated with a complete skeleton canal, corresponding with that in *Opilichites*, though formed in a different way.

In the *Stomatium* and *Cyprina*, the vessel and nerve are covered merely by the soft integument; but in the calcareous subderma of *Pericardium*, the subdermal plates represent the ventral scutula of the *Opilichites* and *Ichthyoid*.

The nervous system of the *Ichthyoides* consists of a ring surrounding the mesopneustes, superficial to those of both vascular systems, and of five cords, which lie in the subderma superficially to the water-vessels. The subdermal cords are larger in the middle than at either end in *Ichthys*, and the circle around the mouth has rather the nature of a commissure than of a ganglionic centre. Many star-fishes, and *Opilichites* among the *Ichthyoides* have the central bulb of breaking themselves up into fragments when taken; but *Miller* has pointed out the very curious fact, that in *Opilichites*, at any rate, this act may be prevented by cutting through the oral nervous circle.

The nervous circle of *Ichthys* surrounds the mesopneustes near the mouth, and is indented by the dorsal, between which the subdermal nervous canal is made it. In the *Ichthyoid*, the circle lies at the extreme limit of the soft membrane, which surrounds the mouth, and may be readily exposed by cutting away the hard inter-subdermal web and angles of lips.

In the *Opilichites*, *Miller* discovered the nervous circle lying in a groove on the deep or upper surface of the plates which constitute the angles of the mouth. The nervous ring of the *Cyprina* has not yet been made out; but in the *Ichthyoides* it lies immediately beneath the peritrids of the oral disk.

The only known organs of sense in the *Ichthyoides* are the pigmented "eye spots," developed in connection with the ends of the subdermal nerves in *Ichthyoid* and *Ichthyoid*, and on the oral nervous circle in many *Ichthyoides*.

The peritridial space is filled by a superabundant fluid which represents the true blood, and is kept constantly in motion by cilia distributed over the peritrids and the surrounding tissues. The situation of this fluid is effected in the *Ichthyoides*, except *Cypris*, by special branching plates developed from the oral peritrids; while in the *Cyprina* and *Stomatium*,

which possess these modified feet known as ambulacral gills, there are in each species.

In the *Starostea* multitudes of thin-walled canal processes which project freely upon the ambulacral surface probably serve the same purpose; while in the *Optistrotaria* and *Dicelostea* an apical respiratory organ is known to exist.

Many *Stolidostoma*, on the other hand, are provided with a very distinct breathing apparatus, in the form of two ramified canals, or "branchial trees," which lie in the perivisceral cavity; they open into the stomach, by whose contraction water is continually pumped in and out of these aquatic lungs, and the perivisceral fluid which bathes them must in this way be constantly renewed.

Besides this true blood system, the *Stolidostoma*, like the *Ascidaria*, possess a system of "pseudoblood" vessels, containing a fluid which, as in the *Ascidaria*, is commonly called "blood," while its reception is termed "blood-veins." Much obscurity hangs over this part of *Stolidostoma* anatomy, the development of which is accompanied with great practical difficulties. The following facts, however, appear to be pretty well determined:—In the *Stolidostoma* a vascular canal surrounds the oesophagus, whose branches are given off to the gill-veins and to the alimentary canal; and besides these there is the so-called "heart," a somewhat bulbous, contractile vessel running parallel with the mesenteric canal, and terminating inferiorly in a circular vessel which lies immediately superficial to the circular ambulacral vessel around the stomodæum.

In the *Starostea* there is an anal siphon and a "heart" analogous to those of the *Stolidostoma*. The "heart," furthermore, opens into a circular vessel which surrounds the mouth, between the ambulacral and the nervous siphons, and in close contact with the latter.

Nothing certain appears to be known as to the arrangement of the pseudoblood system in the *Optistrotaria* and the *Dicelostea* (2).

In the ordinary *Stolidostoma*, such as *Stolidostoma*, a vessel runs along each side of the alimentary canal, and one of the two vessels divides in the middle of its course into two distinct branches, one remaining attached to the intestine, while the other is free for a certain distance, but eventually reunites its fellow. The two are connected by a double set of transverse vessels, forming a kind of ray system, and into the middle of the latter the ramifications of one of the two respiratory trees are inserted; the vessels, however, do not, as is frequently stated, reunite upon the respiratory organ. The other respiratory tree is free, and unconnected with any vessels.

The intestinal vessels unite into a circular vessel, close to that of the ambulacral system, from which branches are sent up along the stomodæum and on to the Pulvis vesicles. Furthermore, the nerves are all isolated within vessels, but the connection of these with the preceding is not well-defined. In those *Stolidostoma* which possess no respiratory tree (*Optistrotaria*, *Spangia*, &c.), there is no such vessel.

In *Spangia* the ramifications of the vessels in the respiratory terminalia, according to Leidy, is open, dilated mouth, shaped like a cornucopia, and having a corking resemblance to the terminations of the water-vessels in the *Asperg*.

All the *Stolidostoma*, with the exception of the *Spangia*, appear to be dioecious, and their reproductive organs are usually of a very simple construction, consisting in the *Stolidostoma*, *Ascidaria*, and *Optistrotaria*, of more or less numerous glands opening externally by the genital pores.

In the *Stolidostoma* the genital pores are situated in distinct plates at the apical extremities of the inner-ambulacra. In the *Ascidaria* there are no distinct genital plates, and the apertures are usually situated between the stipes; in the *Optistrotaria* the genital apertures are vertically elongated slits placed at the junction of the stipes with the body.

In the *Stolidostoma* the numerous genital glands open just behind the head, by a single aperture placed in the dorsal inner-ambulacrum; while in all other *Stolidostoma*, with the exception, in all probability, of the *Optistrotaria*, the genital orifices are multiple. The *Optistrotaria* differ from all other *Stolidostoma* in that their reproductive organs are not situated in the interior of the body, but in the possession of the pharynx, where the stipes or oesophagus are developed in each case.

The numerous channels are described in the tissue of the ventral wall, which the alimentary canal of *Stolidostoma* is united, and a series exists in the head behind, whose development here and thence (the rest of the head) are one and the same. Within was in the wall of some of these vessels appear to be wanting.

Before proceeding to the development of the *Stolidostoma* there are two or three other structural points to be referred to. The soft integument of the *Stolidostoma* rarely becomes completely calcified, and is in the *Stolidostoma* very generally calcified. In the *Spangia*, when the skeleton is cleared, its surface is, in many cases (*Amphistoma*, *Stroma*, *Spangia*), marked by one or more symmetrical bands of stony-stone, minute tubercles (Fig. 2). During life slender spines are attached to these tubercles, the calcareous skeleton of which is clothed with a thick coat of integument, which suddenly enlarges at the apex, so that the spine presents much the aspect of the spines of a grass (Fig. 3); long and slender spines cover the shell of the spines, while on such structures exist on the terminal enlargement. These bands of peculiarly modified spines are called *Sclerites* or "Sclerites." Similar to branch and surround the stipes in some genera, and are called "sea-weed" and "stream-weed" (*Stroma*); where arranged the outer extremities of the principal ambulacra, and are termed "peripetals," or, when they enclose the lower termination of their ambulacra, "intertopical" (*Amphistoma*).

The *Stolidostoma* and *Ascidaria* further possess, scattered among their spines, very singular appendages, called *Psuedo-collaria*. These are long slender stems, terminating in oval heads, divided into two or three jaw-like processes. The latter are strengthened by calcareous masses, which articulate with a similar mass, contained in the basal part of the head, and a calcareous rod is usually developed in the stem. During life, the pseudocollaria are in constant activity, protruding and retracting their heads, coupling with their jaws, and seizing and holding any object which may be presented to them with no little dexterity and tenacity. The function of these curious bodies is as little known as that of the *Ascidaria* of the *Polysia*, which they in many ways resemble. They can

FIG. 2.



Amphistoma *Stroma*.—A. Viewed from above. B. From behind. C. D. From the side. E. From the side. F. From the side. G. From the side. H. From the side. I. From the side. J. From the side. K. From the side. L. From the side. M. From the side. N. From the side. O. From the side. P. From the side. Q. From the side. R. From the side. S. From the side. T. From the side. U. From the side. V. From the side. W. From the side. X. From the side. Y. From the side. Z. From the side.

hardly be for the purpose of getting rid of parasites, as I have seen a number of *Dicelostea* perched upon the back of a living

Fraxer (*Asteronichia*), in which the pedicellars were in full activity.

The skeleton of the *Asteroides*, *Ophiurida*, and *Polysiphon*, presents no pores beyond those intended for the exit of the feet; that of the *Asteroides*, on the other hand, exhibits numerous pores on its un-imbued surface, which give exit to the minute canals, which I have referred to as openings of the respiratory organs, and these pores are occasionally, as in *Ophiurida*, aggregated into distinct "pore-rows."

The lateral and un-imbued plates of some *Crinoids*, also, as we have seen, present peculiar pores; but it is in the *Cystodermis* that this system of "un-imbued" pores attains its greatest development. The pores are here always combined together, usually in pairs, by canals which either increase the substance of the plates or directly penetrate them. The pores which are thus united belong either to the same plate (*Siphonaria japonica* and *Enchelyomorpha*, *Protactinia americana* is in different plates, as in *Staurastraea*, *Cyprasteria*, *Polysiphonia*, *Siphonaria*, etc.) In the latter genus, and in *Protactinia*, *Siphonaria*, and *Protosiphonia*, the pores are few, and are arranged in definite rhomboidal spaces, called "pedicellar rhombs" by Fuchsner & Forbes.

The development of the *Echinodermata* takes place in two very distinct modes. In the one, the oral cavity is at first completely covered with stilia, but gradually loses them over the larger part of its surface, so that they become confined to a band which encircles the body [Fig. 1 A]. At the same time a complete alimentary canal is developed, divided into three well-marked portions, a gullet, stomach, and intestine, and provided with a duct on the mouth and on anus. A line drawn through the mouth and the anus transverse the ciliated circle whose plane is thus, properly speaking, transverse to the axis of the body, although the circle is so obliquely disposed, and at the same time bent upon itself, that it has more the appearance of a bilaterally symmetrical loop (B).

FIG. 1.



Diagram illustrating the general plan of the development of the Echinodermata. A, Ciliated band; B, Ciliated band with a duct; C, Ciliated band with a duct and a gullet; D, Ciliated band with a duct, gullet, and anus; E, Ciliated band with a duct, gullet, and anus, and a stomach; F, Ciliated band with a duct, gullet, and anus, and a stomach and intestine; G, Ciliated band with a duct, gullet, and anus, and a stomach and intestine, and a mouth and anus; H, Ciliated band with a duct, gullet, and anus, and a stomach and intestine, and a mouth and anus, and a mouth and anus, and a mouth and anus.

The great majority of the *Echinodermata* commence their existence as free-swimming larvae of this kind, but a great difference exists in their further course, according to the kind of the *Asteroides*, the *Heterostrophia* and the *Crinoides*,

on the one hand, or to the *Heterostrophia* and *Ophiurida*, on the other.

FIG. 2.



Development of an *Asteroides* larva (after Wolff, vol. 3, p. 100). A, Asteroides larva; B, Asteroides larva with a gullet; C, Asteroides larva with a gullet and a stomach. A, Asteroides larva; B, Asteroides larva with a gullet; C, Asteroides larva with a gullet and a stomach. A, Asteroides larva; B, Asteroides larva with a gullet; C, Asteroides larva with a gullet and a stomach.

The larva of the *Asteroides* (Fig. 2) develops a second ciliated circle in front of the mouth, and therefore not traversed by the alimentary canal; and moreover, as in the *Trocharia* of Hilleb, a third around the anal extremity. The anterior and posterior ciliated circles become profused anteriorly and elongated into pseudociliated processes, which the larva requires a very extraordinary and grotesque appearance. Kolosa and Dandlakin, the discoverers of this form of larva, and being acquainted with its true nature, conferred upon it the name of *Siphonaria asteracea*; the reason of the specific denomination will shortly become apparent. When the larva has attained a certain grade of development, and a pore-like depression of the integument makes its appearance in its anterior and dorsal part, in fact, and this depression gradually becomes converted into a slit, which is, towards the mouth, directed, vertically parallel one side of the stomach. Here its anteriorly expands and gradually changes into a circular duct, from whence processes are given off. In fact, we have the rudiment of the ambulacral vascular system of the adult *Echinoderm*. In the mesenteric a mass of formative matter has accumulated in the same region, and gradually takes the shape of the body of a star-fish, the future mouth being indicated at a point corresponding with the vertex of the circular water-duct, and, therefore, far removed from the aspect of the larva (Fig. 3).

The skeleton of the starfish body next gradually extends over the stomach, and, as it were, cuts it off from its own mouth and esophagus, while it surrounds the restum of the larva, which, at some time, projects as a tube from the apex of the starfish. At the same time the extremity of the tubular commencement of the ambulacral vascular system becomes inclosed within and fixed to the perisoma of the starfish, in the position of the mesenteric tubercle, into which, as the calcareous matter of the skeleton becomes deposited, it is gradually converted. The starfish now adheres by its oral-band wrapped neither in the back of the new "*Siphonaria*" larva, and is carried about by the latter and it were a peculiar, heterostomously it becomes detached, and the larva, deprived of its alimentary organs, is all probably soon ready to crawl. The *Echinoderm* in the starfish, then, commences with the development of the ambulacral vascular system as an inward diverticulum of the intestine; this becoming clothed with the Mucosa supplied by the larva, becomes a sort of complex bud, which gradually assumes the form of a starfish. Like the bud whence the *Fucus* is developed upon its embryo, and, unlike the buds of *Siphonaria*, *Asteroides*, and *Polysiphon*, it develops an opposite alimentary canal, but adopts that of the larva, just as the larvae of sea anemones adopt the alimentary canal of its larva. The whole process, in fact, occupies the most curiously intermediate position between ordinary zoözoögenesis and asexual development. If the body of the starfish had merely modified itself out of that portion of the body of the larva which surrounds the alimentary canal, we should have had a simple act of zoözoögenesis unaccompanied by extensive asexual. If, on the other hand, the starfish had evolved its own alimentary canal, then the case would have been one of simple zoögenesis. As it is, the development of the starfish involves both processes.

(c) When I first made this almost self-evident remark, I by no means meant, as has been supposed, to suggest that the *Echinodermata* larva and skeleton were originally zoözoögenetic.

The larva of the *Helobdella* possesses only the principal dilated diverta at first (Fig. 1), as development proceeds, this diverta, instead of throwing out the long processes of the *Platyura*, merely becomes deeply sinuated, and then certain parts of the sinuated portions of opposite sides become united together, while others are obliterated; so that the larva becomes encased by a number of transverse dilated rings (Fig. 2 & 3).

FIG. 1.



Development of a *Helobdella* (after Müller)—a. Early evolution of larva; b. & c. later stages.

The evolution of the subdorsal vascular system makes its appearance in the same way as before, and in a corresponding position, and gives rise to the subdorsal cords; but no new mass of *Mastaxia* accompanies these and takes the form of a distinct bud. On the contrary, they apply themselves to the walls of the body of the larva, which gradually becomes more and more constricted. The development of the *Helobdella* is, therefore, much more like simple metamorphosis, and the addition of the new system of locomotive organs would be hardly more surprising than the addition of wings to the larva of an insect, were it not that, as in the earthworm, the larval mouth disappears, and is replaced by a new one, developed in the centre of the circular subdorsal vessel. Furthermore, the subdorsal system does not remain connected with the dorsal pore, the canal of communication acquiring a calcareous deposit, and becoming cut off close to its attachment to the parietes. Hence, there is no madreporic tubercle on the body of the *Helobdella*, and the madreporic canal hangs freely into the peribranchial cavity.

Müller has described an earth-larva which becomes round-bellied, instead of assuming the figure of *Platyura*. Of the development of the *Ovicoides* we know very little, beyond Eschsch's observation, that the larva of *Camadula* is provided with several transverse bands of cilia, almost like that of a *Helobdella*; and that the development of the *Helobdella* commences while the larva is still free. We yet want to know the structure of the larva, its earliest form, and the changes which it subsequently undergoes. At a later period, it is well known, since the observation of Mr. V. Thompson, that the young *Camadula* is attached upon a long, jointed stem, so as to resemble a *Planorbis*; and that it becomes detached from this stem, in ascending to adult condition.

The larva of the *Helobdella* and *Ovicoides* resemble those just described in their very earliest condition, but eventually become very different from them (Fig. 15). The difference in

FIG. 15.



Development of an earth-larva (after Müller)—a. Earliest and b. later evolution of larva; c. The *Helobdella* stage developed while not freely attaching the larva.

produced in two ways—1. The dorsal region of the larval *Helobdella* or *Ovicoides* is produced into a sort of conical hump, while the ventral foot becomes much contracted, and its edge prolonged into many slender, symmetrically arranged, processes. 2. While the larva of the *Asterina*, *Helobdella*, and

Ovicoides never possess any calcareous skeleton, those of the *Helobdella* and *Ovicoides* are always provided with such a skeleton, in the form of rods and have connected into a sort of framework, whereby the body and processes of the larva are supported. This has nothing to do with the skeleton of the *Helobdella*, coming into existence before the latter makes its appearance, and disappearing as it attains its full development.

The development of the *Helobdella* in these larva takes place in the same way as in the others (Fig. 15); a depression making its appearance in the anterior dorsal region of the larva, gradually extending forwards as a dilated canal, with a pair-like external opening, and giving rise to the subdorsal vascular system. A mass of *Mastaxia* in connection with this lays the foundation for the parietes of the *Asterina* or *Ovicoides*, which gradually extends round the stomach, cutting off both oesophagus and intestine. A new anal aperture is developed in the centre of the circular subdorsal vessel, and in the *Helobdella* a new anus appears; but in the *Ovicoides* no redevelopment of the anal aperture takes place. The cavity of the madreporic canal is included within the calcifying parietes, and remains attached to it.

Very little of the larva is actually cast off in the *Helobdella* and *Ovicoides*, the most remarkable loss of this kind being the breaking up and disappearance of the larval skeleton, which may here be well termed "provisional."

With regard to the other mode of development of the *Helobdella*, to which I have alluded, there is but one known instance among the *Helobdella* and *Ovicoides* of any departure from the type of development which has been described, in the *Ovicoides* *vitrea*, which was discovered by Kuhn to be viviparous, and whose development has been further examined by Müller. It appears that the embryo of this *Ovicoides* never assumes the dilated three-lobed condition, but passes through its early stage enclosed in a sac formed by the membrane of the ovary. As might be expected, the larval state is here very obscure, and, in fact, it might be doubted whether the animal passed through any, were it not that a rudimentary provisional skeleton is developed, and exists for a short time.

There is said to be a viviparous *Helobdella*, but not single known of the development of the larva. Among the *Asterina*, however, several species belonging to the genera *Stelodora* and *Asteromachia*, have been observed by Van and others to present important aberrations from the ordinary course of development. The dilated embryo never assumes the single or multiple well-marked bands of cilia, nor the secondary canal of other *Helobdella* larva, but puts forth one or more short processes from one extremity inseparable to those developed in the free larval larva. Involving, by means of which it attaches itself either to the body of the parent or to sea-weeds. The free end next gradually takes the form of a spiracle, so disposed that the processes of attachment eventually lie on its ventral surface on one side of the mouth. As in all other *Helobdella* larva, the case of the *Helobdella* is totally distinct from that of the larva in which it is developed; but of the internal changes, and more especially of the development of the subdorsal vascular system in these aberrant *Asterina*, nothing is known.

Having thus said before you at some length an account of the most important features in the organization of the *Helobdella*, I have only, in conclusion, to point out what peculiar structure these organized most occupy in the animal kingdom. As I have particularly explained, beside nothing else as a truly trilateral symmetry in any *Helobdella* whatever, the madreporic tubercle and canal being invariably symmetrical. Furthermore, the larva invariably exhibits bilateral symmetry, and many other *Helobdella* are also, to the in their external form, generally symmetrical. There is no more reason for regarding an *Helobdella* as "Echinoid" than there is for applying the same term to a *Terebra*. Under these views, it seems to me not clear why, even if Currier's "*Stelodora*," should on other grounds, be retained, the *Helobdella* should be arranged among them. We have seen, however, that Currier's *Stelodora* cannot be retained as a natural group equivalent to *Polysiphonia*, *Amphioxus*, etc.; and, therefore, the question of the position of the *Helobdella* would seem to resolve itself into this:—are the *Helobdella* a sub-kingdom equivalent to *Chordata*, *Hydaria*, and *Amphioxus*, or do they fall under one of these sub-kingdoms? I confess I cannot imagine that any one will ever ascertain the former char-

ratio; and, if we admit the latter, then, by the method of exclusion, if there were no latent reasons, the Echinoderms would fall among the *Amphibia*. Assuredly they have an affinity with either the *Amphibia* or the *Cnidaria*; but there are strong positive reasons for assigning to the Echinoderms a position among the *Amphibia*, and in the *Amphibia* division of that great group. The vascular system of the Echinoderms are to be regarded only among *Amphibia*. Larvæ comparable to those of the Echinoderms are to be met with only among the *Amphibia* and the *Turbellaria*, while, as I have elsewhere shown, a curious relation exists between these larvæ and the adult Echinoderm of the *Strophæa*. Finally, the only series of developmental stages to be compared to that of the Echinoderms is presented by the *Amphibia*, where, as we have seen, a bilaterally symmetrical larva gives rise to a radially symmetrical imago, in which the bilateral symmetry only becomes subsequently disturbed by the development of the reproductive organs. The nervous system of the adult Echinoderms is not more advanced than the typical *Amphibian* nervous system than is that of the *Fish*.

These are the grounds upon which I ventured, some years ago, to assign a place among the *Amphibia* to the Echinoderms, and I must confess that I am still unable to see that any other conclusion can be drawn from the known facts of their structure and development.

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No. XXVIII.

OBSERVATIONS ON CASES OF PERICARDITIS.

ADMITTED INTO WALKER MILITARY HOSPITAL, DUNDEE, 1881-2.

By JEFFERY A. HANSTON, M.D.,
Staff Assistant-Surgeon.

(Continued from page 614.)

Rheumatism is not by any means an infrequent disease in the Mediterranean, among British soldiers, particularly recruits, in whom the rheumatic diathesis is frequently present; and we find, that, during the extreme heat of the summer and autumn, the men, after having their clothes completely soaked with perspiration, have on return to barracks frequently stripped, and exposed themselves to other respects to cold, and they were subsequently admitted into hospital with incipient pericarditis. Of few who thus succumbed to their disease, we had arthritic inflammation of the left knee, occurring subsequently on the second day; yet the cases were very frequent in which pericarditis existed, accompanied by the type of symptoms which characterise acute rheumatism, save that no inflammation of the fibrin-coated membranes of joints occurred. In a climate like India, it is impossible to estimate perspiration, while this is the rule, but these patients, we imagined, had abnormal excretions, decidedly of an acid character; the urine, too, although not quantitatively examined, had the usual character presented during arthritic diseases; that, it was scanty, high coloured, very acid, of high specific gravity, and frequently depositing a brick-dust sediment. It may be mentioned, that, at the same period, cases of acute rheumatism were occasionally admitted, even among the men stationed at camp, and in barracks. Hence, in an atmosphere so deleterious to the urine, we had their perspira, or any morbid diathesis likely to produce the effect, the question arises, as to whether it be possible to have a rheumatic condition of the blood, leading to effects upon the heart and pericardium, irrespective of an antecedent and more general affection of the fibrin-coated membranes of the joints. It is now well ascertained, that acute rheumatism may be produced and referred to by a primary affection of the heart. Drs. Todd, Watson, and other Physicians have enumerated such cases, but we are not aware of any case in which this rheumatic condition of the system has developed itself upon the heart and pericardium only.

With regard to the period at which a fibrin-membrane earliest becomes opaque, it appears questionable whether

the corresponding pathological condition be always one of effusion; for so frequently has it occurred that a fibrinous membrane, formed by more than one cell, has been quickly removed by tapping or leeching, and general treatment, that it would hardly admit of the possibility of the lymph having been absorbed, or sufficiently organized to have formed adhesions; rather, it seems to us, that a membrane of a soft gelatinous character, formed during the attack and abatement of the heart, and covering only the secretion of the sac is diminished, and the opposed surfaces of the membranes are merely dry, and enlarged from congestion. In one case only was pericarditis perforated performed, and it appeared unsuccessful, chiefly from its easy late application (performed from the man's mistaken notion from ship-board;) and the lesions which had been already produced. The cases were not all under the care of our Surgeon, nor were those of liquid effusion sufficiently numerous, or the amount sufficiently accurately determined, and the concluding disease the objective, to warrant in more frequent performance.

Case.—*Pericarditis, with Effusion, not an Effect of Rheumatism or Arthritic Synovitis—Amphibia Trichostema*.—*Scott*.—First Lieutenant T. G. Ed. Regiment, aged 41, admitted from transport on the evening of the 26th of July, 1863. Had been in the Crimea during the whole campaign; his health had always been excellent. About two months ago he suffered from diarrhoea, for which he was bled in Stretton, and from those debilitated for England, nearly well, on a convalescence. Heaps stated that he was suffering from dyspnoea and fever. On admission he had almost constant vomiting, dyspnoea, anxious expression of face, much nervous debilitation of the mucous membranes. He seemed positively that he never had otherwise lived in his life. The urine, which was scanty, contained no trace of albumen, and was of high specific gravity. He could not lie down in bed; always occupied a "loving forward" position. The pulse was 128, intermittent; nervous fibres were lined over nearly the whole surface of the chest, the liver's sounds were very distinct; lungs almost imperceptible; dulness existed over nearly three-fourths of the sternum, and to an extent of nearly five inches in diameter transversely; the dulness triangular-shaped. No heart could be detected; dulness existed to an abnormal extent over the hepatic region, extending into the epigastric and left hypochondriac; spleen enlarged. The following morning, about three-fourths of a pint of serous-gelatinous fluid was removed by a small trocar. The operation at first producing syncope, the opening was closed. He appeared much relieved, and slept pretty well. After a violent attack of dyspnoea he died at 9 a.m. on the 11th of July. Treatment pursued included stimulating diuretics, cupping, and free exhibition of stimulants.

Post-mortem examination revealed much fluid remaining in the sac of pericardium; the white anterior surface and base of pericardium was covered with a coarse, villous lymph, partly degenerated into pus; the left ventricle was hypertrophied, and appeared in a condition of fatty degeneration; valves healthy; simultaneous disease of the aorta, with a small obstruction between the two coronary arteries. The ulcer was produced from perforating by a large deposit of lymph (organized) upon the external coat of the interpericardial portion of the coronary plexus. Clots of both large and small vessels enlarged internally, apparently from "loamy" deposit; kidneys quite healthy; intestines healthy, save some inflammatory traces about the pyloric end of the stomach; other organs healthy.

Pericarditis and Pericard Effusion, Acute Rheumatism. Death.—Private W. S., 3rd Regiment, admitted into hospital in May suffering from pleurisy. Had suffered some years before from rheumatic fever. Urine contained albumen, but no masses existed. This case not being treated by us, we know little more than that he died on the fourth day, was supposed to have pericarditis, and could not get without lying with his head and shoulders upon a table.

Post-mortem.—An old pericardial adhesion of the base of heart, the sac enormously distended with at least a quart or more of thick, purulent fluid, the whole sac covered with degenerated, rough lymph; dilated effusion of serum and lymph on right side. The valves and substance of heart appeared pretty healthy. The kidneys (particularly left) were much enlarged and injured highly.

In this case pericarditis would have been possibly at least a great relief.

ON A NEW INSTRUMENT

FOR
MEASURING THE EXPANSION OF THE
CHEST IN RESPIRATION.By G. NELSON EDWARDS, M.D., and L.M., Canada.
Assistant Physician to the City of London Hospital for
Diseases of the Chest.

In the physical examination of the thorax it is frequently impossible to measure accurately the amount of expansion during respiration, as well as of the whole chest as of corresponding parts on opposite sides. For this purpose several instruments have been devised, among which may be mentioned the chest-measurer of Dr. Adams and the sphygmograph of Dr. Quain. These are, however, difficult of application, and too complicated for general use; and it appears to me that the object may be more easily attained by certain modifications of the ordinary measuring calipers.

The instrument which I have had constructed is here figured. It differs from the ordinary caliper or caliper compass in having the two legs contoured beyond the joint in two flat pieces of metal, which move parallel to each other as the compass is opened or shut.

One of these flat pieces is cut into the shape of a circle whose centre is that of the compass joint, the outer extremity being cut at regular intervals into small equal teeth; these teeth work, as the instrument is opened or shut, on a small plain wheel, whose axis is perpendicular to the flat piece of metal transmitting the other leg, works in it, and turns a small index needle parallel to the plate in which the axis of the plain wheel works. By this arrangement, when the extremities are of the feet of the calipers are kept applied to any two points whose distance from each other varies, this variation and the proportion are described by the increased or diminished arc indicated by the motion of the index needle over the dial-plate. Such distances are chosen for the circular arc, its teeth, and those of the plate, that a difference of ten inches between the extremities of the feet of the calipers causes a complete revolution of the index needle. Variations of less than the twenty-sixth part of an inch are thus rendered

apparent and easily measured. For greater variations than ten inches a plate removed from the dial-plate with an index in its upper part exposes a graduated scale on the surface of the hollow circular arc, which marks any greater variation than that which produces a complete revolution of the index needle of the circular dial. A spring of vulcanized India rubber attached to each foot of the instrument at equal distances from the compass joint, serves in keeping the extremities of the feet in contact with the points whose variation in distance is to be measured.

The lower half of each leg of the calipers slides into the other half so that, when it is equal more convenient for use, the length of the feet may be reduced one half, when so decreased, the indications of the dial plate are diminished in value in the same proportion.

In using the instrument, the extremities having been applied to the two points between which it is desired to ascertain the variation, it is to be supported lightly by the hand, and the point at which the index needle on the dial-plate having been accurately read off, the patient is to be directed to take a full



Case of pleuritis occurring in man in hospital without any apparent cause.

1. Was a healthy-looking man, suffering from double pleuritis, the result of erysipelas. Ulcers remained so abundant; was sure that he had never had rheumatic fever. In this case, after inflammatory fever, he exhibited no complaint of pain in the stomach, when a well-marked friction was present was heard with each movement of the heart. After looking with dilating and mercury, the abnormal sounds became less distinct and finally ceased; but he exhibited all the symptoms of an adhesion pleuritis with a remarkably accelerated pulse, and was treated to Chloroform.

2. Corporal J. O., 33rd Regiment, had been in Hospital about seven days, suffering from erysipelas; after great debility, and symptoms of dyspnoea, began to complain of pain in respiration, affecting the left side. Upon examination, it was found that he was suffering from pleuritis, and had a very considerable amount of effusion into the sac, in which he was dilated, &c. He subsequently had much vomiting, following rigors, with a quick pulse, and complained of uneasiness in lying on left side. Upon physical examination of the heart, it was found that slight increase of dulness existed, with a murmur, which accompanied the systole and diastole of the heart, but was heard only from the fourth costal cartilage, spread towards the left axilla; not limited, therefore, to the surface of the heart, but it was not heard at the apex, or along the course of the aorta. After a short period the dulness had extended much, the increase being marked each day by respiration. It was of triangular shape; the impulse was slight, and the sounds were somewhat distant in character, and the murmur was not heard so distinctly. After dilating and mercury, the dulness gradually diminished, and the murmur, which had the character of an endocardial one, was again heard, but higher at the same time becoming more flexible, and the sounds more distinct. He was subsequently sent to England, in charge of air; the pulse remaining accelerated, and tendency to dyspnoea existed on exertion. No effusion in the groin, nor any rheumatic affection of the joints had ever existed in this case, but he had much sweat and perspiration, a loaded tongue, and urine highly colored and occasionally acid.

Case of pleuritis pleuritis, occurring on a soldier in the Madras Army.—J. P., aged 20, Land Transport Corps; admitted December 12, 1844; had been ill two days, with pain in the chest, fever, and cough, for which he was bled. No rheumatic affection had ever, or did then exist, nor was the urine at all albuminous, and of normal specific gravity. Upon examination, it was found that he had tracheitis of both lungs; and a plain friction was present accompanying both sounds of the heart, attended also with marked lancet vibrations; dulness existed from the third costal cartilage, left side, to the sixth, and the interval between these points was dull. He complained of no pain or tenderness; inability to continue long lying on the left side. The sputa continued for more than one week, and he was left in Hospital, apparently suffering from adhesion pleuritis.

Case of Pleuritis occurring after a prior adhesion of Peritonitis with tuberculous pneumonia.—J. K., 3rd Battalion 60th Regt, aged 23, admitted into Hospital from England 20th July, 1855. A man of remarkable good conformation of frame, stated that about three days previously he had suffered from hæmoptoe. Pulse 100, jerky; depression, pale and anxious; no pleuritis in family; slight dyspnoea, and respiration accelerated; skin hot and dry; almost continued cough, with more or less hæmoptoe, and profuse nocturnal sweating; slight dulness of resonance over the thoracic pectorals, but not marked; tuberculous vesicles with pleural friction heard on both sides; no diminution or signs of tubercle to be detected about apices; much hoarseness in the morning; the lower sounds appeared normal but weak and distant. During treatment a double friction sound developed itself over the vesicular region, particularly about apex, but no increase of dulness. The man was supposed to be tuberculous pneumonia, and the symptoms continued unabated, until he died, one month after admission.

Post-mortem examination.—On peritoneal adhesion, strongly organized over every part of the liver, over the anterior surface of the apex, where fringes of evidently recent formation was found. Heart itself healthy; no vascular disease, but much enlarged, weighing only 3 oz. Both lungs were infiltrated with transparent milky tubercles; no vesicles retained; recent adhesions of both pleurae. Liver shrunken; other organs healthy.

inspiration, and to hold his breath for a moment. The distance between the point at which the index now stands on the dial-plate and that observed on the former reading will give the amount of variation between the two points in full expiration. On expiration, by means of the index-rod and spring, the index will return to the point where it stood when last observed.

It would be superfluous for me to dilate upon the advantages of instruments for measuring the expansion of the chest in respiration, as this has been so well done by others; but I believe that in many cases of disease they may form an important aid in diagnosis, and, by a long series of observations, we could ascertain the normal amount of expansion of the healthy chest at its several points, such instruments would be useful in ascertaining the value of liver proposed for treatment, as well as in ascertainment of disease. These considerations must, however, be reserved for future investigation.

The instrument may be seen at Messrs. Elliott's of Chattercross, 45, at Messrs. Ferguson's, of Oldham-Street, to whom I am indebted for considerable assistance in overcoming the mechanical difficulties in its construction.

3, Finsbury-pavement, Dec. 26, 1886.

JERSEY HOSPITAL REPORTS.

By G. M. JONES, Esq.

EXTENSIVE DISEASE OF THE RIGHT ULNA—REMOVAL OF THE ENTIRE BONE—NECROTIQ.

On about a time having elapsed since the patient of whose case I am about to give the history was operated on in the General Hospital, the speaking of it as a necrosy may appear premature; but when it is found that the soft parts on larger pressure become firm, and are well consolidated; that the patient's health has improved so rapidly as to leave no doubt of its thorough restoration; that the fingers are moved not merely with considerable facility but with power also; that neither pain nor weakness is felt, when acute and wasting swelling were experienced before, these criteria, I consider, tolerably just grounds for anticipating on perfect a cure as even the most sanguine could hope; with which symptoms, favorable as they may be regarded, and more pronounced of a useful kind, I should have delayed writing out this case for some months, had I not been influenced by indisputable authorities that there are cases recorded in England in which the entire ulna has been removed; and I am thus led to make known this case in the hope that some junior members of the profession may pause before removing a limb because one of its bones is widely affected, and rather hazard an operation which may be the means of rendering life easier, by enabling the patient to gain his livelihood by his own exertions, instead of being dependent for his bread on the charity of others.

I shall watch attentively the further progress of this case, and when treating elsewhere on the diseases to which the nervous system is subject, shall not fail to mention its further history, as far as regards the capabilities of the patient to employ his arm.

History of the Case.—Emma Maskell, aged 34, married, by trade a bookbinder, although of slight and delicate appearance, had always enjoyed tolerable health up to December last, when during a week of frost she fell twice, and on each occasion injured her right fore-arm; these accidents were followed by much pain, and considerable inflammation of the part; at the expiration of three weeks, an abscess formed near the elbow, which, after suppurating freely, healed, but was immediately succeeded by others over the middle part of the shaft. Her general health very quickly became affected, and although attended by a talented friend of mine, his judicious prescriptions evinced the dietician assistance as essentially necessary to afford them any chance of success. Thus reduced by want as well as by disease, she became an inmate at the Hospital on the 1st of October, this year. The first view at this time presented an immense amount of disease; there existed an indurated abscess surface about the size of a two-shilling piece lying immediately over the epiphyseal process, some ten or twelve lines from this point to the upper third of the arm, considerable puffiness at the elbow, and hazy swelling at that part, much expansion in some places, depression in others, and a jangling tenderness throughout the soft tissues in the vicinity

of the different abscesses. Motion of the elbow, wrist, or fingers occasioned considerable pain, and a steady position of the arm was the one chosen as affording the greatest amount of comfort.

A train of hectic symptoms were apparent; occasional diarrhoea, morning perspiration, vague characteristics of great constitutional debility, loss of appetite, sleepless or restless nights, with pulse varying from 106 to 120. The disease of the arm, and the effect it produced on the system generally, demanded prompt operative interference.

Operation.—This was performed in the following manner, on the 15th day after the patient's admission.—When under the influence of chloroform, her arm was more minutely examined than it had hitherto been; each of the abscesses felt as hard. A small incision was first of all made through the partly part of the elbow, in order to discover whether the disease had extended thence to the bone; it was found that bone divided of the periosteum could be touched with the probe. This fact necessarily facilitated the future stages of the operation, as it became evident that the removal of the entire ulna was necessary; to effect this, an incision was commenced a little above the olecranon, and extended downwards rather beyond the epiphyseal process; the integuments were then carefully dissected on either side, the artery being kept at the time as close to the bone as possible; the vein was now freed from its attachments at the wrist, then secured and held up with the left hand by the ball-cloth forceps, all its remaining connections were cut through. The artery was next cut across, and the entire bone liberated. The hemorrhage was by no means considerable, and no artery of any moment required ligature. Three sutures were applied, back to the upper and the lower part of the wound, two dressing inside the middle part, and also over its entire extent. The arm was then secured on a suitable splint.

Description of the removed bone.—Throughout its whole length, more or less, the bone was extensively diseased. Along the shaft several points presented the condition of necrosis; and at one point in particular was a considerable cavity containing a quantity of dead bone, about four. At the proximal part of the olecranon process was another cavity, and the bone around was hard, the lower extremity, near the epiphyseal process, presented the condition of cancer, and to the extent of about ten or twelve lines, a considerable quantity of new bone was thrown out.

After Treatment.—Local.—For ten days after the operation, the suppuration was extensively great, and much of the integumentary structures sloughed away, so that the warm-water dressings had not infrequently to be renewed two and three times a day; the putrid odour was generally of a healthy character. When healthy granulations were apparent, strips of English syringe soap, half-an-inch wide, and some distance apart, were applied in order to afford support, and at the same time to approximate as much as seemed desirable the lips of the wound, while the head of the radius was by every means possible secured, if I may so express myself, to adapt itself to the part firmly occupied by the ulna. At the expiration of seven weeks from the date of the operation, the parts had entirely healed.

Constitutional Treatment.—Immediately after the operation, stimulants in the shape of wine and malt-liquor, were allowed, and continued for several weeks, as also eight glasses of port wine, and one bottle of porter were taken in the twenty-four hours; animal food was allowed at every meal, also other diet of a nutritious nature. Quinine in large doses, compound extract of bark, and the syrup of iodine of iron were the medicines prescribed, not, as a matter of course at the same time, but alternately.

Present Appearance.—I shall merely add to the observations already made, that at this date, December 8, the appearance of the arm is such, that no one would imagine the ulna is wanting; the head of the radius has so successfully adapted itself to the part that even manipulation leads one almost to imagine the ulceration still exists; there is considerable movement of the wrist and of the elbow-joint, of the former particularly. The patient walks about without appearance of any disability, and seldom or never carries her arm in a sling.

I cannot conclude the history of this case without stating that I had the opinion of my friend, Mr. Henry Smith, of London, prior to the operation, and the advantage of his assistance during its performance.

CASE OF A BOUGLE BROKEN IN THE URETHRA.

CALCULI IN CONSEQUENCE—LITHOTOMY.

By GEORGE LOWDELL, Esq.

Surgeon to the Essex County Hospital.

(Read before the Brighton Medical Society.)

In the month of January last, H. W., a man aged 54, presented himself among the out-patients of the Essex County Hospital, stating that he had a large portion of a bougie lodged in his urethra. As my usual visit I saw him, and passed a probe into the urethra, which reached clearly the foreign body about four inches above the meatus.

The history he gave was, that having for some years been subject to stricture, he had been in the habit of occasionally passing an instrument to keep the canal pervious. This he always accomplished easily till the preceding November, (two months before his present application,) when, unfortunately, the instrument broke, leaving nearly six inches in the urethra and bladder. The foreign body produced no serious constitutional mischief; he made water freely, though, perhaps, more frequently than he ought to do, but without any pain; and he seemed to think he should cure his little bit, except that his thoughts constantly reverted to the unhappy circumstances. I wished him to allow me to pass a fine pair of urethra forceps and endeavour to extract it; but he declared that he had made all kinds of efficient instruments, and was satisfied the removal was not to be brought away by those means. He wished for some "forcing medicine," and if I would not prescribe such for him, he would leave the Hospital. I tried to explain that no medicine would accomplish this purpose, and that probably some deposit would soon lay over the bougie, so as not only to cause him the greatest inconvenience, but probably jeopardise his life. However, he would believe nothing of the sort, and left the Hospital in great rage.

I saw no more of him till the 10th of April, nearly three months since his last visit, and four and a-half months since he broke the bougie. He was now suffering extreme pain, and requested something might be done for him, and if he might have chloroform he would yield to any measure I proposed.

On the 11th of April he was rendered insensible by chloroform, and by the aid of a long pair of urethra forceps I forcibly obtained a good hold of the fractured end of the bougie, and gradually extracted a fragment about six inches in length, curved, especially where it had lain in the prostatic portion, with copious phosphatic deposit; but the portion that was in the bladder was perfectly free from such deposit; from which circumstance the inference was drawn that a calcareous deposit had formed around it, but that it had separated when the bougie was withdrawn. This was considered to be the case; for though the patient was delighted at getting rid of his tormentor, he was disappointed that his pain did not abate; and, after passing two or three miserable nights, he allowed a second to be passed into the bladder, when a calculus was immediately detected.

The poor fellow now saw too clearly the dilemma into which he had brought himself by neglecting the advice given to him when he first came to the Hospital. Pain and anxiety had completely changed his disposition, and, from being the most violent and obstinate of men, he had now become a most tractable patient, and requested that if an operation was necessary, he should be submitted to it as soon as might be thought right to do so. The proposed phosphatic nature of the calculus, soft and friable, encouraged the idea of lithotomy, but this was wavered, followed by the notion of the urine, which was alkaline, and loaded with mucus; and the bladder was so extremely irritable that it would scarcely contain two ounces of water injected into it—and in which, the urethra had become so sensitive, and the patient so nervous, that he could scarcely bear an instrument to be passed. Lithotomy was, therefore, determined on and performed on the 16th of May. A large, soft, shagreened, crumbly, "beetle" calculus was extracted without difficulty. The patient recovered perfectly.

There are many cases reported where instruments have been broken in the urethra; where they have remained the varying periods, producing more or less irritation; where different means have been successful in extracting them; or where,

after endeavouring unsuccessfully to extract them, they have escaped spontaneously; but I have not been able to find one where the broken fragment remained partly in the urethra, partly in the bladder, as long as in this case—a period of nearly five months; and it is on this account that I think it ought more especially to be recorded; but it is also worthy of remark when little hindrance to the passage of the urine, and absolutely no sort of constitutional disturbance there was for the first two months. It was at this time that the patient ought to have allowed the foreign body to be removed, and probably he would at once have been relieved from all trouble. Mark I saw during the next period, (the probable period of the calcareous deposit,) his symptoms became more and more aggravated, till after well-aided and obstinate attempts the bougie supplied for relief, even prying, at an act of mercy, to have to undergo one of the most dangerous operations in Surgery. Happy for him, he escaped with his life. Every one in a similar case may not be equally fortunate.

THE LONDON

PRACTICE OF MEDICINE AND SURGERY.

HOSPITAL NOTES.

TUMOR FROM THE FRONT OF THE FOREBRAIN.—A young female came under Mr. Watson's care at St. Mary's Hospital with a tumour in the centre of the forehead as large as a walnut. It was of strong hardness, apparently just beneath the skin, and so far movable, as to justify the suspicion of being unconnected with the bone. Four or five years ago the growth was first observed, and it had gradually increased without pain till within a few months, when after the movements of the muscles being interfered with, she sought relief. Mr. Watson suspected the existence of endothelium. An operation having been decided on, he made an incision over the tumour, dividing the skin and hair. A distinct cellular structure was at once recognized and opened. With the handle of the scalpel, the slight adhesions were readily overcome, and the entire mass, with the proper envelope, easily removed. Half only of it could be run through with the knife, the rest requiring the saw for division. On the naked eye it had the appearance of endothelium. Microscopically examined, it did not exhibit any cartilage cells, nor was there a fibrous character, nor scarcely what could be called blood. The denser portion consisted of bony granules.

LEGS SHAVED OF THE TRENCHER TEN AFTER TRACHEOTOMY.—A man, whose case we recorded about two years ago, to whom tracheotomy had been performed by Mr. Rickard in Guy's Hospital, under very happy circumstances, accidentally again came under observation in the same Hospital the other day. He was discharged, still wearing the tracheal tube, and had continued ever since to do so. It was retained entirely at his own wish, and as a precautionary measure, as he could breathe very fairly without it. At the time of the operation, he was pale-faced, and, to all appearance, quite dead from dyspnoea; and even so his hours of a respiration of the circumstances, that he insisted on being allowed to keep the tube in. The original disease was inflammatory oedema of the glottis, supervening on chronic epiglottitis disease; and on the morning of the occurrence he had been sufficiently well to be allowed to leave another Hospital of which he had been an inmate. There is, therefore, reason to believe that no very great amount of asphyxiation or obstruction existed. His trachea in excellent health, and breathe sufficiently well through the larynx to allow of the tube being worn removed over by his consent. When it is so removed he can speak with sufficient clearness to be well understood, and even to be heard at some distance. He states that he has had some trouble on the chest recently, but not, he thinks, either more frequently or of greater severity than he used to be liable to before the trachea was opened. The case adds another to the list of several which we have recorded, in which tracheal tubes have been worn for long periods, not only without inconvenience, but with great comfort. In some cases, undoubtedly, the introduction of cold air directly into the trachea is productive of liability to bronchitic attacks of more or less severity, but these cases quite exceptional. Very probably the adaptation of some kind of

wire gauze, on the principle of Jeffrey's respirator, might even in these cases obviate the incision.

EFFUSION INTO PERITONEUM OR INTO CANCER.—There is a case (a lady named Maud) under Mr. Lloyd's care in St. Bartholomew's, well worthy of attention as an example of some of the results of carcinoma. He has been under my observation in St. Bartholomew's Hospital for nearly three years. In the first instance it was a remarkable example of immunity from constitutional disturbances, while one pleural sac was full of pus. Admitted into St. Bartholomew's Hospital, within a few weeks of the original diagnosis, (the symptoms of which were those of a tubercular abscess), he was well as to be able to go up and down stairs and attend the various necessary things for the other patients. The left chest was perfectly dead, but a large majority of those who are now here expressed the most confident opinion that this field could not be other than cancer, or at least show greater signs of ill-health. While in the Hospital he had several eyes, went well through it, and recovered well. He left the Hospital in better case as regards the chest, and returned home to assist his father, to work as a bricklayer! About six months later, however, a proof of the correctness of the diagnosis held forth from the chest by Mr. Lloyd and some others, he suddenly began to expectorate pus freely. This continued, and afterwards the matter made its way through an intercostal space, and an external opening was made. This repeatedly healed up, and was repeatedly reopened, by continuing throughout, in spite of the profuse discharge, in his health. He was under Dr. Power's care in the City Hospital for Chest Diseases for some months. A week or two ago, Mr. Lloyd made a free opening into the chest, and there was a fair chance of the cavity being emptied, should he have strength to survive the process.

A case illustrating the same point, at nearly the extreme extremity of early symptoms, is under Mr. Hutchinson's care in an out-patient of the Metropolitan Free Hospital. A lady aged 40, aged 4, was attacked throughout a French illness by a parish Medical Officer, who told his mother that she had retained liver. The mother was positive that throughout this the never complained of pain in the chest. Not requiring her strength, she was taken to a very excellent and experienced Physician, who heard the history, and seeing nothing to lead him to the chest did not make an examination of it. She had been under his care about a month, when a large, fluctuating swelling becoming apparent in front of the chest, she was sent to Mr. Hutchinson, to have "a burrowing abscess under the pectoral muscle opened." A few taps on the chest soon settled this diagnosis, and showed that the pleural sac (the left) was distended with fluid, and the lower pushed over to the right of the sternum. Within a day or two, a second collection of matter externally showed itself, and both were opened. Since then (about two months) the lower pleura has continued to discharge, and the pleura is now that supplying itself. The child's health is bad, and steadily improving. A case similar to this, which we mentioned eighteen months ago under the care of Dr. Russell and Mr. Hutchinson, has since healed in complete recovery. The patient, a little boy of 18, is in excellent health, the fluids usually closed, and the chest but little contracted.

HYDRAEMIA CANCERIS OR **WATER BLOOD** IN THE PERITONEUM FROM MALIGNANT CANCER.—Long before the histological diagnosis of cancer was reached, it was a matter of remark among experienced Surgeons, that those forms of the disease affecting the meso, oviduc, and broadens were usually of very slow progress. This is now explained by a knowledge of the circumstance, that the form of atresia to which, as often happens, the name of malignant might fairly be given, is, essentially, not a true cancer. We are speaking of a disease perfectly distinct from all the forms of lupus, and which none but the ignorant could confound with these. It is the disease described by Mr. Paget, and before him by Leber, as the "Rindes Ulcer." The cavity formed by this disease resembles often very exactly that of an open abscess; but more frequently it is not nearly so deep. It has a dense border, thickened, elevated, and often of some thickness. From the appearance of epithelial cancer it differs markedly in not having any warty growths whatever about its border or surface. It cut away of destroyed run as freely by caustic, the deeper, more, so far as the surface appearance, but remarkably slow, and generally nearly painless. It runs round the glands in coils, and does the patient become emaciated, or has Colic, or has a more or less profuse dis-

charge, only the form of cell growth common in the edges of indurated ulcers, and nothing at all resembling those of any kind of cancer. It is decidedly a rare disease, and our own experience, which has included a very large sphere of Hospital observation, does not supply us with more than a dozen or eighteen cases. Speaking from general impressions, we should say, that on the parts named, i.e., the lower angles of the oviduc and the meso, it is of about equal frequency with epithelial cancer. Its duration before it ceases to be curable by caustic or other means, and sometimes even more. In its spread it involves all parts, lays bare the bone, opens the vessel, etc., and in the cases in which we have known death to occur, the fatal event has been from hæmorrhage. We have seen but two cases in which the cancer ulcer had its seat on other parts than the liver, and in both of these it affected the broadens. We make these some few remarks on an interesting example of this epithelial cancer of the meso, now under Mr. Cook's care in Lazarus Ward, St. Mary's Hospital. The patient, a Westman in robust health, aged 40, suffered a cold in his nose in February last. He attended to, and treatment commenced, which speedily so rapidly that Mr. Cook was compelled to make the earlier operation, although it was only about five months from the commencement. The glands had as yet enlarged considerably, but they had been the seat of lancinating pain of some severity. In the rapidity of its spreading, the case offers a marked contrast to the examples of cancer ulcer of the same part.

HÆMORRHOIDAL HEMES, OR CANCER.—Mr. Cook has now under care a case in which an impacted tumor had been reduced, or some before the man's admission into the Hospital. Although reduction had apparently been effected, yet there was still a suspicious degree of fulness in the groin, and the symptoms of unabsorbed blood persisted. On the second day of admission it was determined to operate, the case resulting in Mr. Cook's hands, under the care of Mr. Poland. On opening the impacted canal, the man was really found just about as much, and was drawn down and opened; it was however empty. The symptoms afterwards ceased entirely, and although he got well strengthened, yet there could be no doubt that the operation had been the means of effecting his liberation, as complete was the relief afforded.

EMBOUS PERITONEUM.—A case was admitted into the clinical ward at St. Mary's last week under Dr. Addison's care which presented some features likely to have misled in diagnosis. It was that of a pale emaciated man, who had suffered from local symptoms, with falling power in the limbs, irregular pulse, and some epigastric pain, but whose chief complaint was of palpitation of the heart. He was stated to have once had a fit, and at that sight the idea suggested was that there was cerebral mischief consequent on tubercle disease. In respect to the tongue, however, Dr. Addison noticed a blue line on the gums, and on inquiry it appeared that the man had been working in wet lead, and that he had suffered much from constipation. The urine, in one case out, had been more affected with the loss of power than the lower extremities. Dr. Addison ordered the bottle of potassium and expressed a confident opinion that most of the symptoms, if not all, would prove to have depended on the impregnation of the system with lead. He related some instructive cases which had occurred to him in private, illustrative of the necessity for being constantly alive to the possibility of symptoms of supposed spinal or cerebral disease being in reality of this nature. A conviction occurred in the clinical room, respecting the explanation of the earlier occurrence of paralysis from lead in the arms than in other parts. Mr. Addison said that this was to his experience a common event, and occurred equally in cases in which potassium water had been taken or in those in which, as in painting, the lead had been absorbed by the skin, and mostly by that of the hands and arms. He declined to give any opinion as to its explanation, but mentioned that Mr. Lloyd had tentatively a theory in the effect that it was from the pressure possessed by lead of inducing contraction of the arteries, in proportion of the upper extremities being supposed to be proportionately smaller than those of other parts. Dr. Todd's interesting suggestion is, that it results from the more constant use of the arms, and from the consequent increased rate of motion of their vessels.

EMBOUS OVIDUCORUM.—Mr. Baker Brown will operate in a case of Tumor vaginal Stenae, by the method of Dr. Boscman, at St. Mary's Hospital, on Wednesday next, at one

Medical Times & Gazette.

SATURDAY, DECEMBER 17.

OUR OLD AND NEW VOLUMES.

THE volume of the *Medical Times and Gazette* completed by the present number has been honoured by a larger number of subscribers than any former volume. We accept this as an encouragement to future exertions in order to deserve continued and increased support, and have taken means to improve every department of the Journal, in order to make it more and more worthy of the high and influential position it has acquired and maintained in Medical Literature.

The following Courses of Lectures will appear in the volumes for the new year:—

ON ANÆSTHESIA IN MIDWIFERY,

By J. Y. SIMPSON, M.D., F.R.S.E., Sec.
Professor of Midwifery to the University of Edinburgh.

A continuation of the Course of

CLINICAL LECTURES ON FEVER,

By WILLIAM STOKES, M.D., M.R.C.P.
Regius Professor of Physic to the University of Dublin.

The Lectures delivered at the College of Physicians.

ON THE DISEASES OF THE OVARIA AND UTERUS,

By ROBERT LEE, M.D., F.R.S.,
Physician Assistant to St. George's Hospital.

A Course of Clinical Lectures

ON THE DISEASES OF THE SKIN,

By WILLIAM JENNER, M.D., F.R.C.P.,
Physician University College Hospital, and to the Hospital for Skin Diseases.

The Courses commenced by Professor Huxley, Mr. Tynan, and Mr. Adams, will be continued and completed. Occasional practical Lectures on Surgery and Ophthalmic Surgery will also be continued by Mr. Wharton Jones and Mr. Spencer Wells.

Among the Original Communications we have several series of unusual interest—Our Hospital Reports will become of increasing interest from the frequent introduction of short notes, bearing especially upon the case of disease—the *Notes and Queries* are gradually becoming more valuable as the habit is being established of using this department of the Journal as a means of intercommunication by the Medical Public—Additional labour will be bestowed on the Editorial and Review Department—the Biographical Periodic commenced in the present volume will be continued—the Selections from Foreign Journals regularly kept up—the notices and brief Reports of Medical Societies may be depended on—while great care will be taken to ensure early and accurate notices of Medical News and Apparatus. In a word, we may appeal to the past as an example of what our readers may expect for the future, assuring them that no expense or care shall be spared to make the coming volumes of the *Medical Times and Gazette* more deserving of success than any of their predecessors; and we trust that a steady and increasing prosperity will be found to be repaid to by greater efforts to merit the kind, continued, and additional support of our friends and subscribers.

THE WEEK.

IN reference to the letters of Dr. Spoor and Dr. Fisher, which appeared in our numbers of the 13th and 20th of the present month, we have been rejoiced by Dr. Fisher to state, that he never maintained that the combination of pulmonary tubercle with thrombic aneurism is of frequent occurrence; in fact, the very contrary may be inferred from Dr. Fisher's words, which are as follow:—

"As might be expected from thrombic aneurism being an often met with in pairs of strong constitutions, the class of aneurismal or pseudoaneurismal is but limited, and there are no local affections of organs distinct from the aorta which appear to have any frequent association with aneurism."—*Lectures of the Heart and the Aorta*, p. 475.

It is true, he adds, that "the morbid condition which most often accompanies aneurism is that of tubercle," but this is far from being a statement that such a complication is common, it merely conveys that aneurism coincides with tubercle more frequently than with other organic diseases of the lungs. The statement that "the combination is more frequent than has been supposed" is to be taken in the opinion of the author, and as differing from that of some pathologists who have held that the two diseases were incompatible. With regard to heilthness of respiration as a sign of aneurism, we may refer to Dr. Fisher's original paper in the first series of the *British Journal of Medical Science*, Vol. V, 1834, and also to his work on Diseases of the Heart, page 558, to show that he long ago observed and described this sign as resulting from the pressure of a tumour on one of the bronchial tubes.

We stated last week that Government had determined to submit the whole subject of Metropolitan Sewage and Devolvement to a committee of scientific men. This determination has since been made known to the Chairman of the Metropolitan Board of Works by Sir Benjamin Hall, who has stated that the committee will consist of one military and two civil engineers. We trust these gentlemen will bear in mind that the public will be satisfied with nothing less than the complete purification of the Thames and the utilization of the Sewage; and we feel quite certain that they will be enabled to secure these great objects by no very great modification of some of the plans which will be laid before them.

A very deplorable case of alleged malpractice in Midwifery has just been made the subject of a Coroner's inquest in the north of England. The deceased was a poor woman, the wife of a puddler at Stockton, and the person supposed to have mismanaged the case was a Mr. Wray, whose name does not appear in the "London and Provincial Medical Directory" or in the lists of any British College or Hall, but who states that he holds a diploma from a Medical College in New York. The facts of the case may be compressed into a very narrow compass. It is abundantly evident from the symptoms and the subsequent post-mortem examination, that the patient was suffering for some time before her labour from placenta previa, which occasioned at intervals great losses of blood. As the labour commenced and the hemorrhage became profuse, and in a few hours the poor woman died from exhaustion. From Mr. Wray's statement now it appears that his treatment consisted in the administration of some powders consisting of opium, ipecacuanha, camphor, and Macebrantate of soda, and in addition to using the powders, a hot brick was applied to the feet for the purpose of equalizing the circulation. By this treatment she was so much improved that Mr. Wray did not consider that she required further attendance. On the 5th of the present month Mr. Wray was again sent for, and found that she was in labour, having sustained a great loss of blood, but he did not think it necessary to remain with her,

is to be considered that his services would not be required for eight hours. He, therefore, went home and prepared his case-papers which had been so successful on the previous occasions, and, in addition, prepared a mixture composed of equal parts of infusion of gentian and calumba, with a few drops of the tincture of aloes. At five o'clock the next morning, Mr. Wray was again summoned to the patient, and found her in a dying state. "Under these critical circumstances," said Mr. Wray, "I administered if dry clothes were put on her, and a hot foment applied to her feet, she might be restored a little." Notwithstanding this treatment the patient died, and on a post-mortem examination, a full-grown female child was found in the uterus, with a natural presentation, and the placenta detached. It was the opinion of some of the medical witnesses that if the woman had been delivered, her life might probably have been saved, and in this opinion we entirely concur; but Mr. William Richardson, of Stockton, a friend of Mr. Wray's, and who is described as a Liberator of the London Society of Agnostics and Deputy Coroner of Stockton-on-Tees, takes a different view. This gentleman has met in consultation several experienced practitioners in similar cases, and he said they thought it better to leave the patient to the efforts of nature, assisted by medicine, and they have found such treatment successful. Our own opinion most decidedly is, that to leave a patient suffering from hæmorrhage caused by placenta prævia to the efforts of nature, even although assisted by a hot brick, and by opium, and picrocarnicin, and camphor, and bicarbonate of soda, and infusion of quassia, is most unwise practice, and that most patients would infallibly perish under such treatment. The Coroner in examining up the case to the jury, remarked that the law does not require that a person practicing as an accoucheur should be legally qualified, neither does it license the practitioners, unless given licence as a public neglect is exhibited. The jury did not consider leaving a woman bleeding from placenta prævia to the efforts of nature, assisted by medicine, to be an instance of neglect or ignorance, and they, therefore, returned a verdict concerning Mr. Wray from all blame. We hope, however, for the information of the Legislature, it will become extensively known that the present state of the law does not require an accoucheur to possess any scientific knowledge, and that any ignorant pretender may leave a case of placenta prævia, or protracted convulsions, or even presentation, or impaction of the foetus, to the "efforts of nature," more especially if he assist her efforts by such active medicines as infusion of quassia, or carbonate of soda, and the like. If an ignorant or inexperienced person were to drive a railway train or navigate a steam-boat, and a fatal accident were to ensue, the pretender would be inevitably tried, and most probably convicted of manslaughter; but any one may practice obstetric medicine without the necessity for any scientific education, and without the slightest apprehension of any consequences which may befall him if he happen to lose his patients.

A Report has been presented to the Town of St. Marylebone, and adopted by that body, on the subject of an improved method of cleaning the streets, instead of the present system of scavenging or sweeping and occasional watering, and slopping or carting away the sweepings, is one great thoroughfare. The Report states that the experiments recently made in Oxford-street have been quite successful, and have given general satisfaction. The new system consists in washing the streets at all seasons of the year, and running off the dirty water into gully-holes so constructed that the solid matter is caught in a screen or pit, while the superfluous fluid sweeps into the sewer by ascending to a dipper or tray, which also prevents the ascent of gas from below. The advantages of this plan consist in its diminishing the exhalations

from decomposed organic matters, and in promoting cleanliness and comfort in walking and riding by the avoidance of mud and dust. The Report contains a comparative estimate of the cost of the new and the old method, by which it appears that the adoption of the new plan would involve an expense of 120 beyond the present annual rate of payment; but it is considered that the great improvement in the appearance and in the salubrity of the streets will more than counterbalance the proposed outlay. Under the new system it would be necessary to wash the streets three or four times a week, but scavenging, slopping, and watering, would be superseded. For one washing in the morning has been found sufficient to keep the streets clean for a whole day, and a repetition of the process in the afternoon was injurious, rather than beneficial.

We content with the discovery of Adamantium, and its application to useful purposes, Wöhler and Berthel have just succeeded in obtaining Berthel in a crystalline form. This substance resembles silicon in many respects, and may be looked upon as intermediate between carbon and silicon. The crystals are extremely brilliant; their refractive power is equalled only by the diamond; and it is supposed that our chemists will now be able to prepare a brilliant or heavy diamond, which no one but a chemist can detect from the genuine or carbon diamond.

Of all those who have accomplished the long, difficult, and dangerous task of exploring the interior of Africa none have been so successful as a gentleman who went out under the double recommendation of being both a Physician and a Christian missionary—Dr. Livingston, whose return to England has been so heartily welcomed. It may interest our readers to know that this gentleman suffers from an aneurysm of the aorta-joint, the result of fracture of the lower end of the humerus by a wounded lion, and that he is about to undergo the operation of forced rupture in the hope of regaining the use of the joint.

At the moment of going to press, we hear that Dr. Paris, the President of the Royal College of Physicians, died on the morning of the 14th inst. His last literary employment was preparing a new edition of his successful work, "Philosophy of Spirit under Science in Europe," the last sheets of which he revised only a few days before his death. Want of space obliges us to postpone any further notice of his life and works.

A Motion-Bishop question of some importance was brought before the Nottingham Medical-Chirurgical Society last week. It appears that a certain Professor Andrews, a corn-mercer, induced some of the Medical men of Nottingham to allow him to cut their coats, and then to give him testimonials as to his ability as an operator. These testimonials were, of course, extensively advertised in the local papers, and Mr. Edmonson called the attention of the Medical-Chirurgical Society to the injurious tendency of such advertisements and testimonials. Our gentleman acknowledged that he had overborne the impudence of the question, and made a most satisfactory and handsome apology; but other members denied the right of the Society to inquire into a question of Medical science. It does appear that the rules of the Society do not include such questions; and a Special Meeting has been called to alter the Rules, and submit the discussion of questions of "Medical Policy and Medical Ethics." As to the propriety of this alteration we need not offer any opinion, but we must warmly commend the effort made by Mr. Edmonson and his friends to check the too-common practice of issuing advertising enquiries by testimonials of authorized and situated Practitioners.

OUR GREAT ONES OF THE PAST,

MEN OF THE BRITISH SCHOOL.—No. III.

RICHARD WISEMAN.—Continued from page 623.

Wiseman having noticed himself in reference to the virtues of the Royal-tongue, and therewith thrust his head of a considerable number of tubercles, which thoughtfully into the pathology and treatment of King's-evil.

His definition of King's-evil is as follows:—"A tumour arising from a peculiar acidity of the serum of the blood, which, whenever it lightens upon glands, muscles, or membranes, it coagulates and hardens; when it issues with mucus, always discharges it, and scabs the bone."

The remote causes of the disease he believes to be referable to various kinds, viz., "Living in a thin and sharp, or thick and foggy air; diet of salt, sour, and starchy meats; want of exercise; natural complexion; hereditary transmission; the milk of a nurse infected with the disease." Natural accidents are also, he infers, occasional causes of the evil, but when they excite the disease, "they suppose a predisposition of the body to it." "A straight stay, or some women and children were them, both the others the same effect."

The glands, muscles, viscera, membranes, tendons, or bones, are the parts most commonly affected with the disease. He does not remember to have seen the nerves or brain affected immediately with any tumour of this kind. Speaking of the breast as the seat of cancerous tumours, he adds the following curious remark:—"In a late private hearing, I presented a young woman with one (tumour) in the right breast, and three near that, lying between the two breasts, as large as pheasant's eggs." What he means here by a private hearing, and the presenting a young woman with four tumours, it is difficult to guess. Perhaps Mr. Richard Wiseman had private exhibitions of his cases and practice at his house, in which he invited Walter Needham, Francis, Francis, Francis Wiseman, Edward Mollo, Haller, when he was in London, Derys, and others; and that at one of those gatherings he presented the girl to the meeting, and commented on her case.

In the cure of King's-evil, Wiseman held that three intentions were necessary—1. The "regiment" of diet, and the other "non-naturals." 2. Pharmacy, or internal prescriptions. 3. Applications of minerals, either to disperse, suppress, or cut up the glands. His diet plan is not very profound. Fasting, by sometimes recommending; at other times he would order medicated treacle and cow's milk. As he considers a great help to cure. Honeycomb is too pleasing, Kennington is more gentle. He mentions one fact, "which he leaves to his reader's judgment, whether it ought to be attributed to the sticks, or the carbonic bladders from Riggates." A patient of his and of Dr. Thomas Cox, was cured almost in this and hence. They removed him to Knightsbridge, where after some weeks he having a little recovered his strength, and being tired of his cough; they removed him again (for the more expediency of curing an ulcer with care of the remedy) to a lodging near King's-Cross, Holloway, which stood back wards, and dry enough, opening to the field. In two nights he was so much worse that they expected he might die. They took him back to Knightsbridge, where he soon recovered.

Exercise of body ought, as Wiseman held, to be enjoyed in this disease. "It being necessary to waste superfluities." "Sleeping in the day is forbidden. Fustians of the mind ought to be relaxed. The Pharmaceutical treatment of our author it is impossible to follow. He gives no prescriptions by the signs Not. Mineralization was with Wiseman an occasional means of cure in strumous cases. The external applications recommended are extracts of various kinds; opening the tumour if it contain pus, and

cauterization if it be loose. That it was in some cases really a swelling containing fluid that was then to be removed is shown by the statement, "that the tumour is to be opened early, but the matter included in the cyst escape." In other cases, however, he seems to refer to simple fungous. He was acquainted with the operation of ligature through the base of strumous swellings; and he also recommends removal by cautery, in special cases.

Concerning strumous swellings of joints, he divides them into two varieties. "First of those rise by congestion and increase gradually; yet differ in that the one extends externally upon the tendons, and between them and the skin, or between them and the bone; the other internally within the bone itself." It is in any case of this latter kind, the bone was carious, it was his practice to open down upon it, let out the matter, and allow the bone to solidify, or to remove loose parts that might come in sight. Then he placed and kept the limb in a proper position, that the joint above it might not contract. His reason for this practice is thus why given:—"By nature, one cannot loose cannot cast out of nature; they may well not in place; but with the hyperæmia is removed, and the bones laid bare, you can expect nothing but operations one after another, and your patient at length will die of hectic." In one case he met Dr. Wilson, with Drs. Cox, Boyson, and Needham, in consultation. Sometimes about 1873, being called into the country, he returned home grievously diseased; but a bad case being in hand, he was carried from his room to the consultation, at which Dr. Lewis was present. The case was one of pyæmia following an operation. A few hours later he was called again, but had not strength enough in his hands to make use of the hand. "Dr. Charlton and Mr. Holroyd were at a public dinner in our theatre, where Dr. Walter Needham was reader; only Dr. Lewis and James Wiseman were to be found." These gentlemen, therefore, operated by removing a portion of bone after cauter. This patient died insensible on the third day—a result due to the constitution of the patient rather than to the operation, for it, says our author; who seems ignorant, however, of traumatic tetanus as a distinct disease. In illustration of the great evil that may arise from little ones, he remarks on the "tumour in Westminster of the young lady holding up her finger prick with a needle, of which she died." Who was this young lady thus immortalized in stone? Any relation to that famous lady who died from the same cause, and whose the distinguished Mrs. Jewry immortalized in wax? The question is left open to conjecture.

It is impossible to give an idea even of the many interesting cases and observations with which this part of Wiseman's work abounds. The interested reader will refer to the work. He will there find our author's love for his righteous denunciations against home-actions; he will learn of one of his (then) grand-children, who played Wiseman a very "scurvy trick," though permitted into the house of "Friends of Honour;" he will find our Charapagon throwing pointed queries down to James and burning up various houses; and will read here of the Public Reading Exhibitions, possibly hospitals or dispensaries. He will also find that the Surgeon lived at one time near Covent Garden, that a Mr. Stockdale made improvements for him, that he got sometimes attacked on the subject of his skill, that that case he obtained a letter from a gentleman whose son had been under his care, whereby to raise his reputation; and that one Mr. William Clark, who had formerly been his assistant, but afterwards entered as a Charapagon at Newington, in Kensington, wrote a letter bearing date November 18th, 1874, to his "honoured master" about a case in which both were concerned.

OPERATIONS ON THE TONGUE.

We must pass over two curious chapters on Ophthalmia and Epilepsy, in order to comment on the chapter on the Tongue.

Here we are informed on the subject of excision of the testis, and the result is made thus: Mr. Edward Madsen was the first Chiropus who performed this operation. He did it with the actual cautery "through a small well conceived for the purpose." The operation was not one however of close excision. The pointed cautery was passed through the body of the testis, which afterwards crumpled up. Wiseman improved on this operation by affixing a ligature round the neck of the testis, and then snipping it off wholesale with blunt pointed scissors. He also practised snipping off the vessels in cases where this organ was enlarged.

On Wounds.

Wiseman's definition of a wound is at once simple, precise, and brief. "A wound is a solution of continuity in any part of the body, accidently made by anything that cuts or tears, with a division of the skin." Not less simple and truthful was his plan of treating wounds. We give his own words on this point, that on historical cases or dissections may refer.

"The wound being a solution of continuity, both require to be made-up again, thereby relieving the portions of softener back a laceration. To effect this is the work of nature and of art; both must necessarily join their helping hands, and when both the vital functions and ministrations of the part do assist the art of the Chiropus it will be less tedious; here must be a joint meeting and agreement all in one." For simple wounds the Chiropus is to afford his assistance in two manners of ways—

1. The first is, in careful and diligent taking away all such extraneous bodies as by their application may hinder the true agglutination of the disjointed parts, whether they be concrete blood, hair, sand, dust, pieces of bones, cartilages, or pieces of weapons, &c., &c.

2. The second is, in bringing the lips of the wound even together, which were separated.

3. The third is, in uniting the lips as brought together that they may, by consolidation, be returned to their former figure.

4. The fourth is in restoring the temperament and natural heat of the part, in order to action.

5. The fifth is, in preventing all accidents, and preventing such as have already arisen at the part.

The second of these intentions is to be performed by bringing the lips of the wound exactly together. "This intention is delivered in a few words, but they are to be observed as a law. Nature hath nothing to do here in bringing the lips together, that is the sole work of the Chiropus; who must act by a pencil, or spread a doseful of lin into the wound; so that the way to keep the wound open, and make it painful, whereby defilements are entered up, the composition of the part weakens, and the cure prolonged."

Wiseman is further very exact respecting the way in which wounds are to be brought together. The parts must be made to meet in one another, that Nature may do her work more speedily and easily.

For the holding together of wounds he recommends three plans, sewing, stitching, and "Stitches or straps." He explains clearly enough why the asymptomatic powder gained so much credit, i.e., nature alone effected the cure. He commends several kinds of stitches; the separate stitch, the glove's stitch, the stitch "performed with pins and needles, as in hair-dress," and the dry stitch, i.e., the laying of two pieces of some adhesive plaster on each side the wound, and when they adhere, the passing the stitch through the one and the other of them, instead of the skin. In the case of wounds the habits of the patient must be carefully considered. He considered it bad practice, in cases where the wounded were low down, to put such at ease on low diet. He often saw in some of the Dutchmen at sea, who drank unconscionably, and were full of drink, at the time of their sea-sickness, that he could scarce ever cure any of them without allowing them wine.

In the way Wiseman had constant experience in the cure of compound wounds, especially of those inflicted by the sword. These wounds were most profused when the fore-men fell in amongst the infantry, in which case the latter had the worst of it by considerable odds. In the treatment of such wounds he was ever, he says, assisted by Mr. Sanderson, "now one of the Chiropuses of St. Bartholomew's Hospital." At Edinburgh, in Scotland, he was helped by Mr. John Chalm, Apothecary to his Majesty. In compound wounds he still recommends the straps by the first intention.

WOUNDS OF ARMS.

If the artery is wounded by a simple wound, the lips of the wound may be brought together by a glove's stitch, and bandy bandaged afterwards. If this does not succeed, the artery is to be "taken up and tied." If tying cannot be accomplished, amputation or the actual cautery are to be used.

A STRANGE ANECDOTE.

In speaking of wounds of the face, Wiseman introduces an anecdotal anecdote, throwing a little light on his own name. "When," says he, "I served among the Dutchmen, when such and such was, as it were, a halberd, I had much of this sort of work" (then meaning), "and, for your diversion, shall set you down one instance in that kind—While one squadron laid at anchor in the Texis, there came in some Hollanders, under the colors of Wamburgers, with their ships now trimmed up for the King of Spain's service. A halberdier of one of these ships happened to be in company with some of our men; while drinking together, the Hollander began to praise of religion, upbraiding one of our men for wearing a cross, and after a while he became quarrelsome, and worse, afterwards he would not wear a cross; (as, the devil takes his repeating it often. One of our men beat him down, and hit with him; then, kneeling upon his breast, and holding his head down, he drew out a lead, and set him from the ear towards the mouth, then from the ear against to the nostril jaw. 'Now,' said he, 'you shall wear a cross, then the devil do not carry you away.'" Wiseman being called, treated the wound by nature, and produced a cure very satisfactory to the patient, who was proud of his cure.

He who in these days is interested in military exploits must look at Wiseman's writings, where they will discover many martial hints and curious anecdotes, some of historical value. He will be introduced to Prince Rupert's chief Chiropus, one Mr. Sanderson, and to the General Chiropus of the British army, Mr. Fennelike. He will find Wiseman in the character of fighting Chiropus, running away from France with the post; and, in order to release himself from a wounded trumpet, showing the trumpet a portion of his [his trumpet's] own brain, as a kind of proof that a Chiropus could do no good if he stopped, the right worded as "valiant" the patient's passion," that the Chiropus had liberty to fly from the enemy. He will follow the King's surgeon, to the fight at Marstonburgh, Tamworth, and Worcester; at which latter fight he will discover him, while running away, holding a branch to assist up an Indian who had been operated on a day or so before, —the Irishman, now on his legs, in his own country the Chiropus.

Again, the reader notices only after professional knowledge will find among other things that Wiseman in expectation of little used the circular incision, but cut at once to the bone; that he stopped bleeding vessels by the cautery or ligature; that he was conservative in his operating views, and refused to cut off a whole hand, if even a finger could be saved; that he knew how to reduce shoulder dislocations, by putting the head in the armpit; that he presented mercury and arsenic pills in syphilis, and did not believe in the cure of this disease without mercury.

Lastly, it will be discovered, if this analysis be followed out more minutely, that our Regiment-Chiropus thought the discharge of gunpowder to be unusual in character, that he called the obstructions met with in the urethra after gonorrhoea "cancerula," and a very fine sentence curiously with a remedy; that in treating these obstructions he used dilatation, or passed a needle down to the cancerula, and, while holding that there steadily, conveyed a grain of canaris down through the canalis to the cancerula, and passed the canalis in it; and, lastly, that if there were suppression of urine with canaris, he cut down to the canaris and divided it. On this last point it may be well, however, to give a full and final quotation:—

"If there be a canaris with canaris near way it is dilate and supply it by conditions as above said. If a suppression of urine happen, a large stone suddenly followed up both frequently forced the urine out of the bladder; but if that fail, a catheter must help you, as if condition is pernice through the canaris."

Our present task is ended. Another Great One of the Past had fitted before us, and a fourth is in progress. We have in this talk been the observers of an important era in Surgery, and of the acts and deeds of one of its most important

Part of the upper surface. In a similar manner, another strip is brought over the glass, from one side of the plate to the other; and in like boys a third or fourth strip may be applied. Over these another strip, three or four lines broad, and six or eight inches long, is wound, firmly round the glass behind the middle of the arches and over the process, so as to cover one half of it, and extending as far as the middle of the penis. For greater security a second strip may be applied. The application is well borne, and within twenty-four hours the swelling is so diminished as to require the plaster to be re-applied, the roll being usually renewed in four or eight hours.—*Medical & Dental Record*, London, p. 122.

EXCISION MINORA.

Operation of the Penis, from the Larynx.—Dr. Berger relates the case of a man who was struck by a horse just before the larynx was. There was hardly any wound, but the neck became weak and stiff. The breathing was greatly embarrassed, and general anæmia came on, the patient dying in an hour and a-half. The trachea was found almost completely separated from the larynx, the various portions of the latter remaining unaltered. About a third of the connection with the larynx remained, several rings of the trachea being torn through. The lungs were much loaded with blood, and the trachea was full of coagula.—*British Medical Gazette*, No. 22.

Operative Division of the Intestinal Canal.—Dr. Jürgensen relates the case of an infant born, so all appearances, in a healthy condition, but who gained no weight, and resisted vaccination. Sutures brought away a blackish mass, but the vomiting went on, and the child died on the third day. The stomach and stomach were found in a normal condition, but the duodenum was very much enlarged, as was the jejunum for about a foot in length, when it terminated without exhibiting the usual inflammatory connection with the rest of the canal. The latter, traced up from the rectum to the small intestine, terminated in an enlarged knot, which was connected to the liver, near the fundus of the gall-bladder. It was empty, but up to the knot movable. The rest of the organs were normal.—*Ibid.*, No. 25.

Removal of Fat.—Dr. Ehrlich states that he always treats fat, both in private and hospital practice, by salt soap and iod. Right corners of the fingers and toes of the latter are dissolved in a mass of wax, the patient being well rubbed with the warm solution night and morning. It is rather a painful application, but a cure results in 3 or 4 days, and often sooner, except in very obstinate cases, when some more days are required. The skin is afterwards well cleaned in a bath or with soap and water.—*Medical Gazette*, No. 22.

Hereditary Fibrous Tumours of the Uterus.—M. Nilsson is strongly averse to operative interference in these cases. We should oppose the hemorrhages as they arise by various means: keep up the patient's strength, and await the period of quiescence of menstruation. This advice is founded upon his abundant experience acquired while engaged to the Salpêtrière, which proved to him that this description of tumour, when the wife parred, usually remains stationary, the hemorrhages ceasing, and the women living long without being sensibly inconvenienced by the tumour.—*Am. de Mé.*, No. 71.

Employment of Tannin.—Dr. Barlett recommends the following treatment of catarrhs: One ounce of brewed oak-galls should be boiled for an hour in two pounds of water, and the fluid evaporated two or three times a day for a most efficacious application. The same result is obtainable by means of a decoction of oak-bark, or by a solution of half an ounce of tannic acid in ʒi of water. If no chlostrides are present, we may also employ tincture of galls. Tannin as a haemostatic and styptic, acting on venous or pale, is of the greatest service. In glyster uterine discharges, we may advantageously employ ʒi of tannic dissolved in ʒi of water, and combined with ʒi of mucilage. The same mixture, taken by spoonfuls internally, is very useful in chronic diarrhoea and accompanying dysentery. In certain forms of chronic bronchitis, the following formula has been of use, a spoonful being taken every second hour. Tannin, ʒi grains, acid. lufful. i grain, ext. cinchon. ʒi grains, infus. scopol. ʒi ounce, sq. Simul. ʒi, sp. nitros. of each i ounce. This Tannin is also a very useful remedy in menorrhagia, and leucorrhœa, but it requires to be taken in the pill-form for the female, and to prevent constipation it should be combined with oleum of castor.—*Med. Soc.*, No. 41.

PROVINCIAL CORRESPONDENCE.

IRELAND.

DUBLIN, DECEMBER 16, 1890.

THE first meeting for the present session of the Surgical Society of Ireland was held on last Saturday evening, in the Examination-hall of the Royal College of Surgeons. It was expected that an opening address would have been delivered by the President, Dr. Williams; but indisposition prevented his presence on the occasion. While the cause was much regretted, it was, however, felt that the postponement of the delivery of the address to a future evening was rather advantageous than otherwise, as the two papers brought forward were so important, and excited so much interest, that they occupied the close attention of the Society to a comparatively late hour. In consequence of the Vice-President, Dr. Irvine, having been unavoidably prevented attending until after the time appointed for the meeting, the chair was taken by Dr. Keary. Mr. Hutchins made an exceedingly instructive and interesting communication on the subject of excision of the knee-joint, and illustrated the efficacy of the operation, not only by a series of very beautiful films, drawings and preparations, which were laid upon the table, but by the production of a man, on whom he had operated two years previously, and whose appearance of rude health, combined with the little amount of the deformity left, and of the impairment of his power of locomotion, was the best proof of the complete success of the proceeding to which he had been subjected. The idea of a stiff joint is almost necessarily associated with that of rigid and outward power of motion; but, in the present instance, it was remarked by all who were present with the opportunity of seeing the man who had been operated on, that he had acquired not only a free, but even a graceful movement of his legs. He jumped upon a chair, and down again, walked across the room, and readily took off the loose coat and stockings which he wore; in short, it was difficult to perceive which was the leg from which the knee-joint had been excised without a close examination, so as to see the deep crease left. The case is detailed in Volume XIX. of the Dublin Quarterly Journal of Medical Science, where it is illustrated with very detailed coloured lithographs, both of the patient himself and of the portions of bones removed. Dr. Foster read a paper on "The Effects of Tartar Emetic upon the Muscular System, with special reference to Strabismus." He detailed the particulars of a case which occurred under his observation in the summer of 1842, in which strabismus was exhibited in chronic form for a paralytic attack of the external muscles of both forearms. The strabismus produced its full effect upon the muscular system, and it was deemed prudent to control it to a certain extent, for this purpose, minute doses of tartar emetic were administered, and in a few hours the spasms became greatly relieved, and at length disappeared. The tartar emetic was therefore discontinued, but after a lapse of twelve hours, during which time there were no tetanic paroxysms, the spasms reappeared, and were again controlled by the emetic. Dr. Foster then on the suggestion, that probably Foster may have had some knowledge of this effect of tartar emetic, and thus he will continue to keep his emetic tincture under its influence, both before and all day after the exhibition of the first dose of strabismus, and up to Tuesday evening, used, in fact, within a few hours of the administration of the second dose of strabismus, which cured his death; and that this may have been done with the intention of making or sharpening the characteristic spasms. A discussion ensued, in the course of which Dr. Curran referred to the very interesting experiments of Mr. Haughton, as to the mutually counteracting effects of strabismus and strabismus, of which I saw you a brief account some days ago.

Two meetings of the Pathological Society have been held since I last wrote, the President, Dr. Corrigan, on both occasions in the chair. On Saturday, the 14th instant, Dr. Mayne exhibited a vaginal polypus which had been removed by the trepan; he also showed the instrument employed in the operation. Communications were also made by Dr. Stokes and Dr. McEldown.

At the meeting held on the 16th instant Dr. Mayne brought forward a most remarkable specimen of carcinoma of colon of the right leg. The organ presented a very

single appearance, being much reduced in size, and being acquired throughout its entire extent in almost perpendicular positions; and Dr. Major stated that the greatest difficulty had been experienced in detaching it from the ribs. The disease, which commenced in a woman aged 43, dated from September, 1844, and had, consequently, lasted fifteen months. The phenomena it exhibited were pain in the chest, extreme emaciation, constriction of the right side of the thorax, with dilatation of the veins over its surface; there was but little cough, and the expectoration was very trifling; the left side of the thorax was distinctly resonant on percussion, yielding a nearly tympanic sound; the respiration was here intensely painful, the affected side afforded the most perfect dulness Dr. Major had ever heard; the total want of resonance produced a quite peculiar effect; the heart was somewhat displaced, and its sounds were unusually audible over the entire of the right side of the chest. The respiration on this side was intensely and purely bronchial. The left lung, as well as every other organ of the body, was, after death, found to be perfectly healthy. Dr. Barton exhibited a specimen of constipation of the plicæ, combined with chronic ulcer of the stomach; after which Dr. Fleming brought forward an example of what he was disposed to consider to be "Laryngitis," in the form of a granular disease suddenly supervening in the convalescent stage of fever, in a boy aged 14, and destroying life within three days. In detailing the history of this case, it was noted that there had been no alteration of the voice. Dr. Fleming remarked upon the extensive early of laryngeal affection in the convalescent stage of the epidemic fever of this country; especially alluded to a case of St. Mary's, of granular oedema occurring in one of the late epidemics in a boy aged 11, in the period of fever when alluded to; and concluded by drawing attention to Robert's observations on the "lyphoid process in the mucous membrane of the air passages," and particularly on "Laryngitis," stated to be unusually common in many epidemics of typhoid in Germany—observations which Dr. Fleming looked upon as illustrating his opinions.

From the notices I have seen of the public attending at the several Medical Schools, it would appear that the number of Students in Dublin is about the same this session as it was last year, viz., between 450 and 500.

GENERAL CORRESPONDENCE.

ALLEGED PLAGIARISM. DR. HAMBROTH AND DR. CHURCHILL.

(In the Editor of the Medical Press and Review.)

Sir,—I consider that the Profession owe you a deep debt of gratitude, for having directed their attention so pointedly to the crime of literary piracy; which, unless checked by some bold and strong measure, might tend the separation of British authors, as a body, and call down upon their heads the just animadversions of their contemporaries in other countries.

With your permission I will make known through your Journal an act of piracy, by which I have for a long time considered myself much aggrieved. I allude to Dr. Hambroth and Churchill, and the following are the facts that form the basis of my complaint.

In the year 1841, I published, in its native shape, the first edition of my work on "Osteo-Myology and Surgery," which had been brought out in monthly numbers, under the title of an "Osteo-My Atlas." This work comprised thirty-five plates on steel, and twenty-eight wood-cuts, to which were fresh plates, six of them original,—and eight wood-cuts have been added in subsequent editions. The drawings for all the plates and cuts were executed by Mr. William Hagg, of this city, under my own personal superintendance, and the wood-cuts were engraved by his father. Of the nine cuts in the first edition, one was original. Of the thirty-one plates, many contain two figures, others three, four, or five, and one or more in relief. Ninety-six of these plates were entirely original,—not a few were fresh conceptions, drawn by Mr. Hagg, from instructions personally given by myself, at the expense of much time and trouble. Twenty-five were copied

from other authors, chiefly Hunter, Magrison, and Moore. In eleven cases I mentioned the sources from which I took them;—in fourteen, I omitted to do so, either from inadvertence, or from their having been copied by others as well as myself, and their having thus become pretty well known. But to maintain was I of appropriating the labours of recent authors that I wrote to Dr. Hambroth, personally a stranger to me, for permission to copy one of his plates, which, after a communication with his publisher, was kindly granted.

New mark the difference between Dr. Churchill's idea of what is right and my own. Dr. Churchill published the first edition of his work on the "Theory and Practice of Midwifery," in 1845,—the year after mine came out completed,—I illustrated, as he observed, "by more than one hundred highly finished engravings by Hagg." I have looked through mine in vain for even a tolerable speckling of original designs; but I find that twenty-eight are copied from Moore, twenty from my work, and seven from Magrison,—and this without the least acknowledgment, in any one instance, of the sources from which they are derived; moreover, as far as my work is concerned, Dr. Churchill was not contented with appropriating the illustrations, but he, residing in Dublin, actually employed the same artist, whom I had, at considerable cost of time and trouble, as he previously ascertained, and who lives in London.

If any one will be at the trouble of comparing the two illustrations, names, engravings, and the style even of the skeletons, as delineated in my volume, drawn from nature, and as given in Dr. Churchill's, he will see that the one is clearly taken from the other; and if he will compare my plates 57, 58, and 59 with Dr. Churchill's 58, 59, and 60, he will again see that every line of his has been copied from mine. These three plates, which illustrate the mode of performing the operation of caesarean, were from original drawings, superintended in every stage by myself, and nothing of the kind had been placed before the Profession until my plates appeared. The same remarks apply to their full forms in illustrations 65, 67, and 107, which are exact counterparts of my 58, 60, and 74, except that in 65 the hind head of the fetus is towards the spectator instead of the face; and in 67 the left arm is brought forward instead of the right; directions which my clever artist could not avoid effect. It is remarkable also that in two or three instances where I have placed the previous author's plates, Dr. Churchill has copied the features that I have given to the original.

It may, perhaps, be contended that I myself have copied plates of other authors without acknowledgment, and that it is a common practice to do so. To the former objection I would reply, that although I have omitted to state, in some few instances, from whom the plates were taken, still I have mentioned the name in connection with some others, and have thus given a strong clue to the true designer, provided any person had curiosity enough to seek it "for himself;" but nobody would think of looking into my book for the original of any one of Dr. Churchill's cuts, from any expression he would find in his work. Besides, there is a manifest difference between selecting from those that have been long before the public, and others which have only appeared for the first time within a few months. On the latter part of the sentence I would submit, that it is not usual, nor is it to be tolerated, that an author should appropriate to his own use, as Dr. Churchill has done, the original illustrations of another, only reverently published, in a work on the same subject at his own, in the same language, intended for the same class of readers, and in which his has all the appearance of being a rival production.

Dr. Churchill, indeed, has systematically avoided all mention of my name in relation to the illustrations he has taken from me, although he has engraved the drawings, casts, engravings, and other instruments of the same pattern as in my work, and of exactly the same size. This latter circumstance alone would prove that these cuts are drawn from mine, and they certainly would have been designed less; for, as my page is so much larger than his, the size of the instruments, as delineated by us both,—notwithstanding that it suits mine very well,—is not of all proportion to his; and the same may be said of the detached bones. Again, Dr. Churchill has given my father's dissection of the hand, without mentioning who proposed it, and my long levers, which he merely designates "the long levers;" while on the next page appears an instrument of different form, which he characterises as "Hag-

The tumour was larger than a man's head, situated at the lower part of the nasal region, and attached by a broad short pedicle, as it was supposed, to the lower part of the cartilage, in the middle line. The lowest part of this pedicle was about two inches from the nose. The parts in this neighbourhood were a good deal thickened, so that the deep connections of the tumour could not be accurately made out. Its contents fluctuated very distinctly; its surface was covered by large tortuous veins, and the skin was elevated in one or two places from the irritation of his clothes. He seemed in good health, and suffered no inconvenience from the swelling, except what was occasioned by its enormous size. This operation, however, was so great that he was willing to submit in any operation that would afford him a prospect of cure. The tumour was punctured with a grooved needle, and found to contain a clear, transparent, light-yellow fluid, differing from the serum of the blood in containing a much less quantity of albumen. Five days after admission a second was introduced at the lowest part of the swelling, a tube to one side of the middle line, and about half a inch beyond the level of the fluid surface. This left the tumour about the size of his head. Two days after the tapping, erysipelas appeared round the puncture. He complained of pain in the belly and in the head, and it was noticed that he kept the head drawn backwards. The pulse was rather weak, but few constitutional symptoms were noticed. When no difficult symptoms were given. Next day the urine and faeces passed irregularly, and the head was still further increased. No medicine appeared then affected, except the deep incision at the back of the neck. The retention increased daily during the next three days, accompanied by pain about the lower part of the stomach, and difficulty of swallowing; the latter, however, was probably due only to the position of the head, which on the third day of the attack was ordered to be pushed back as to almost to make a right angle with the spine. This position was not retained to be altered in sleep. The treatment consisted in the exhibition of mercury in the form of bicarbonate. The erysipelas of the skin soon subsided, but the oedema continued, with rapidly increasing protrusion. On the sixth day after the tapping, and fourth after the attack of erysipelas, the tumour gave way, from extension of one of the abscesses previously noticed, and its contents were almost all discharged in the course of the day. His strength continued to fall rapidly, and he died in the evening.

On post-mortem examination, the ear was seen to be fixed by a membrane resembling mucous membrane in appearance, highly vascular, and coated in some places with lymph. At the upper part of the neck of the ear was an opening, apparently in the situation of the natural orifice of the eustachian canal, and leading into the subarachnoid space. The brain seemed perfectly healthy. The membranes of the cord were much thickened. Extending along the cord from its lower end to about the middle of the dorsal region, was a collection of pus, and the cord in this situation was softened in the parts adjacent to the purulent fluid; otherwise it was quite healthy. Some of the spinal nerves were found to communicate with the ear. There was a large quantity of cerebro-spinal fluid, which was opaque and of a dull grey colour. The meninges were perfectly healthy, but very thin; the brain and the rest of the viscera were healthy.

Mr. Bennett showed a specimen of

INTERRUPTION OF THE SCUMOLD FLEXURE OF THE COLON AND LOWER PART OF THE RECTUM.

The patient, a man of about 40, by trade a tailor, applied for admission on account of what he said he had been told was a hernia. On inquiry, however, nothing could be ascertained from him, except that he had been suffering from stomachic constipation and relaxation of the bowels for some time. Of this he had taken little notice, as he, like most men of his trade, was subject to other temptations. For some days preceding he said he more than a week he had had no action of the bowels. This constipation had followed immediately on an attack of diarrhoea. He looked very much out of health, but was not particularly feeble. He was sent to bed, and laxative medicines given. There was no effect. On the second day after his admission, as he sat up at the bowels had taken place, an examination was made. The sphincter was so relaxed that it offered no resistance to the passage of one or more fingers into the bowels. Pushing into the gut, to

within about halfway out of the anus, was a soft, cylindrical tumour, of uniform consistence, smooth on its surface, and covered by the mucous membrane. The finger, when pushed up as far as possible to the back part of the gut, discovered the reflection of the mucous membrane from the tumour to the wall of the intestine. In front, however, nothing was felt. No opening could be detected in the tumour. An exceedingly foul discharge of mucus, mixed with mucus and fecal matter, escaped from the anus. The belly was very much distended, but tense and resonant; a little tender to pressure. There was no vomiting, and the tongue was clean; the pulse rapid and weak. Calomel and opium three times a day was ordered. In the afternoon acute pain was complained of in the belly, and slight sickness came on; the pulse was very much weaker than in the morning. The pain increased rapidly, and in the evening was extremely severe. He experienced some slight relief from the application of leeches, but the pain subsided so alarmingly that it was necessary to give him stimulants. An attempt was made to introduce a small bougie, but it could not be passed. The pulse soon became imperceptible, the extremities and lips cold, and he died in the morning.

During the preceding circumstances, the examination was not made till three days after death, the fluid in the stomach, and in a very hurried manner, only the intestines were examined. Dissection was advancing rapidly. On opening the peritoneal cavity, it was found full of sweet-scented fœces. The great intestine was very much distended, and very thick. About the middle of the ascending colon was a large ragged perforation, from which the fœces were exuding out on pressure. No other lacerations were seen in the gut at this part. The small intestine appeared healthy. The irritable part of the great intestine was removed from the body, together with the bladder and prostate. The intraluminal portion measured more than three inches. The mucous membrane coating the gut was dark, and elevated in some places. A small opening existed at the apex of the protruded part, of an irregular form, with ragged edges, which proved to be that of the canal of the intestine. At the point where the intussusception commenced the gut was considerably constricted, and here a perforation existed at the anterior part, leading into the retro-peritoneal pouch of the peritoneum.

EPIDEMIOLOGICAL SOCIETY.

MANCHESTER, DECEMBER 1.

Dr. BARNARD, President, in the Chair.

A paper "On the Climate of the Crimea, and its Effects on Health," as observed during the first part of the occupation by the Allied Forces," by Dr. Smeat, of H.M.S. Diamond, and late in charge of the Naval Hospital at Balaklava, was read by Dr. McWilliam.

Dr. Smeat introduced the subject of his paper by a few very appropriate observations on the early, as well as the modern, history of the Crimea. He stated that, in the earliest passages of European history, Cimæria, now the Crimea, was believed to be a land involved in perpetual winter and darkness, its inhabitants addicted to the most barbarous practices, and so inhospitable that they sacrificed all strangers to a relentless blood-thirsty. At length some Greek adventures, undertaken by three fathers, or by the general leader of the invincible hosts of the intervening sea, pushed boldly across, and reached a happy shore, with its flowing fertile plains. Here they founded the city of Panticapæum, that exists to this day under the name of Kerch, which, owing to the excellence of its commercial situation, arose, from being the head-quarters of a barbarous people, to the dignity of the seat of a Kingdom, and has since been, in succession, a dependency of the Persians, Romans, Byzantines, Ottomans, and Russian-empire. From that date (i.e. 1853) poor Governor began to carry civilization on her wings to the remote parts of Scythia, and to return laden with the native productions of those vast plains and interminable forests. The importance of this commerce increased with the growth of the Russian empire; but when the Eastern address of the world turned the metropolitan of the Ottoman empire, Cimæria darkened upon embowered these frozen regions; and thus the ancient fables respecting them have been almost equalled in modern days. Before the Messure of Smeat had reached

the waters of the Buxina with blood, our best lay in the Thuringian mountains, leading to water a son of which the phytog was unknown, preventing it to be studied with uncoloured sheets, and obtained by clouds pregnant with storms. Two years have sufficed to digest such delusions, and Western Europe remains no longer in ignorance of those among the forest regions of the north, the forests of that great basin into which the largest rivers of Europe pour their inexhaustible floods. The lakes and triangles of war have continued, in this instance, to the extension of the arts of peace. Our pilots now sail quite fearlessly the barbed canoes of Siberia, knowing that in forest basins is free from hidden dangers. Our marchers have become more fully acquainted with the resources of the hostile provinces extending from the shores, which, when fully developed, will render it an almost unequalled superiority for the supply of less productive regions, opening up at the same time a wide field for the spread of our commerce and manufactures. This general good has been viewed as the one of epochs of which Britain was justly proud, whose sufferings have been wrongly attributed, in great measure, to the nature of the climate in which they were called on to undergo military labours, with numbers unequal to their task. Endangered by epidemic disease, they were led into the Crimea when winter was close at hand, to encounter a skilled and experienced enemy; and after occupying in the field, to sustain within his fortifications the best, possessing uncalculated resources and the advantage of winter quarters, while they themselves lay encamped in the open field, suffering the worst evils of poverty. Calculations beyond calculation naturally followed; instinctively of such a nature, they were somewhat increased by the rigour of the climate. To describe the natural features, and to account for some of the more obvious phenomena of the climate and seasons as observed throughout the last year of the occupation, by the allies, from the main object of Dr. Smart's communication. The Crimea (deserves Dr. Smart) being almost surrounded by water, and connected, by means of a narrow short isthmus, with a vast extent of the country, possesses, from its configuration and configuration, a climate partaking of both those orders of characteristics distinguished by the terms continental and insular. These opposite characters do not, however, improve their traits continuously, so as to mark each in every season of the year, but by their frequent alternations serve rather to stamp the climate as an irregular and inclement one, from which it may be anticipated that the advent and course of the seasons will be found to vary much in a series of succeeding years. In describing briefly the leading features of the seasons, through the first year of the occupation, by the allies, and that of the capture of Sebastopol, such in succession, it may be said of the winter, that its mean temperature was mild, much moisture being deposited in the early part of the season—in the end of December; after which there were very heavy falls of snow, with low depression of the thermometer continuously through a space of three weeks. This, which may be regarded as the climax of the winter, occurred early in January, and in receding or in advancing from that period there was not any great variation of cold. A most striking peculiarity of the winter was the suddenness of succession of great variations of temperature, by which animal and vegetable life were subjected with regularity to the moderating effects that more properly belong to spring, and again acted on by the retarding influence of the depths of winter, very marked changes of this kind being completed in the course of a very few hours. There were simply the interchanges of the continental and insular conditions of climate, which were felt extremely in the position occupied by the allies, the Caucasus, because the mountain barrier that shields from the northern influence does not extend to the west. As early as the middle of February, sometimes at noon the thermometer was observed to have risen to 70° Fahrenheit; and the plagues and miasmas, the first offerings of a grateful soil, were soon that early belching every hour; and numerous varieties of bushes and cerebellous plants were in flower. The spring season, from the early part of March to the end of April, was warm, and the ground was moistened by showers that fell frequently during the day, the night being cold, clear, and dewy. The insupportable effects of this season on the animal kingdom were strongly exemplified in the large flights of migratory birds that hurried on these shores in their course to their northern fields,—in the improved condition of the

domestic animals, that had witnessed the vicissitudes of the winter,—and in the joyful spirits pervading the camp. The heat of the summer was at no time excessive, and varied to that to which our troops are accustomed when stationed at Gibraltar or Malta; but in May and June it was oppressive, from extreme dryness of the atmosphere, with northerly winds that absorbed every atom of moisture, giving very few showers in season. This dry heat was much complained of, because of the great evaporation that goes on from the surface of the body while it lasts, but it did not appear to be unhealthy. The summer season changed abruptly into that of autumn; and, regarding autumn as a whole, Dr. Smart knows no country in which the climate is found more agreeable to the constitution by a succession of cool nights to warm clear days than marked its course in the end of October, when the north wind, blowing coldly at intervals, suggested the necessity of a return to winter clothing. The change from autumn to winter, in 1854, was so sudden in that from winter to spring; this change depended more upon that exhilaration, in consequence of the continued rains, rather than of severe cold, attending the commencement. The sudden variations of temperature, in which the climate of the Crimea is liable in the winter months, was more harmful to the health of our forces than any other of the climatic conditions. These changes of heat and cold were the sequences of the changes of the winds from the northerly to the southerly direction, and vice versa. A fall of 30 degrees within a few hours was by no means an uncommon occurrence. It has been said, that these great vicissitudes of temperature of the winter season, together with the frequent electric changes of the summer, are dependent on the alternations of the two principal winds, or rather the changes in the altitude and position of the planes of these atmospheric currents, are determined by the inland continental and insular conditions of the land, and the configuration of its surface. High mountain ranges along its southern coast, and from a southerly rising into the climate, that causes the insular conditions of climate in preference south of its barrier, over that narrow strip of coast which resembles in its scenery, as well as in its climate, the Italian "Nubia," between Nice and Genoa. To illustrate the insular basis and the southerly coast, to enjoy the balmy influence of a southern climate, in winter would avoid the soft influence of insular valleys, or on the many aspects of mountain slopes that decline rapidly towards the sea. Northward of this mountain range, the whole aspect of the country and its climate, except in a few sheltered nooks, are assimilated to the continental conditions of Southern Russia. The fields of the mountain range, of which the western was the seat of war, are obstructed to all the insensibilities of the alternations of climatic conditions to which allusion has been made. The character of the produce of a land and the earlier or later date of its harvest are general, but slight good criteria of the average conditions of the climate. To apply this, it may be stated that, on first arriving at these shores in the middle of September, 1854, it appeared significant of a moderate mean temperature of the summer, that the crops had just then been reaped, and were but partially gathered in, while the grapes were not yet ripe for the vintage; and the absence of the olive afforded evidence that the production of its oil does not ever reach the profitable agricultural resources of a country where much of the commodity is in demand. These facts would lead to one of two inferences; either that the summer of 1854 was behind the average years, or that the climate of the south-western portion of the Crimea, in its mean, average and mean temperature, resembles more closely that of England, and the South of England, than the 2° north of it, on the western or oceanic coast of Europe. than the plains of Lombardy and central France, which are situated within its own parallel. Dr. Smart thus proceeds to examine, separately, the atmospheric and marine currents, the effect upon temperature and climate of the great rivers, which after draining the vast spaces of land radiating from the northern slopes of the Caucasus to the eastern precipices of the Taurus Alps, and from the Balkan and the Dalmatian Alps to the south, to the limits of moderate height that form the northern boundary of the great central plain of Russia, pour their waters into the Buxina; and the topographic and electric conditions of the atmosphere. A rapid but masterly sketch of the principal cause of disease, during the occupation, of the Crimea by the allied forces, formed the concluding part of the paper.

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LECTURE X.

(Continued from page 144.)

The spermatozoa, like those of many other Crustacea, are motile, and have the form of cells, provided with an envelope and produced into a number of delicate radiating processes. They are united in their course down the *vis dorsalis* into cylindrical masses, which becoming invested by a fine membranous coat, probably secreted by the walls of that duct, constitute the spermatothecæ, which may not infrequently be found adhering to different parts of the body, not only of female but of male *Astus*.

The *ova* are fertilized while still within the uterus; they become surrounded in their passage down the oviduct, by a coat corresponding with that of the spermatothecæ, which is produced into a papilla whose extremity becomes attached to one or other of the abdominal appendages. Great numbers of *ova*, attached in this way, may be observed during the breeding season, within the chambers formed by the fissure of the abdomen upon itself; and it is in this cavity that the embryos pass through the whole of their fetal existence.

The nervous system of *Astus* is composed of thirteen principal ganglionic masses, of which one, central, lies in the head, in front of the mouth; six, thoracic, are situated in the central canal; and six, abdominal, lie in the median sternal region of the six anterior members of the abdomen.

The cerebral ganglia give off nerves to the eyes and to the muscles of the ophthalmic appendages; to the antennæ and the sensory organs which they contain; to the intestine and the sac of the salivary gland; to the oesophagus in front of the cervical setæ; and finally they send posteriorly two long and stout commissural cords to the anterior thoracic ganglionic mass. These commissures are connected by a transverse cord immediately behind the oesophagus (3, fig. 2). The size and form of the anterior thoracic ganglion would lead to a supposition of the complex nature which development shows it to possess (figs. 3). It supplies the muscles and their appendages from the fourth to the sixth inclusively, and sends forwards delicate filaments to the oesophagus.

Posteriorly it is connected with the ganglionic nerves of the tenth coxites by two commissures, and the other thoracic ganglia are similarly brought into communication, the commissures of the abdomen and parasternites only being remarkable for their levelling. The abdominal ganglia, which are much smaller than the thoracic, are united by single cords, which represent median dorsal commissures. Each of these

ganglia supplies the muscles and the appendages of the limbs to which it belongs, and the posterior abdominal ganglion sends branches into the telson.

The Coarctæ possess a remarkably well-developed system of visceral nerves, which has been the subject of special study by Branch, Miles-Edwards, Kuhn, and Schlemm, each of whom has described a larger or smaller portion of the system with accuracy, but has omitted, or denied the existence of, some other part. Each of the great commissures, as it passes over the sides of the oesophagus, becomes slightly swollen, and from the enlargement four nerves arise; one, anterior, passes towards the mandibular muscles, a second posterior-lateral branch (3, fig. 4) runs upwards and backwards to the lobular region of the stomach, and eventually enters into the composition of the hepatic nerve; a third branch (7) passes directly forwards and upwards, and unites upon the oesophagus with its fellow and with an artery (see 2) which passes up in the middle line of the anterior face of the oesophagus and stomach, and enters a ganglion placed between the anterior gastric muscles (8), from whence a lateral branch is given off on each side, while a posterior median branch continues the direction of the artery nerve.

Having reached the median cord this nerve divides into two branches (5), each of which passes downwards and backwards, unites with the posterior nerve of its side, and then forms the hepatic nerve (6). The fourth and last, or anterior-lateral branch (4) descends as first to meet the mouth, and then turning backwards, ascends to unite on the anterior face of the oesophagus with the median continuation of the artery nerve which passes forwards and upwards and enters the cardiac mass. I am inclined to think that this part of the artery nerve forms a portion of a fine plexus of nervous filaments which pass from the cerebral ganglia backwards in the living membrane of the oesophagus, but the direction of these fine filaments and the demonstration of their continuity is a matter of an ordinary difficulty. The intestine is supplied by two nerves which arise from the last abdominal ganglion, and unite into a single trunk, from which small branches are given off backwards, and two principal ones forwards, which supply the greater part of the intestine. According to Branch, the pylorus is supplied by branches of the fourth, fifth, and sixth thoracic ganglia.

The only certainly known organs of sense in the *Astus* are the eyes and the auditory organs. The eyes are seated at the extremities of the ophthalmic peduncles, the integument of whose outer extremity becomes translucent over a median space, and constitutes the corneal membrane. There are no crystalline lenses specially developed from the deeper parts of this membrane, but it is divided into a great number of minute quadrilateral facets, each of which corresponds with the base of a quadrilateral pyramid, surmounted by a membranous sheath containing the clear vitreous humour, whose distal spot is prolonged towards the hollow expansion of the optic nerve. The base of the pyramids are separated throughout their whole length by a dark pigment, which performs the functions of a choroid, and is immediately contact with the bulb of the optic nerve trunk, it lies, imbedded in the pigment and taking the same direction as the pyramids and their continuation, a number of minute fusiform bodies of a pinkish colour, and appearing irregularly oriented, from being apparently divided by regular partitions. How these bodies are related to the pyramids on the one hand, and to the sinistron which proceed from the outer bulb on the other, I have not been able satisfactorily to make out, the investigation being very difficult, and requiring far more time than I have as yet been able to devote to it.

The upper lip of the third joint, prebasal, and largest joint of the maxillæ presents an oval space, which at first looks like a mere broad brush of complex hairs arranged along a line about one-sixteenth of an inch long, and having their points all directed inwards (2, fig. 4). On cutting these hairs away close to their base, however, it is seen that they cover an aperture, whose floor lies below, and about one-sixteenth of an inch long. They are situated to the outer lip of this aperture, and some are directed so as to lie within the lower lip, but the majority cover it. A quadrilateral bristle grows with great care into this aperture, and if the lower and outer walls of the oval joint of the prebasal be now removed, and the cut part carefully dissected away (2), the end of the bristle will be seen to have passed into a wide dilative sac about one-fourth of an inch long, which is attached by a narrower



Nervous System of *Astus*.—Cerebral ganglia, A. Commissures, B. Oesophagus and oesophagus tubes, behind the oesophagus, C. D. E. F. Artery nerve, G. Hepatic nerve, H. Lateral branch of artery, supplying the posterior-lateral plexus, I. Median dorsal nerve, J. Mandibular nerve, K. Symplic, C. Median portion of stomach.

neck over the aperture, whose lips are continuous with its walls (&c.) The sac is filled with minute sandy particles, suspended in a mucous, dirty-looking fluid, and when emptied of these contains a hard, consisting of several lines of very

FIG. 6.



auditory organ of *Salix*.—A. *Salix*.—B. *Salix*.—C. *Salix*.—D. *Salix*.—E. *Salix*.—F. *Salix*.—G. *Salix*.—H. *Salix*.—I. *Salix*.—J. *Salix*.—K. *Salix*.—L. *Salix*.—M. *Salix*.—N. *Salix*.—O. *Salix*.—P. *Salix*.—Q. *Salix*.—R. *Salix*.—S. *Salix*.—T. *Salix*.—U. *Salix*.—V. *Salix*.—W. *Salix*.—X. *Salix*.—Y. *Salix*.—Z. *Salix*.

different hairs, like those which guard the mouth of the ear, but more delicate, is seen to enter its lower extremity. The hairs projecting forwards come into close contact with the solid particles suspended in the mucous fluid.

A nerve may be traced accompanying the auditory nerve to the ear, and appears to be distributed principally along the sclerotic band, so that the extension of the nerve fibres come into close relation with the base of the hairs. Hence if not all of the sandy particles are inelastic in strong resistance, and would appear to be silicious.

The merit of the clear recognition of the nature of this apparatus is due to Dr. Arthur Farrow, who demonstrated conclusively, as it appears to me, that the organ connected with the external ear, and considered by anatomists generally to have an auditory function, an ear, and that there are, in the true auditory organ of the *Salix*. In a paper published in the *Annals of Natural History* for 1832, I pointed out how the structure of the corresponding organ in *Ascaris* (formerly described by Swammerdam), and in a certain *Muræna* (now designated the *Scyllium*), in a recent essay, has indicated the existence of a similar organ in the antennule of the *Scyllium*. I have not examined the auditory organ in the whole of the latter division with any care, but in a larva in the Mollusca stage, I have found an auditory organ, in all essential respects corresponding with that of the *Muræna* (Fig. 7). It occurs, therefore,

FIG. 7.



The left hand figure represents the antennule of a *Scyllium* larva. The right hand figure represents the auditory organ of *Scyllium*. Letters as in preceding figure except a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z.

and to assume that in the *Podiplichia* generally the auditory organ is seated in the distal joint of the antennule, the only known exception to the law of position being found in *Ascaris*, in which genus, as Frey and Leuckert rightly state, the auditory organ (Fig. 7) is seated in the subcapitate of the distal abdominal appendage. I have not only verified Frey and Leuckert's description of the auditory

in this extraordinary and anomalous position, but I have traced a nerve from the last abdominal ganglion to it (which they failed in doing), and thereby removed all ground for the doubt which has been thrown on their interpretation of this singular ear.

The apparatus which is commonly regarded as the auditory organ (though Dr. Farrow inclines to the belief that it is the organ of some special, perhaps new, sense) lies in the cavity of the thorax, but its aperture is visible on the inner or anal side of a coxal prominence, arising from the anterior portion of the basal joint of the antennæ. A bristle passed into this aperture opens a large, but very delicate and transparent sac, filled with a clear fluid, and usually very visible on each side of the stomach when the coxæ are carefully retracted. A nerve which comes off from the cerebral mass close to the auditory nerve, passes to the neck of this vesicle, and is distributed over its surface between the outer and inner membranes, of which it is composed. Indistinctly the vesicle rests upon a large granular glandular mass, but is directly connected with it only at two points, by a vascular (?) cord which passes to the central, and usually more yellow portion of the gland, and by a short thick fibre (containing one of the nerves) which is attached over a small circular space midway between the centre and the periphery of the gland, and opens into the circular principal duct of the gland; there is, therefore, a free communication between the cavity of the gland and the exterior by means of the ear, which in this respect, simply a dilated duct. A section of the gland shows it to be composed of two substances, a central and a cortical. The latter is composed of minute cells, filled with a homogeneous gelatinous matter, containing many large nucleoli; the former is traversed in all directions by large canals, so as to have a spongy appearance. The coats open into the ultimate ramifications of the vessels, and the spongy, long-like texture of the central mass seems to arise merely from the very fine anastomoses of their larger branches, which eventually enter the circular canal into which the vesicle opens.

There is little in these structural features to suggest an organ of special sensation, but much to show that the green mass is a secreting organ, and that the vesicle acts (whatever other purposes it may subserve) as its duct; and the similarity in the structure, structure, and position of the auditory "gland" in the *Scyllium* with those of the "palmar-gland" described as the "true ear" by Mr. Darwin, in the *Ornithoptera*, leaves no doubt on my mind that they are homologous organs, and that the ear in the homologue of the "sensory duct" in the *Ornithoptera*. Similar auditory glands are stated to exist in the *Cyprina*, &c.

The development of the *Cyprina* has been the subject of one of the most beautiful of the many admirable monographs on development, for which we are indebted to the genius and patience of Rastbach. After fertilisation a blastodermic membrane arises upon the surface of the yolk, and gradually extending over the whole yolk, becomes thickened at one part, so as to form an oval germinal disk, with a central depression.

This disk next becomes widened and lobed at its anterior extremity, the lobes being bifurcal (I may judge from Rastbach's description) with the peripheral lobes, to be hereafter described in the embryo of *Spina*. The edges of the disk are raised into a fold, and within the fold a papilla, the rudiment of the abdomen, and of the greater part, if not the whole, of the thorax, makes its appearance, while anteriorly three pairs of transverse striations constitute the rudiments of the mandibles, the antennæ, and the cercæ. The labrum arises as a median papilla, situated at first between the antennæ. The ocular papillæ are next developed in front of the antennæ as ridges, which only subsequently become free processes.

The characteristic abdominal process lengthens, and the anal aperture makes its appearance. It is to be remarked, that the anus is at first situated on the dorsal side of the extremity of the abdomen, and that there is no tail.—This organ being developed only at a weak later period from the distum of the end of the abdomen, and by its outgrowth, forcing the anus to the ventral side.

In the meanwhile, the anal aperture is developed behind the labrum, which moves backwards, and the maxillæ, mandibles, and mandibular feet appear in succession, as striations or ridges of the substance of the labrum, which are at first all alike, and gradually become specialized into their ultimate forms.

When Huxley first observed these appendages, the maxilla and first pair of mandibles were attached to the anlage, in front of the thymic-ventral process, — the second mandibles being in the angle between them, and the third mandibles and following appendages were attached to the dorsal margin of the thymic-ventral process itself; and, as this process in its first form downwards upon the rest of the germ, it followed that the appendages attached to it look upwards. While those attached to the anterior part of the anlage look downwards. As development proceeds, however, the anlage gradually straightens itself; more and more of the anterior part of the thymic-ventral process becoming continuous in direction with the anterior part of the anlage, until at length the whole of the ophthalmo-thoracic portion forms a continuous surface parallel with the striae transversae, the abdomen only remaining bent upon the ophthalmo-thorax. The middle portion of the carapace is formed by the continuous continuation of the dorsal margin of the ophthalmo-thorax of the anlage. Its plates are developed as two distinct folds, one of which, the rudiment of the lamellostoma, covers the anlage posteriorly, and extends forwards on each side as far as the mandibles; while the other, the rudiment of the rostrum, and anterior ophthalmo-plate, is developed in front of the eyes, and extends on each side to meet the former. Huxley's clear account of this matter is in perfect accordance with what I have observed in *Mysis*, and shows conclusively that the carapace is not developed from any one or two centres in particular, but that its lateral portions correspond with, and is formed by, the legs of all the ophthalmo-thoracic anlagen, while the lamellostoma and rostrum are developments of the lateral portion of all these centres; *viz.*, in fact, their plates, like the legs, coalesce and continuously solidify.

The appendages are at first, as I have stated, double in one position, and consist of a ridge which eventually becomes a plate, five or six in number. This plate, in all the members, except the ophthalmo-plate and the mandibles, then becomes bifid externally, the inner lobe representing the metapodite, while the outer is the representation of the propodite and epipodite. The two latter, when they are independently developed, become separated by a new fissure. The gills arise partly as outgrowths from the epipodites, partly as distinct processes from the parts to which they are eventually attached. The divisions of the limbs into articulations where place from their distal towards their proximal ends. The heart appears late, as the posterior extremity of the ophthalmo-thorax, and therefore behind the yolk sac.

The nervous system of the post-oral portion of the ophthalmo-thorax consists at first of eleven pairs of ganglia, corresponding with the mandibles, maxilla, mandibles, and ventral legs. The six anterior post-oral ganglia of each side soon unite in pairs, so as to form in many single ganglia; and of these the four anterior, *viz.*, the mandibular, the two maxillary, and the first mandibular ganglia, unite into a single mass; the two hinder ganglia, *viz.*, those of the second and third mandibular centres, next unite in the same way, and it is only subsequently that the two masses thus formed become fused into the single anterior post-oral ganglion of the adult. The other ganglia not only remain separate, but become wider apart with advancing age. A ridge on each side of the ophthalmo-plate represents at first the corded ganglion and the connective cord, the latter being developed out of the posterior part of the ridge, and the former from its anterior portion. The corded ganglia are at first two on each side, but the posterior, whenever the nerves to the anterior organs proceed, is much larger than the other, and would appear to represent two ganglia. The metamorphosis often so processes from each of the eight posterior ophthalmo-thoracic stems, which eventually sink over the gophthalmic cord, and unite with one another.

The alimentary canal is produced by the gradual differentiation and demarcation of the apical part of a distinct mesoneuric layer, which invades the whole yolk, from the large part, which becomes the yolk sac. The sternal part of the mesoneuric layer is at first, so to the *Peridroma*, united with the serosa layer, but eventually becomes completely separated from it, so that there is no mesoneuric, unless the labelliferous ligament which unites the anterior margin of the stomach with the fore part of the body-wall, and in which the great anterior and posterior suspensory muscles of the stomach are developed, should be considered in this light.

The liver, proctodae, and accessory glands are developed

from the walls of the yolk sac, which eventually becomes reduced to a small *caecal* diverticulum, situated at the pyloric end of the stomach. The genital ducts in both males and females are originally diverticula from the corresponding regions of the genital glands; their external openings and the copulatory appendages of the first abdominal coxites in the male are not developed until some time after birth.

ORIGINAL COMMUNICATIONS.

CASES OF BONY CYSTS OF THE LOWER JAW,

BY

AMPUTATION OF THE INCREASED PORTION OF
BONE WAS PERFORMED.

By ROBERT ADAMS, M.D.

Surgeon to the Edinburgh Hospital, &c.

I am here to lay before the Society (a) two cases in which the right side of the lower jaw was greatly enlarged. The expanded bone formed a tumour, which in each case consisted of a bony cyst; in the one instance containing a solid material, and in the other the cyst or bone shell had fluid contents.

As in both these cases the disease had been for some years steadily increasing, and we know of no medicine capable of arresting its progress, it appeared evident that the life of the patient would be ultimately sacrificed, if amputation of the portion of the lower jaw included in the disease were not resorted to.

The pathological anatomy of bony cysts of the lower jaw, and the surgical treatment they require, may, I believe, be somewhat elucidated by the relation of these cases, and by the exhibition of the morbid specimens which have been removed.

Case 1.—*Removal of the right side of the lower jaw, with solid contents. Amputation of the diseased portion of the jaw, by the section of the bone near its epiphysis, and extension of the right condyle from its socket.*

Andrew Macdonald, aged 30, fisherman, a native of the county of Wexford, of robust habit of body, was admitted into the Edinburgh Hospital under my care on the 20th of January, 1857. He had a considerable enlargement of the right side of the lower jaw, which had several expanded into a globular tumour, about the size of a goose's egg. The swelling extended backwards from the angle of the mouth to the back part of the ramus of the jaw. The chin, in the situation of the epiphysis itself, and of the second process, projected somewhat outwards. The submental fossa was well occupied by a hard swelling, evidently formed by the bone of the lower jaw, which had become increased in breadth, and had extended itself much below the level of its ordinary situation.

A small but movable lymphatic gland could be felt in the submandibular space. The case of Andrew Macdonald's jaw when he was admitted into Hospital (which was here previously showed the natural form the disease in this case assumed.

On examining the tumour in the mouth, the alveolar border of the jaw was seen expanded, so as to be nearly two inches in breadth, and the three molars, and the second of the lower, had both disappeared, and scarcely a trace could be found on the gum of the places they had once occupied.

Upon careful examination in the situation of the second process and lower part of the temporal bone, it appeared evident that this process was involved in the disease; at the same time, from the free motion of the jaw in its articulation socket, it was equally evident that the surface of the articulation were not at all implicated. The tumour was remarkably elastic and yielding, yet it did not crackle under pressure of the fingers, nor convey in the examination the idea of a fluid, but rather of some elastic material contained within a bony shell. The patient did not complain of any pain or during yolk whatever in the jaw; but simply of an itching sensation, which was only occasional. He did not wear these few years was made with the finger on the swollen part.

As to the origin of this disease he said that about three

years and a half ago he got a severe knock on the right side of his lower jaw, the effect of a fall; some short time afterwards, while endeavouring to settle a dispute between two of his friends, one of them struck him with his clenched fist on the very same spot, where a few days before he received the injury by the fall. About eight or ten days after this, he felt an swelling in the jaw, with some stiffness in the motion of the joint at the affected side. These symptoms had existed for about three months, when he became alarmed, having observed one day two small hard swellings on the gum; these gradually, from month to month, somewhat increased. The lower molar teeth successively became loose, and slanted above their ordinary level, so as to prey seriously on him when the jaws closed. He on this occasion had them extracted. The swellings ceased at once, and the swelling went on increasing as before. He observed that when his pressure was made on the swollen jaw there issued one from the abscess, hurriedly accepted by the lugs of the teeth, a thin fluid which mixed with the saliva. He thought that for the last six months the swelling seemed to enlarge more rapidly than it had ever done before. Under these circumstances, he was, by the recommendation of my friend, Surgeon Owen, of Clons, admitted under my care into the Richmond Hospital, a consultation of the Surgeons of the Hospital having been held on the case, it was agreed that there was only one measure to be thought of to relieve him, namely, the amputation of all that portion of the lower jaw which was included in the disease, and that the cysts should be removed from its socket if such a course were found necessary. The healthy aspect of the man, the absence of any fungous growth from the gum, or of any facial discharges, and of all hard glandular enlargement, the total absence of the mucous membrane, and of the skin covering the tumour, all gave us the idea, that the nature of the growing tumour was benign; yet it was not to be concealed, that the tumour, if not arrested, must, by its progressive enlargement, ultimately be the cause in him of a lingering death; all which having been explained to him, he made up his mind to submit to the severe and painful operation of amputation of the diseased portion of the bone. Unfortunately it was a case in which, in our opinion, amputation could not be safely resorted to, to lessen the sufferings of the patient during the operation.

Notes.—In this city we usually object to the use of chloroform when the patient is in the sitting posture, and this is the position we always place the patient in, whenever amputation of any portion of the lower jaw is had recourse to.

The patient then, on the 14th of this month, Feb. 1867, was placed sitting in a chair with a high back, and was well secured in it. The operation was begun by an incision having been made from above downwards, through the whole substance of the lower lip, commencing a little nearer to the middle line, than the right commissure of the lip, thus avoiding the nasolabial angle, for reasons hereafter to be mentioned. The chin-ware was then introduced behind the arch of the lower jaw, and quickly passed through the bone, the motion having been made through the line of the socket of the first incisor tooth, which had been extracted ten days previously. The next incision through the skin was made parallel to, but a little above, the base of the jaw towards the angle of the bone at the right side, and this having been continued upwards in front of, but parallel to the back part of the ascending ramus, the skin forming a flap was drawn up so as to expose fully the osseous mass of the tumour. The attachment of the maxillary muscle was cut through, and the chin-ware was then had recourse to, and introduced behind and as close as possible to the inside of the tumour, and the bone cut across just at the base of the neck of the condyle and coronoid process.

The portion of the lower jaw, which constituted almost the whole of the disease, was thus isolated and included between the two muscles made by the saw.

The next proceeding to be undertaken was to denude the diseased portion of the lower jaw from the surrounding soft parts. This was done by detaching any fibres of the maxillary or internal pterygoid muscle, which still adhered to the mass of the jaw, and next by severing the connection of the horizontal portion of the bone from the muscles which were attached to the mylohyoidian edge, and thus converted it to the os hyoides.

To effect this easily and expeditiously the bone was firmly held in a strong forceps, designed for such a purpose, and

while Mr. Ouzak retained the bone as much as possible from within upwards, I ran the edge of the knife at the inside of the jaw along the line of muscles attached to the mylohyoid edge, while this attachment of muscular fibres was severed, the bone was easily separated from the surrounding soft parts. Numerous small arteries, which were necessarily divided, furnished a good deal of blood; some of these were secured, and amongst them the labial was tied, before the further steps of the operation were proceeded with. Having now examined the state of the coronoid process, and of the condyle of the lower jaw, it was plain that these also were implicated and must be taken away. The incision through the side of the face was then extended upwards towards the lab of the ear, the angle of the lower jaw was exposed, and we next endeavoured to draw down the coronoid process, which was applied into a roll, but the altered bony structure gave way under the forceps; and although we effected the removal of the altered coronoid process completely, we could not, as directed by other operators, by making use of this process and that of the neck of the bone as levers, disarticulate its head, and draw it forwards away from the glenoid cavity and from the dangerous vicinity of the internal maxillary artery. I was compelled, therefore, to open cautiously in front the capsule of the articulation, and I then introduced above the head of the bone the extremity of the handle of a tooth forceps, which I used as a lever, and by such means the capsule was pushed downwards from its place, the attachment of the external pterygoid muscle to it was next cut across with a bone-pointed bistoury, and this portion of the bone removed. Some delay now occurred in detaching several portions of the coronoid process, which still remained adherent to the temporal muscle.

When the bleeding ceased I drew down the flap of the cheek, and carefully joined the wound through the lip by hair-line needles. The wound was dressed, and the patient placed in his bed.

During the day and night the patient had some hæmorrhage, but pressure of the fingers relieved after a time in several.

During the night the patient was in rather an alarming state from constitutional irritation. His skin was cool, and rather in a clammy state; his pulse small, weak, 120 in the artery. He sighed deeply, and though he did not absolutely faint, he seemed to have a continual tendency to spasm; in short, he seemed to be in an extreme state of mental and bodily depression.

For these symptoms he was ordered brandy and wine freely during the night, with fifteen drops of the solution of musk in ammonia every second hour. After an hour he slept, and when the third spine draught was taken, which was about half-past two, he fell asleep, and continued so until morning. On awaking, he stated he felt considerably better; his pulse was stronger, but he was still in a condition requiring the judicious use of stimulants. He was fed by means of a gum elastic tube, inserted in the space of a drinking cup.

Feb. 24.—It is now seventeen days since the day of the operation, and the man seems in perfect health; and this is truly surprising to me such a trifling degree of debility resulting from the operation. The line of the incision made for the removal of so large a portion of the lower jaw in the lip has joined by the first intention, and the rest of the line which runs parallel to the base of the lower jaw and posterior margin of the ramus will, I should not, be fully cicatrized in a few days.

In commenting on the “muscle approach” adopted in this case, some may think that the vertical incision through the ear and border of the lip might have been better omitted, as the chin-ware could have effected the motion of the bone without the necessity of this preliminary step having been resorted to. On the other hand, it must be admitted, that to expose fully the diseased mass we had to remove, appeared to be a great desideratum in such a case, and which was best answered by the vertical incision through the substance of the lip, which prevented the flap being drawn up fully on the cheek. By omitting the vertical incision above spoken of, it is said we should avoid the debility likely to result from the distention of such a wound. To which, however, I would reply, that the distention of such a wound as that above-mentioned need not of necessity be attended by debility, provided that the incision through the lip be made so as to have cut at the commissure of the lip, but at a little distance from it, nearer to the middle line. In the drawing which

I lay before you, Dr. Conolly, which is an exact representation of the patient's face, now but the arrangement they since the operation, it may be seen that such an incision is not necessarily followed by any deformity whatever.

The second incision through the skin, parallel to the lower margin of the inferior maxilla, should be made somewhat above the level of this margin, with the obvious view of avoiding it easy to compress the labial artery, as it runs round the bone, when we wish to include its cut extremity in a ligature.

In two cases, from incision to this simple rule, I saw much difficulty experienced by the Surgeon in securing the labial artery, when performing this operation; his incision having been made along the very margin of the lower jaw, the artery, as soon as cut, struck in behind the bone, and could not be compressed nor commanded, and bled freely while the Surgeon was vainly endeavoring to secure it by ligatures, which, in consequence of the retention of the cut artery behind the margin of the lower jaw, was only, after the loss of much blood, at last accomplished.

When the bone was in this case seen in two places, the tumor in formal was held to be cut out, just as we should cut out any ordinary tumor from this situation; but let it not be considered as a matter of indifference how this tumor is to be dissected out. The best method has been pointed out by Mr. Conock, and was adopted here, namely, to commence the final detachment of the enlarged bone (which had been already seen across in two places) from the surrounding soft parts, by passing through the mucous membrane of the mouth down upon the inside of the lower jaw-bone, where the mylohyoidine ridge exists. Here, we know, are attached the muscles which connect this portion of the bone to the os hyoidine.

When the operation thus sets down on the inside of the lower jaw, his assistant raises the bone in a strong forceps, well constructed for such a purpose, and retains it firm within, upwards on its long axis, and then it can be drawn out at the same time that it is being dissected from its place, the operator always preserving the cutting edge of the knife towards the bone.

When this portion of the diseased shell of the bone, including within it the great mass of the disease, was taken away, several had to detach the condyle, and coronoid process, which was an operation attended with some difficulty, but it was at length ultimately accomplished.

Some may object to the mode of proceeding adopted in the operation, as far as that the second section of the bone by the saw was confined to at all, it having been found afterwards necessary to disarticulate this side of the jaw-bone; but for my part I do not regret that this was the plan adopted here, because I had presumed that it, connected with this one division of the bone only, I had never presumed to disarticulate it from its socket, I should have then experienced the greatest difficulty in separating the attachment of the temporal and external and pterygoid muscles from the enlarged coronoid process and head of the condyle, as well as in safely opening the regular ligament of the joint.

The dissection which this disengagement required, "when the knife was continually used on the immediate neighborhood of large and important arteries" (it was, it is plain, much more easily accomplished than it could have been done, had not the principal part of the morbid mass been previously removed). I should have been embarrassed by the presence of a large tumor obscuring the vessels, from which I had to dissect out the above-mentioned processes of the lower jaw. Indeed, I could say, that the same principle I have already applied in the removal of any large tumors whose narrow and most adjacent part is engaged in any deep sinus, where, although the great bulk of the tumor has been disengaged from the surrounding parts, its narrow neck, and most critical connections are still to be managed; under such circumstances—when, for example, the Surgeon is removing a large tumor from the submandibular space, when arrived at a certain stage of the operation as this just alluded to, I have seen him derive much advantage from retracting the great bulk of the swelling, which had obstructed his view of the deeper-seated parts; and after this with much more facility was he enabled to disengage from its deeper connections the neck of the tumor. When we examine the portion of the

lower jaw thus removed, we find it extends from the alveolar socket of the second bicuspid tooth backwards, and includes the coronoid process and condyle. The condyle we always followed out into a bony shell, even to the interior of the head of the bone itself, but the articular surface was fortunately perfectly sound. The body of the lower jaw, we perceive, is expanded into a bony cyst, or shell, which extends within it a cartilaginous-like material, resembling that we find composing the interior of those enlarged sinuses we see affected with epine cysts or benign sarcomata.

The case of bony cyst of the lower jaw which I have just detailed I consider to be of the same nature as the above-mentioned epine cysts of the bone of the hand, or benign sarcomata. This is a disease which, in my experience, I have never known degenerate into carcinoma; but one which, if not arrested, takes upon itself an unlimited growth, and softening of the contents of the bony cyst or shell takes place, or the patient is carried off by hectic fever, which I have seen to occur in one case of this disease affecting the lower jaw.

I shall conclude by observing that, in cases of a decidedly malignant nature, the disease should not be incised with by the Surgeon; but when considered "benign," as the ordinary, that amputation of the morbid part should be resorted to; and I will add, that no operation, however painful or severe, should be considered equivalent to the slow misery the unhappy patient is destined to endure, if his malady be allowed to take its miserable course until it causes the death of the victim.

In the case which I have just related the operation was necessarily tedious, painful, and severe, but I am happy to say that so far as this (the arrangement they enter the operation) everything has gone on in the most satisfactory manner.

The second case of amputation of a portion of the lower jaw containing a bony cyst, which I have to communicate, I shall reserve for another communication.

FURTHER REMARKS ON AMYLENE.

By JOHN SNOW, M.D.

(Continued from page 334.)

Amylene differs widely from chloroform, and still more from sulphuric ether, in the promptitude with which patients generally recover from its effects. This is a character of amylenol which might have been predicted from its physical properties. I have many times observed how quickly, and indeed, almost instantaneously small animals recover from the stupor occasioned by certain permanent gases which are sparingly soluble in watery fluids, as nitrous gas, carbonic oxide and carbonic acid gas, nitrous oxide and the gaseous oxide of amylenol. Now amylenol is so volatile as to approach to a permanent gas; at a temperature a little above that of the human body it would be a gas, and the vapour is very sparingly soluble in watery fluids, and consequently in the blood. Sulphuric ether, indeed, is volatile as amylenol. I cannot remember any other two bodies whose volatility is so nearly alike; but sulphuric ether is very soluble in watery fluids, in comparison with amylenol. Water dissolves a bulk of its volume of liquid ether, or 10 volumes of the vapour. Consequently a large quantity of ether is dissolved during inhalation, and the blood has to pass many times through the lungs before it is freed from it. The quantity of amylenol which is absorbed is, on the contrary, extremely small, as I explained in my paper in January, and this, together with its volatility, is no doubt the reason why the patient recovers so promptly from its influence. In about a minute after the operation is concluded, and the inhalation left off, the patient usually wakes from the influence of amylenol, and completely recovers his consciousness. The same quick recovery may take place after chloroform, but more frequently it is a few minutes before the patient is quite conscious. I have seen two or three instances in which a child has slept for twenty minutes or half an hour after amylenol, but it does not seem to me that children sometimes sleep for hours after chloroform is gone when the operation has not produced a painful wound. The quick recovery of the patient is a decided advantage in all minor operations. In great operations, where the patient is obliged to keep his bed afterwards, it is of less consequence whether he wakes promptly or not, although, even under

(2) Observed by Mr. Lawrence, who, in a similar case, adopted the same mode of proceeding. The *Lancet*, vol. i. 1864-65, page 578.

years and a half ago he got a severe knock on the right side of his lower jaw, the effect of a fall; some short time afterwards, while endeavouring to seize a dispute between two of his friends, one of them struck him with his fist, the effect on the eye was severe, where a few days before he received the injury by the fall. About eight or ten days after this, he felt an swelling in the jaw, with some stiffness in the motion of the joint at the affected side. These symptoms had existed for about three months, when he became alarmed, having observed one day two small hard swellings on the gum; these gradually, from month to month, somewhat increased. The three molar teeth successively became loose, and dropped above their ordinary level, so as to prove annoying to him when the jaws closed. He on this account had them extracted. The alveoli closed at once, and the swelling went on increasing as before. He observed that when first pressure was made on the swollen jaw there issued out from the alveoli, broadly occupied by the fangs of the teeth, a thin fluid which mixed with the saliva. He thought that for the last six months the swelling seemed to enlarge more rapidly than it had ever done before. Under these circumstances, he was, by the recommendation of my friend, Surgeon Owen, of Clonmel, admitted under my care into the Edinburgh Hospital. A consultation of the Surgeons of the Hospital having been held on the case, it was agreed that there was only one measure to be thought of to relieve him, namely, the amputation of all that portion of the lower jaw which was included in the disease, and that the cavity should be removed from its outlet if such a course were found necessary. The healthy aspect of the man, the absence of any fungous growth from the gum, or of any local discharge, and of all hard glandular enlargement, the sound appearance of the mucous membrane, and of the skin covering the tumour, all gave us the idea, that the nature of the growing tumour was benign; yet it was not to be concealed, that the tumour, if not arrested, must, by its progressive enlargement, ultimately in the case in him of a lingering death; all which having been explained to him, he made up his mind to submit to the severe and painful operation of amputation of the diseased portion of the bone. Unfortunately it was a case in which, in our opinion, amputation could not be safely resorted to, to lessen the sufferings of the patient during the operation.

Now,—In this city we usually object to the use of chloroform when the patient is in the sitting posture, and this is the position we always place the patient in, whenever amputation of any portion of the lower jaw is had recourse to.

The patient then, on the 14th of this month, Feb. 1867, was placed sitting in a chair with a high back, and was well secured in it. The operation was begun by an incision having been made from above downwards, through the white substance of the lower lip, commencing a little nearer to the middle line, than the right commissure of the lips, thus avoiding the commissure itself, the reason hereof to be mentioned. The dissection was then introduced behind the arch of the lower jaw, and quietly passed through the bone, the motion having been made through the line of the socket of the first molarial tooth, which had been extracted two days previously. The next incision through the skin was made parallel to, but a little above, the basis of the jaw towards the right of the bone at the right side, and then having been continued upwards in front of, but parallel to the back part of the ascending ramus, the skin forming a flap was turned up so as to expose fully the morbid mass of the tumour. The attachment of the mucous membrane was cut through, and the chin-piece was then had recourse to, and introduced behind and as close as possible to the inside of the tumour, and the bone cut across just at the base of the neck of the condyle and coronoid process.

The portion of the lower jaw, which constituted almost the whole of the disease, was then isolated and included between the two sections made by the saw.

The next proceeding to be undertaken was to disengage the diseased portion of the lower jaw from the surrounding soft parts. This was done by detaching any fibres of the maxillary or internal pyriform muscle, which still adhered to the margin of the jaw, and next by severing the connection of the horizontal portion of the bone from the muscle which were attached to the epiphyseal ridge, and then connected it to the os hyoides.

To effect this safely and expeditiously the bone was firmly held in a strong forceps, designed for such a purpose, and

while Mr. Craik rotated the bone as much as possible from within outwards, I ran the edge of the knife at the inside of the jaw along the line of muscles attached to the epiphyseal ridge, while this attachment of muscular fibres was severed; the bone was easily separated from the surrounding soft parts. Numerous small arteries, which were necessarily divided, furnished a good deal of blood; some of these were secured, and amongst them the labial was tied, before the further steps of the operation were proceeded with. Having now separated the ends of the coronoid process, and of the condyle of the lower jaw, it was plain that these also were implanted and must be taken away. The incision through the side of the face was then extended upwards towards the lobes of the ear, the capsule of the lower jaw was exposed, and we next endeavoured to draw down the coronoid process, which was appended into a cleft, but the altered bony structure gave way under the forceps; and although we effected the removal of the altered coronoid process completely, we could not, as directed by other operators, by making use of this process and that of the neck of the bone or lever, disarticulate the head, and draw it forwards away from the glenoid cavity and from the dangerous vicinity of the internal maxillary artery. I was compelled, therefore, to move cautiously in front the opening of the articulation, and I then introduced above the head of the bone the extremity of the handle of a tooth forceps, which I used as a lever, and by such means the condyle was pushed downwards from its place, the attachment of the external pyriform muscle to it was next cut across with a blunt-pointed bistoury, and this portion of the bone removed. Some delay now occurred in detaching several portions of the coronoid process, which still remained adherent to the temporal bone.

When the bleeding ceased I drew down the flap of the cheek, and carefully joined the wound through the lip by hair-line needles. The wound was dressed, and the patient placed in his bed.

During the day and night the patient had some hæmorrhage, but pressure of the finger relieved after a time to arrest it.

During the night the patient was in rather an alarming state from constitutional irritation. His skin was cool, and rather in a clammy state; his pulse small, weak, 120 in the minute. He slept deeply, and though he did not absolutely faint, he seemed to have a continual tendency to swoon; in short, he seemed to be in an extreme state of mental and bodily depression.

For these symptoms he was ordered brandy and wine freely during the night, with fifteen drops of the solution of muscivale of ammonia every second hour. After an hour he slept, and when the third opiate draught was taken, which was about half-past two, he fell asleep, and awoke on next morning. On awaking, he stated he felt considerably better; his pulse was stronger, but he was still in a condition requiring the judicious use of stimulants. He was fed by means of a gum elastic tube, fastened to the spot of a drinking cup.

Feb. 21.—It is now seven days since the day of the operation, and the man seems in perfect health; and this is truly surprising to see such a trifling degree of debility resulting from the operation. The line of the incision made for the removal of so large a portion of the lower jaw in the lip has healed by the first intention, and the rest of the line which runs parallel to the basis of the lower jaw and posterior margin of the ramus well, I doubt not, be fully cicatrized in a few days.

In commenting on the "wound spread" adopted in this case, some may think that the vertical incision through the neck of the lip might have been better confined, as the chain saw could have effected the section of the bone without the necessity of this preliminary step having been resorted to. On the other hand, it must be admitted, that to expose fully the diseased mass we had to remove, appeared to be a great desideratum in such a case, and which was best answered by the vertical incision through the substance of the lip, which permitted of the flap being thrown up fully on the cheek. By omitting the vertical incision above spoken of, it is said we should avoid the deformity likely to result from the contraction of such a wound. To which, however, I would reply, that the contraction of such a wound as that above-mentioned need not of necessity be attended by deformity, provided that the incision through the lip be made as it was here (not at the commissure of the lip, but) at a little distance from it, nearer to the middle line. In the drawing which

I lay behind the jaw (by Gossely), which is an exact representation of the patient's face, saw that the anæsthetic day after the operation, it may be seen that such an incision is not necessarily followed by any deformity whatever.

The second incision through the skin, parallel to the lower margin of the inferior maxilla, should be made somewhat above the level of this margin, with the obvious view of rendering it easy to compress the labial artery, so it turns round the bone, when we wish to include its cut extremity in a ligature.

In two cases, from inattention to this simple rule, I saw much difficulty experienced by the Surgeon in securing the labial artery, when performing this operation; his incision having been made along the very margin of the lower jaw, the artery, as soon as cut, struck in behind the bone, and could not be compressed nor restrained, and bled freely while the Surgeon was vainly endeavoring to arrest it by ligatures, which, in consequence of the retraction of the cut artery behind the margin of the lower jaw, was only, after the loss of much blood, at last accomplished.

When the bone was in this case seen in two places, the tumour is forced was next to be cut out, just as we should cut out any ordinary tumour from this situation; but let it not be considered as a matter of indifference how this tumour is to be dissected out. The best method has been pointed out by Mr. Cusack, and was adopted here, namely, to commence the final detachment of the enlarged bone (which had been already sawn across in two places), from the surrounding soft parts, by cutting through the mucous membrane of the mouth down upon the inside of the lower jaw-bone, where the mylohyoid ridge exists. Here, we know, are attached the muscles which connect this portion of the bone to the hyoid.

When the operator thus cuts down on the inside of the lower jaw, his assistant raises the bone in a strong forceps, well constructed for such a purpose, and rotates it from within forwards on its long axis, and then it can be drawn out at the same time that it is being dissected from its place, the operator always presenting the cutting edge of the knife towards the bone.

When this portion of the distended shell of the bone, including within it the great mass of the disease, was taken away, we next had to detach the maxilla, and osseous process, which was an operation attended with some difficulty, but it was at length ultimately accomplished.

Some may object to the mode of proceeding adopted in the operation, as far as that the second section of the bone by the saw was confined to at all, it having been done afterwards necessary to disseminate this side of the jaw-bone; but for my part I do not regret that this was the plan adopted here, because I had presumed that it, connected with this one division of the bone only, I had next proceeded to disseminate it from its socket, I should have then experienced the greatest difficulty in separating the attachment of the temporal and external and pterygoid muscles from the enlarged osseous process and head of the maxilla, as well as in safely opening the regular ligament of the joint.

The dissection which this disengagement required, "when the knife was continually used in the immediate neighborhood of large and important arteries," (N) now, it is plain, much more safely accomplished than it would have been done, had we not the principal part of the morbid mass been previously removed. I should have been embarrassed by the presence of a large tumour obscuring the resources, from which I had to dissect out the above-mentioned processes of the lower jaw. Indeed, I could say, that the same principle I have already applied in the removal of any large tumour whose narrow and most adjacent part is engaged in any deep vessel, when, although the great bulk of the tumour has been dissected from the surrounding parts, its narrow neck and most critical connection are still to be managed; under such circumstances—when, for example, the Surgeon is removing a large tumour from the submaxillary space, when arrived at a certain stage of the operation as this just alluded to, I have seen him derive much advantage from removing the great bulk of the swelling, which had obstructed his view of the deeper-seated parts; and after this with much more facility may be enabled to discharge from its deeper connection the neck of the tumour. When we examine the portion of the

lower jaw thus removed, we find it extends from the alveolar socket of the second maxillary teeth backwards, and includes the osseous process and maxilla. The osseous part appears hollowed out into a bony shell, even to the interior of the head of the bone itself, but the articular surface was fortunately perfectly sound. The body of the lower jaw, we proceed, is expanded into a bony cyst, or shell, which encloses within it a cartilaginous material, resembling that we find composing the interior of those enlarged fingers we are affected with spine caries or bony osteosarcoma.

The case of bony cyst of the lower jaw which I have just detailed I consider to be of the same nature as the above-mentioned spine caries of the bones of the hand, or finger osteosarcoma. This is a disease which, in my experience, I have never known degenerate into carcinoma; but one which, if not arrested, takes upon itself an unlimited growth, and spreading of the contents of the bony cyst or oblongating takes place, or the patient is swept off by hectic fever, which I have seen to occur in one case of this disease affecting the lower jaw.

I shall conclude by observing that, in cases of a decidedly malignant nature, the disease should not be treated with by the Surgeon; but when considered "benign," the contrary, that amputation of the morbid part should be resorted to; and I will add, that no operation, however painful or severe, should be considered equivalent to the slow misery the amputee patient is destined to endure, if his misery be allowed to take its miserable course until it causes the death of its victim.

In the case which I have just related the operation was necessarily tedious, painful, and severe, but I am happy to say that so far as this (the anæsthetic day after the operation) everything has gone on in the most satisfactory manner.

The second case of amputation of a portion of the lower jaw containing a bony cyst, which I have to commemorate, I shall reserve for another communication.

FURTHER REMARKS ON AMYLENE.

By JOHN KNOW, M.D.

(Continued from page 254.)

Amylene differs widely from chloroform, and still more from sulphuric ether, in the propossibilities with which patients generally recover from its effects. This is a character of amyline which might have been predicted from its physical properties. I have many times observed how quickly, and, indeed, almost instantaneously small animals recover from the asphyx occasioned by certain permanent gases which are sparingly soluble in watery fluids, as nitrous gas, carbonic oxide and carbonic acid gas, nitrous oxide and the gaseous oxide of azotic. Now amyline is as soluble as is approach to a permanent gas; at a temperature a little above that of the human body it would be a gas, and the vapour in very sparingly soluble in watery fluids, and consequently in the blood. Sulphuric ether is, indeed, as soluble as amyline. I cannot remember any other two bodies whose volatility is so nearly alike; but sulphuric ether is very soluble in watery fluids, in comparison with amyline. Water dissolves a tenth of its volume of liquid ether, or 11 volumes of the vapour, of its volume of liquid ether, or 11 volumes of the vapour. Consequently a large quantity of ether is absorbed during inhalation, and the blood has to pass many times through the lungs before it is freed from it. The quantity of amyline which is absorbed is, on the contrary, extremely small, as I explained in my paper in January, and this, together with the volatility, is no doubt the reason, why the patient recovers so promptly from its influence. In about a minute after the operation is concluded, and the inhalation left off, the patient scarcely awakes from the influence of amyline, and completely recovers his consciousness. The same quick recovery may take place after chloroform, but more frequently it is a few minutes before the patient is quite conscious. I have seen two or three instances in which a child has slept for twenty minutes or had an hour after amyline, but it must be remembered that children sometimes sleep for hours after chloroform in cases where the operation has not produced a painful wound. The quick recovery of the patient is a decided advantage in all minor operations. In great operations, where the patient is obliged to keep his bed afterwards, it is of less consequence whether he wakes promptly or not, although, even under

(N) Observed by Dr. Lawson, who, in a similar case, adopted the same mode of proceeding. See *Lancet*, vol. 1, 1854-55, page 526.

These circumstances, his friends are generally anxious to see him recover his consciousness. The starting of the wound after an operation is often prevented longer when chloroform has been employed than after the use of amylene, and this may be considered as a slight advantage which chloroform possesses in certain cases. In some instances, however, in which chloroform has been used, the patient begins to show symptoms of suffering pain in the wound before he has entirely recovered his consciousness, while after amylene I have not seen symptoms of pain in the wound till consciousness had completely returned. In any case where the pain after an operation, either from a wound or ligation of vessels, is very great, the inhalation of the agent which has been employed may be greatly repeated at three until the pain has a tendency to subside, or till an opiate shall take effect.

The patient generally seems surprised or confused on first recovering from the effects of the amylene, but in a few seconds he becomes, in most cases, completely conscious of his position, and feels that his mind has been wandering. He often says he does not know where he has been in his dream, or that he has been a long way. Sometimes he does not remember exactly what he has dreamed about; at other times he does. All this is common enough after chloroform, except that the process of recovery is generally much slower; but there is one condition of mind which is very common after chloroform, which I do not remember yet to have met with after amylene. If the patient, when he awakes from even a deep and prolonged insensibility, is in the same position as when he became insensible, he often says that the vapour has not taken effect, he requests that the operation may be recommenced, and will not believe it is over till convinced by his own senses. It seems as if, in such cases, a piece had been snipped, as it were, out of the natural existence of the patient, and that not even dreams had occurred.

The patient has nearly always a very cheerful expression of countenance when he recovers from the amylene, and the state of his mind, as indicated by his conversation, corresponds to his look. Dr. Stewart has noticed the same circumstances. Speaking of the patients operated on under amylene in Paris, he says, "A few recited at a pretty advanced stage of organic brain, and hyperplastic and hysterical. The same state of countenance and mind is met with after chloroform only now and then, and is by no means the rule. I have met with hysterical laughing and crying in three females after operations under amylene, which I think is not often met the same symptoms might be met with after chloroform. In one case where Mr. Ferguson operated the leg of a young woman, the hysteria lasted about an hour; in the other two cases it subsided in a much shorter time, although the patients were very weak in the after state."

Amylene appears to support the pulse under loss of blood at least as well as chloroform. I have not as yet found the pulse to fall, although there was rather free hæmorrhage in two or two operations.

There has been a fatal hæmorrhage in a few cases on the effects of this agent were extending, but it has passed off in a few minutes.

I have already administered amylene in many as the chief anæsthetic of surgery. There have been five cases of lithotomy in the male, three of them by Mr. Ferguson, in King's College Hospital; the young man and the child already alluded to in my former paper, and another child; and two cases in St. George's Hospital, one by Mr. H. C. Johnson, and the other by Mr. Pollock, both children. All the five cases have done well. In addition to the operations of the thigh by Mr. Henry Lee, mentioned in my paper in January, I administered amylene in a similar operation by Mr. Tait, in St. George's Hospital, and also in an operation of the forearm by the same gentleman, and an amputation below the knee by Mr. Ferguson, in King's College Hospital. I have administered amylene in the removal of the head of the femur by Mr. Bowman, in the removal of three large tumours near the groin, two of them by Mr. Newman, and one by Mr. Ferguson; in the removal by Mr. H. C. Johnson of a tumour deeply seated behind the angle of the jaw, and in the removal of the contents of the breast by different Surgeons. There have also been three operations for strabismus by periotomy method, two by Mr. Ferguson, and one by Mr. Coaling. The amylene has answered perfectly well in all these cases,

as there can be no doubt of its general applicability in the great operations of surgery.

Amylene has succeeded perfectly well in operations of the eye. In the extraction of cataract it will probably have an additional advantage, in the almost total absence of nausea after its use. I have exhibited it in two cases of extraction of cataract, performed by Mr. Bowman, and one operation for cataract by drilling. Also in six cases of excision of the eyelid the various diseases, by Mr. Bowman; one of these cases occurred in King's College Hospital, one in the Ophthalmic Hospital at Manchester, and the others in private practice. There have been also twelve operations for strabismus, and a number of other operations on the eye and the eyelids, in which I have administered amylene chiefly by Mr. Bowman. I have given it in three cases of the fibrils rupture of the adhesion in unclashed joints, and it has answered perfectly in preventing the pain. Two of the cases were in King's College Hospital, and one in the Ophthalmic Hospital, under Mr. Lonsdale.

I have employed amylene in two cases of dislocation of the humerus, both patients of Mr. French in the St. James's Paralytic Infirmary. The first case was a dislocation downwards in a woman aged 60. She laboured for three minutes, when extension being made, the bone slipped into its place with the utmost ease, although Mr. French had found a great deal of resistance in an attempt he made just before sending to for amylene, and he thought it would be a good opportunity for trying the amylene. In two minutes after the reduction of the dislocation, and five minutes after beginning to inhale, the patient was quite awake again, and said that she had felt nothing. The other case was a dislocation forwards in a man aged 71. We attempt to reduce it was made till the amylene was administered. The case was under the care of Mr. Buzzard. After inhaling two or three minutes, the old man got into a state of muscular rigidity, and did not get beyond this state, although I continued the inhalation. Finally ten minutes went about two ounces of amylene were used. He did not get up till the rigidity prevented the reduction was quite insensible, but the rigidity returned, and went for some of the dislocation. He I discontinued it, and sent for some chloroform, which I administered a few minutes afterwards. It produced muscular rigidity rather stronger than that which the amylene had caused, but by continuing the inhalation gradually for about two minutes, the limbs became relaxed, and the humerus slipped easily into its place. This is the only case in which the amylene has not effected the purpose for which I have exhibited it; and I have no doubt, for reasons which I stand before, that I could have produced relaxation of the voluntary muscles by increasing the strength of the vapour the patient was breathing; but there were one or two circumstances which at the moment stood in the way of this. The patient's face was so hollow from his loss of flesh that the face piece fitted badly, and as it was only in a loose manner the water bank of the inhaler was colder than usual. These defects could have been remedied if necessary, but I thought it as well to use chloroform; and I am inclined to think that chloroform in the better agent to employ in these rare instances where relaxation of the voluntary muscles is required. I remain also of the opinion, which I expressed years ago, and which I occasionally see so, that sulphuric ether is preferable to chloroform in the reduction of old dislocations, as it seems to produce complete relaxation of the muscles more readily and certainly than chloroform.

Amongst the minor operations in which I have administered amylene, have been eighteen operations of tenotomy, chiefly by Mr. William Adams and Mr. Lonsdale, in the Royal Ophthalmic Hospital, and mostly in children and young people. An inhalation of about two minutes generally sufficed to prevent the pain entirely. I find that some surgeons have entertained an objection to use chloroform in tenotomy, but it should cause a relaxation of the muscles, which would interfere with the operation. I have, however, been in the habit of exhibiting it for eight or nine years, both in King's College Hospital and in the private practice of Mr. Ferguson, and some other surgeons. I never noticed the effect of the chloroform so far as to cause relaxation of the muscles, and I have generally found the tension gone with a snap. With a small dose of amylene the tension of the muscles not only remains, but is usually somewhat increased.

Amongst the more important and painful operations in which I have given amylene, and where it has answered per-

body, I ought to have mentioned several cases of anæmia affecting various tissues,—as the bones, lower jaw, tibia, etc. I administered it to an infant about six months old, in King's College Hospital on January 27th, previous to Mr. Ferguson's operation for hare-lip. The child was innoxious to the body at the beginning of the operation, but began to cry before the incision was finished, and cried very faintly as the hare-lip pins were introduced. The property, previously alluded to, which anæmia possesses, of allowing the patient to awake so quickly, although an advantage in most operations, is not desirable in operations about the mouth, where the infiltration cannot very well be continued or resumed. This is more especially the case in young children, who awake, even from chloroform, more quickly than we wish in such operations. There have been four or five operations on infants for hare-lip since the one above mentioned, but I have given either chloroform or sulphuric ether. In all the other operations in this Hospital, when I have been present in a halitator any narcotic vapour, since the 15th of December last, I have exhibited anæmia, in order to give it a fair trial. There have been several plastic operations on the face in patients of adult age, or nearly so. The anæmia has always prevented the pain at the beginning of the operation, and has been continued on a hollow sponge afterwards for some little time. On two or three occasions it was continued with success to the end of the operation; but two or three times the sponge became so cold by the continued evaporation of the anæmia, as to make my fingers ache, and to limit the evaporation so much that the patient seemed about to awake. I therefore put a little chloroform on the sponge, and it answered the purpose desired. Chloroform admits much less when than anæmia during its evaporation, as the patient inhales, on account both of the quantity which evaporates being less, and of the specific gravity of the vapour being greater.

In tooth-drawing, anæmia has both its advantages and disadvantages as compared with chloroform. The prompt recovery from its effects, and the almost constant absence of sickness, are decided advantages, as also in the greater ease with which it is inhaled; but in cases where eight or ten teeth require to be extracted at once, as often happens, when my assistance is required, or where several attempts are to be made, the effect of anæmia does not last long enough to complete the operation, without one or more repetitions of the inhalation. A difficulty in getting the mouth open occurs about as often, I think, with one agent as the other.

I have only on yet had leisure to administer anæmia in two cases of labour. One was under the care of Mr. Bennett in the St. James's Infirmary, on January 18th. It was the patient's second labour, and was a lingering one, having lasted 48 hours. I administered the anæmia only during the last 28 minutes preceding the birth of the child, the head being advanced so as to rest on the pubes. The vagina was given well dilated at the beginning of each pain. The patient breathed very deeply, and got relief very quickly from each pain; the uteri was quite clear between the pains, and I could not tell whether or not the membranes were removed for half a minute or so, during each pain. Half a fluid ounce of anæmia was used. This other case occurred in an outpatient of King's College Hospital under the care of Mr. Meadows, Dr. Power's assistant. It was the patient's third confinement. I arrived three hours after the commencement of labour, and two hours before the birth of the child. The os uteri was almost dilated on my arrival, and the pains were very strong, recurring every three minutes or so. They continued to increase in strength to the last. The patient was probably unconscious for a brief period during the uterine contractions, while the anæmia was administered, but between the pains she was quite conscious. Under the use of chloroform, in a labour with brisk and frequently recurring pains, it is in this way, the patient usually slumps on from one pain to another, but I offer no opinion at present as to which state of insensibility is preferable. The amount of anæmia inhaled in this case was three fluid ounces. The quantity used in each of these cases must have been about half a fluid drachm in each pain, and this is the quantity I had previously recommended Dr. Tyler Smith to employ, when he did me the honour to ask me some questions about anæmia before he employed it in a case of labour. The results achieved by Dr. Tyler Smith, in the case in which he employed anæmia, were similar to my own, viz. relief of suffering during the uterine contractions,

concomitance between the pains, and no interference with the progress of labour. I look forward with some interest to a more extended experience of anæmia in midwifery. Chloroform answers so extremely well that there does not seem much room for improvement; there are cases, however, in which chloroform has a tendency to retard the progress of labour, by diminishing the force, duration, and frequency of the uterine contractions, even when administered very moderately; and it remains to be ascertained, by observing a number of cases, whether anæmia may not be free from this disadvantage.

In the concluding part of this paper I shall make some remarks on the mechanical means of maintaining anæmia in the most efficient way, and on its relative safety as compared with chloroform and ether.

(To be continued.)

ON MALIGNANT GLANDULAR TUMOURS

OR HYPERTROPHIES OF THE MAMMA IN THE FEMALE.

By WILLIAM AITKEN, M.D. Edin., F.R.C.S.E.

Corresponding Member of the Society of Medicine and Natural History of Scotland, and of the Royal Imperial Society of Physicians of Vienna; late Professor at Bristol.

Two or two following cases are related with the view of illustrating a useful condition of the female mamma, the malignant tendency of which has not been hitherto observed, and the pathological nature of which requires more extended investigation.

The history of the first case is in the words of Mr. Spence Wells, in whose practice at the Samaritan Hospital the case occurred, and who requested me to examine the state of the mamma, and the morbid condition of the other parts which subsequently became affected.

The history of the second case is in the words of Dr. J. Adair Lewis, the distinguished professor of Surgery in the University of Glasgow. This case I had an opportunity of observing during life, and of examining after death, and an account of which Dr. Lewis published in the *Glasgow Medical Journal* for April 1845.

Case I.—*Glandular tumour of the right mamma, of slow development. Secondary tubercle, tubercle conglomerate of left mamma. Secondary tubercular nodular deposits. Secondary nodular deposits in the lungs, liver, and ovaries. Ulceration in cicatrix of right mamma. Nodule dead.*

Mrs. Boper, 31, married, admitted to Samaritan Hospital in November 1845. Has had one child seven years ago, two miscarriages since the last in September 1833. A few months after miscarriage, eighteen months before admission, began to complain of pain in right breast. It became hard, and she suffered a great deal from it. I recommended to remove it at her own wish, on account of the extreme pain she suffered. One gland in the axilla was swollen but not hard. I excised the breast, Nov. 23, 1844, but did not remove the axillary gland. The wound healed by first intention. The swelling of the axillary gland disappeared, and she remained well for six months. Then a small tumour appeared near the cicatrix, which soon became painful, various symptoms appearing at the same time, viz. lumbar pain, hoarseness and intermittent warm-purulent discharge. Admitted with these symptoms to Middlesex Hospital, Sept. 25, 1845. Here she pointed some relief to uterine symptoms, and was discharged Dec. 3, 1845. Two days after this she was admitted in the Marylebone Infirmary, complaining of cough, debility, and lumbar pain. Soon afterwards she noticed small tumours under the engagement of anterior part of thorax, more or less painful. The number of the tubercular tubercles continued to increase, and in August, 1846, the cicatrix on the breast began to ulcerate. She believes no tumour formed in the axilla before ulceration commenced. She remained in the infirmary until readmitted to Middlesex Hospital, Nov. 5, 1846. Here she continued gradually to decline in health. The ulceration in the breast spreading very slowly, as has going growth from it, and she died on last night suddenly, March 1, 1847.

Autopsy. March 24.—Emaciated, but not extreme; hard, round, tubercular tubercles in many parts of trunk, wt of

nodes; a great deal of fluid in cavities of pleuræ and both pleuræ; lungs congested. On surface of both lungs immediately under pleura small, hard, white deposits, varying in size from that of the head of a small pin to that of a mustard-seed; some rather larger in long substance superficially. In the substance of the liver were some scattered, round, white, opaque, hard, isolated tumours, which could be excised easily from the surrounding liver substance. On pressure they yielded a turbid white juice. Two or three similar tumours were beneath the mucous membrane of the gall-bladder.

Uterus.—Congestion of the neck, and superficial ulceration; no deposits in the substance of the organ. Both ovaries enlarged, and hard from deposit.

Cervix.—Three tubercles between os and external os; no deposit in lumen.

Several hard nodules in left breast.

Microscopical Examination.—A careful microscopic examination of the primary mammary tumour in Mr. Wain's case showed that the surrounding connective tissue was in abnormal condition, the secreting epithelial cells of the ducts, and of the lobules of the gland, as if to involve in one uniform tumour the gland substance of the whole organ. The secreting cells were altered from their natural spheroidal shape, and were seen in almost every variety of form, abundant, granular, and distending, especially the side of the gland. The morbid condition appears to have been entirely confined to the secretion of the ducts, and the sides of the lobules. Neither in the manner nor section did the tumour present any of the marked characteristics of a scirrhus tumour. The secondary nodules in the other mammary gland presented characters similar to the primary tumour of the right mamma, and appeared to involve a few lobules of the gland mostly. The secondary deposits in the other parts of the body presented elements of a granular character, combined with tubercle cells, and sometimes few fibrous tissue cases.

Case 2.—*Acute hyperplasia, or placental tumour of both mammae, of rapid development. Secondary nodular deposits in the liver. Secondary deposit in the ovum.*

Mary D., aged 33, house servant (late).—Chiefly called upon me about the 7th April, 1884, complaining of general pruritus. At this visit she made no complaint of her mammae, but when I saw her again, two days afterwards, she said they were painful. I found them very slightly enlarged, painful to the touch, the areolæ I thought darker, and the papillæ more prominent than natural; the areolæ otherwise normal. Suspecting neural pruritus continued, I questioned her very closely. The girl being from the Highlands, and speaking English imperfectly, did not give very satisfactory or intelligent answers; but the impression left on my mind certainly was, that she might be, and probably was, in a very early stage of pregnancy. I accordingly prescribed some gentle diaphoretic medicine, and waited the result. The only cause that she could assign for the enlargement of her breasts was sudden transitions from heat to cold, the necessary attendance on her employment as a cook.

She did not improve, and as the breasts continued to increase rapidly, I sent her to the Infirmary on the 19th April. She proved a very discontented patient, and twice left the hospital without permission, so that the treatment employed had not very fair play. From whatever cause, none of the means prescribed had the slightest beneficial effect. They continued, in the early stage, locally of friction and fomentations, followed by cold and gentle pressure, leeches, and cupping; internally, mercury to the extent of gentle salivation, and iodine freely.

On her admission into hospital, 19th April, the breasts are described as enlarged to double their natural size, firm, elastic, resistant to the hand, but very irritating and becoming sore from their weight and size. The tenderness not discovered, and slightly painful. She left the house on the 25th, and returned on May 7. The mammae are then reported "to have increased very much in size, to be affected with acute stinging pain, and to have assumed a bluish colour." These symptoms continued to increase, the suffering became very great, and the colour of both breasts was a deep purple before her death. They were never in the slightest degree "painless"; on the contrary, although moribund, they were badly lacerated in the chest, and from some tension caused, not only pain, but considerable difficulty of breathing. The lobulated form of the glands was very distinctly felt. That their vascularity was great was

shown by the jets of blood which flowed from the puncture of a common-sized grooved needle. In a few minutes I collected 8 or 9 ounces, and so it appeared I could have bled her as freely from this aperture as if I had opened a vein in her arm. About the 16th or 18th of May her general health began to give way rapidly, typhoid symptoms set in, she became gradually comatose, and her tongue was much drawn to the left side. She died on the 17th. I showed her twice to my colleagues in consultation; none of them had ever seen a similar case. Surgical assistance was considered quite inadvisable, and no incision, beyond those already employed, was suggested. I entrusted the post-mortem examination to my friend, Dr. William Aitken, Demonstrator of Anatomy to the University, and Pathologist to the Infirmary, who has most kindly sent me the following report:—

"A case having been taken of the unusual form of the breasts immediately after death, the mammary glands were removed from the body for inspection and preservation. The right gland was larger than the left, but each presented the characteristic lobulated form and arrangement of the gland substance. Along with the ducts, and a small portion of pectoral muscle which accompanied each gland, they weighed six pounds fourteen ounces; and it was observed that the skin covering them was less tense than before death, probably from the gravitation of the blood towards the dorsal region of the body. The right, and larger gland of the two, when freed of all its accessory parts and hardened in spirit, so as to remove a considerable portion of water from its substance, weighed two pounds two ounces.

Microscopic examination.—The hypertrrophy appeared to depend upon the following conditions of the gland substance, and its accessory parts:—The secretory cells of the ducts of the extreme ends of the gland tubes, were distended to about twice their size, compared with a mamma which had never secreted milk. This distension appeared to be due, partly to a granular accumulation, and partly to a very large amount of epithelial cells, mingled in some places with globules of oil. The ducts of the axial were also in some places irregularly distended with this epithelial secretion. In examining a section of the gland, thicker portions could be observed, which, when isolated from the rest of the gland, varied in size from a millet-seed to a pea, or a bean; and microscopic observation showed that these thicker portions were the seat of an abundant substance and secretion. A lamina immediately below the skin, a layer of connective tissue lay the space between the lobules, making the surface of the gland assume a rounded aspect. This condition was of a granular appearance, similar to that in its first stage of organization; and it was found abundantly creviced into the interspace between the tubes and ultimate lobules of the gland, apparently taking the place of the fat usually found there, and which had probably disappeared by absorption, the result of pressure. In such cells the lymphatic glands were much enlarged, and infiltrated with a granular secretion.

Liver.—Circumscribed deposits were irregularly and sparsely scattered throughout the whole substance of the liver, projecting in some places from its surface. They varied in size from a pea to a plum, presented a granular appearance microscopically, and no liver cells could be distinguished among the substance of these deposits; and while they were perfectly circumscribed by the capsule of Orhan, the secreting substance of the gland was continued round their periphery.

Uterus and ovaries.—The ovaries and broad ligaments of the uterus were markedly adherent to the walls of the pelvis, and appeared to be infiltrated with a serous exudation. The ovaries, on removal (and more especially the right one), were found to be in a state of inflammatory softening, and much enlarged. The Fallopian tubes, also, were unusually distended, especially near their fimbriae, which adhered freely to the ovaries. The softening was so great, that the substance of the right ovary was easily broken down under the finger, and an appearance of extravasated blood, or of corpus luteum, could be detected in others. The uterus was somewhat larger than one which could hardly have been distended by conception. Its neck was more especially elongated, and did not terminate in an os uterine and posteriorly by, separated by a cross-vein also, as in the normal uterus. A pointed rugæ-like spot projected into the vagina, through which an opening with an irregular border led into the cavity of the uterus; but so contracted, that a probe about two lines in diameter was all that could be passed through it. The whole aspect of this

part of the masses perfectly resembled what is described as the result of irritation and disorganization of the neck and mouth of the uterus. The substance of the organ, more especially near its fundus, enclosed condensed white particles, like the commencement of fibrous laminae in its substance.

Remarks.—Every case who reads these two cases must be at once impressed with their similarity. The only difference between the two appears to consist in the one requiring a rapid and acute resection involving the whole glandular substance of both mammae; in the other, requiring a more prolonged course, and affecting the whole gland substance of one mamma, and only a few lobules of the other. They are cases undeniably peculiar, and I do not know of any others so good resembling them. In both the primary disease became developed in the gland substance of the mamma, and, therefore, both are, in the first instance, to be classed with the mammary gland tumours of Paget, or the hypertrophies of Hallett and of Leber.

Mr. Paget remarks, at page 546, vol. 2, of his *Lectures on Surgical Pathology*, that "there is no data to suggest that the glandular tumours are, as a rule, either true tumours;" but we know also that there is no class of tumours singularly variable in their course of existence and development as the mammary glandular tumours; and the two cases now detailed are instances of such tumours having undeniably a malignant tendency. The ages of the patients were nearly similar, namely, 30 years in the one case, and 31 years in the other. In both, uterine irritation preceded and accompanied the morbid changes in the mammary glands. In both, the pain of the gland swelling was acute and excessive. In both cases, nodular secondary deposits of peculiarly similar microscopic appearance pervaded the substance of other organs, such as the liver, and spleen in both cases, and also the subcutaneous tissue and lung in the others. The uterus exhibited the appearance of being diseased, or of having been so, in both instances.

There are three points in the history of these two cases which require special notice, and which demand for glandular tumours of the mammae a more extended pathological investigation.—

1. As to the nature of such peculiar morbid conditions of the mammae as have been now described.

2. As to the malignant nature of the course of the disease, and the source of the malignancy.

3. As to the nature and pathological significance of the secondary deposits.

1. There is evidence, in both cases, that uterine irritation preceded the development of the mammary tumours; and it is a well-known and universally accepted physiological truth, that the uterus, the ovaries, and the mammary glands, are held together in sympathy of structure and of function by one of the strongest links; and any morbid change in one of these organs is, as a rule, made manifest by some sympathetic change in the others. Beyond this, however, the course of such tumours is obscure; and if uterine irritation is the common origin of both, "why," as Dr. Leconte remarks, "is not a consequence from one common antecedent?"

2. The malignant nature of the course of the disease made itself apparent very early in the one case (thirty to thirty days), and with comparative slowness in the other (24 years).

As far as the primary disease is concerned, a superficial examination of the tumours might warrant a classification of them with *Sphaculoma*. But, then, the class of tumours known as *Sphaculoma* are made up of variously modified early, epithelial cells, variously modified in shape; and we know also that secondary *Sphaculoma* are seldom seen beyond the zone of direct propagation of the primary local disease; and that distant multiple deposits are not common. Nodules of *Sphaculoma* only occur in the immediate vicinity of the primary tumour, or in the adjoining glands, and are rather a continuation of the primary disease than a constitutional reproduction of it.

We know, however, that *Sphaculoma* sometimes prove fatal in the way of purid infection; and if I might venture to account for the malignant course of the two cases detailed, I am inclined to believe that their type of malignancy is derived from the "epithelioma" nature of the primary disease.

3. The existence of the secondary nodular deposits constitutes a peculiar and remarkably interesting feature in both cases. In both they presented similar microscopic charac-

ters, and appeared to indicate the mode of death by way of purid infection, and which is not an general termination to cases of "epithelioma epithelial disease."

Dr. Leconte considered that the deposits in his case were "analogous to, or possibly the second stage towards, the formation of those circumscribed abscesses which are so frequent a cause of death in surgical and obstetrical practice." Such deposits, we know, are often perfectly independent of purid infection, the occurrence of which is now doubted by some pathologists.

London, March, 1887.

THE LONDON

FRACIION OF MEDICINE AND SURGERY.

HOSPITAL NOTES.

EXFOLIATION OF BONE AFTER COMPOUND FRACTURE.

Mr. Cusling has under his care in the London Hospital some cases bearing with much interest on the question as to the length of time occupied by sequestered bone after compound fracture in becoming loose. In one, a healthy man, aged about 30, had a compound fracture of the leg. The case has done well, but now, after the lapse of ten months, there is still a fragment of dead bone exposed, but freely fixed. In a second older man, who was recently under care, the exfoliation was complete in a third of the time. The difference between the two cases was, that in the first the portion of dead bone is attached to the lower fragment, and in the second to the upper one. Mr. Cusling remarked that he had often noticed the very slow progress of separation in the lower fragment, which was so liable to be obstructed in its being disengaged with blood, since by the fracture the main supply, that usually flows from above, would be cut off.

REMOVAL OF CANCEROUS TUMOURS BY EXTENSIVE APPLICATIONS.

That the removal of cancerous tumours by comparatively painless applications of very dilute caustic solutions is practicable is beyond doubt. We noticed, about six months ago, a case in which, by a diluted lotion of the Wilson Smellie's disinfecting fluid, Mr. Stanley had removed a cancerous mass from the breast, with the result of leaving a clean and healthy scar. Since that Mr. Stanley has pursued the same plan in two or three other cases with perfect success. In one the skin was first removed, after amputation, by the knife, so as to admit of the application. In a case of recent date of the face in an elderly man, great benefit has also attended the use of the same solution; and the more, which was large, has, to a great extent, disappeared. The same application is being tried in a case of very extensive cancerous ulcer of the face, under the care of Dr. Russell and Mr. Hutchinson at the Metropolitan Free Hospital.

USE OF OPIUM IN STENOSED OPHTHALMIA.

The employment of narcotics, as hyoscyamine or belladonna, in that form of stenosed ophthalmia in which the intolerance of light is a prominent symptom, is an old and often very successful practice. We notice that Mr. Crockett, at the Royal Ophthalmic Hospital, prefers the more direct anodyne, and generally uses the laquei opii. In the case of a child of four years old, who was admitted the other day, in whom the intolerance was extreme, this remedy acted like magic. On the second visit the patient could look full at the light. Although the momentary symptoms which indicate the employment of opium, probably of the nature mentioned generally, and especially diarrhoea, are of much value. In some cases of extreme ophthalmia a brisk purgative should be the first measure employed. In a certain class the intake of potassium is of the greatest use.

EXPECTED OPERATIONS.

At St. Bartholomew's, on Saturday, this day, there is a case of excision of the elbow-joint. At St. Thomas's, Mr. South has a case of removal of the breast for cancer. At King's College, Mr. Ferguson has a lithotomy, a case of partial amputation, and three cases of plastic surgery. Mr. Brown has a ligature of the femoral artery for aneurism. At St. Mary's, on Wednesday, Mr. Brown has a case in which a Stone tumour of the stomach is to be removed.

AMPUTATION AT THE HIP-JOINT.

TABULAR REPORT OF EIGHTY CASES OF AMPUTATION AT THE HIP-JOINT.

In 1868, when Mr. South Cox compiled his "Memoir on Amputation of the Thigh at the Hip-Joint," the number of recorded cases in which the operation had been performed was 24, the recoveries having been 27, and the deaths 23. Regarding a large proportion of these the details are very imperfect, and do not permit of any accurate comparison or arrangement into classes. A considerable proportion of the recoveries was in cases in which the operation had been performed for injury, and others (but a minority) were on account of tumours or other diseases of the limb. In three

cases, of which Mr. Cox's was one, the part removed was the stump left by a former amputation of the thigh, and in all of these recoveries ensued. It is manifest that in this class the operation would be a comparatively trifling one. As we have just work to record in detail the particulars of a case in which, a week ago, Mr. Stanley removed the entire limb on account of malignant disease of the femur, we take the opportunity of presenting in a tabular form the experience of the London Hospitals during the last four years in respect to this operation.

No.	Hospital, Date, and	State of Health.	Nature of the case.	Duration of Disease.	Modes of operating.	Progress.	Result.	Remarks.
1	Staring-room St. Thomas's, 1892.	W	Periodically attacked by neuralgic pains and "at night" severe spasmodic general tremors.	3 weeks.	It was intended only to separate through the thigh lig. up to the fem. head. Spinal trepanning, excision of the fem. head, and amputation was performed.	On each night the chest and head almost incessantly shuddered after the operation.	Death.	In this case the operation was performed under almost hopeless circumstances.
2	The Westminster, Mr. J. A. Clarke, 1894.	W	Subsiding gradually.	2 years.	Active-puncture flap by trepanning, partial amputation. The fem. art. was tied until the returned was complete.	An attack of meningitis occurred two days after the operation, when the patient died on the 10th day.	Death on the second day.	1. The recovery following was believed to have been a mere "streak" of the circulation.
3	The London, Mr. Adams, March 15th, April 1st, 1895.	W	Wife and child.	2 years.	Active-puncture flap by trepanning. The operation was completed before the fem. art. was tied, and the femur, which three days previous to the operation was completely ossified, was cut and the fem. art. was tied and the limb was removed.	The patient was in a very debilitated state when taken to bed. She did not get up to the third day, after which she got up and was able to walk on the 10th, and the drainage tube, the stump was tied, the limb was again taken on the 15th day.	Death from exhaustion on the 10th week day.	The patient did not recover in respect to complete removal of the source of the circulation.
4	St. George's Hospital, March 14, 1895.	W	In good health, previous to the operation, but in collapse from loss of blood.	2 hours.	Active-puncture flap by trepanning. The operation was completed before the fem. art. was tied, and the femur, which three days previous to the operation was completely ossified, was cut and the fem. art. was tied and the limb was removed.	On the operation well tolerated, but some vomiting and delirium.	Death from exhaustion on the 10th week day.	Amputation was given during the operation, but not in complete recovery. The patient was in a very debilitated state when taken to bed. She did not get up to the third day, after which she got up and was able to walk on the 10th, and the drainage tube, the stump was tied, the limb was again taken on the 15th day.
5	St. George's Hospital, June 1895.	W	At health, but with loss of fem. art.	None recorded.	Active-puncture flap by trepanning. The operation was completed before the fem. art. was tied, and the femur, which three days previous to the operation was completely ossified, was cut and the fem. art. was tied and the limb was removed.	The limb was fully recovered, and she was well.	Recovered.	
6	The London, Mr. Deyling, March 1895.	W	In good health, but with loss of fem. art.	None recorded.	Active-puncture flap by trepanning. The operation was completed before the fem. art. was tied, and the femur, which three days previous to the operation was completely ossified, was cut and the fem. art. was tied and the limb was removed.	The progress was throughout very successful.	Recovered.	The patient died about ten months after the operation, from a disease of the lungs, which was believed to have been caused by the operation.
7	Staring-room St. Thomas's.	W	General and very severe, from injury to the hip.	Months of bed rest.	Active-puncture flap by trepanning. The operation was completed before the fem. art. was tied, and the femur, which three days previous to the operation was completely ossified, was cut and the fem. art. was tied and the limb was removed.	For a few days after the operation the patient was very debilitated, but she recovered and was able to walk on the 10th day.	Recovered.	The limb was fully recovered, and she was well.
8	St. George's Hospital, March 1895.	W	At health, but with loss of fem. art.	None recorded.	Active-puncture flap by trepanning. The operation was completed before the fem. art. was tied, and the femur, which three days previous to the operation was completely ossified, was cut and the fem. art. was tied and the limb was removed.	On the operation well tolerated, but some vomiting and delirium.	Death from exhaustion on the 10th week day.	The patient was in a very debilitated state when taken to bed. She did not get up to the third day, after which she got up and was able to walk on the 10th, and the drainage tube, the stump was tied, the limb was again taken on the 15th day.

NOTES AND QUERIES.

By the questions which shall here ensue.—Saras.

No. 204.—THE DEATH OF A WOMAN, AND THE SUFFERING EXERCISED BY HER FEMALE WIVES.

There is a superstitious idea very prevalent, not only in New-England but throughout the land, that the death of a woman in England is the forerunner of evil to women with child. I should think like to know whence this absurd notion emanated. There have been many post-partum deaths lately in this neighborhood, and more than ten old women has connected the loss with the death of some woman, an account of which has appeared in the daily papers. I have seen several of a physician having gravely assured a bereaved husband that his wife's death was one of those which usually occur after a fatal infantile convulsion.

THE MOUNTAIN IN THE PARALYSED MOUNTAIN.

ANSWERS.

No. 197.—SWEATING SICKNESS.

Readings will find a full account of the "Sweating Sickness" in the first volume, published by the Hygienic Society in 1888, entitled "Hector's Epidemics of the Middle Ages," Spanish, April 4, 1891. G. B.

No. 197.

For an account of the "Sweating Sickness," see John Colson's "De Epidemia Britannica," of which also translations have been published. For a complete account of the matter, Guyer's collection of writers upon the subject should be consulted. The following is the title of Hanner's edition: "Symptomata de Febre Anglica repetita." Catalogo G. B. Gronovii. Post mortem auctoris abstrahit et edidit H. Hauser, Jenæ, 1667." &c. J. C.

No. 197.

In reply to your inquiries (187, 199) in the last number of the Medical Times and Gazette, I beg leave to inform them that, first, the best account of the Sweating Sickness is to be found in "A Notice or Council against the Disease commonly called the Sweate or Sweating Sickness," made by John Colson, Doctor in Physick, Imprinted at London, s. n. 1610." This work is largely quoted by Dr. Boaden, in his useful translation of "Hector on Epidemics of the Middle Ages." Dr. Hector has also written an account in German of the frightful scourge.

No. 198.—HARVESTING WHEAT.

The spring will come, and it is to be seen a few yards west of the Ministry's Chapel, in Wall-walk, Hampshire. The composition of the water is exactly of the same nature as the chalk-water at Tisbury Wells, only that the proto-carbonate of iron is in greater amount in the former than in the latter spring. G. W. G.

No. 201.—HISTORY OF BARBERS.

I do not recollect, nor has a hasty search enabled me to find any passage in the works of Dr. Pott's writings, which would justify your correspondent W. M. in attributing the name of that learned Physician to his authority for a statement so manifestly incorrect as that which would assign the first introduction of barbers into medical practice to so recent a period as the latter half of the sixteenth century (1575).

Admission of Dr. Pott's immense medical erudition, and respect for his memory, prompt me to venture a reply to your correspondent, who, I hope, will pardon me for suggesting that he has misinterpreted the distinguished author of "The History of Physick, from the time of Galen to the XVIIth Century."

Arrigo and Arseno are probably the earliest writers who pointedly recommended cauterization as an expedient in the medical treatment of disease.

Ancient surgery as known in the time of Trajan, s. n. 105-117. His writings, as a whole, have perished, but fragments have been preserved by Aelian, in his "Tetrabiblos." In them, we meet with two passages, where distinct mention is made of cauterization as a vesicatory. Thus, in the chapter De Resolutione et Arthritide (2), we read:—"Reverendissimi medicorum veterum Therapia cum aqua. Ulla aut cum aceto post dyperos; item Ulla ac acanthidibus." And, again, in the chapter headed "Pompholyx, Cantharidum, Oculorum et Hemorrhoidum et Arthritide et Ullis;" (3):—"Non minus valens cataplasma ac acanthidibus et uillibus than post longum tempus stragula sine ullaque per longis postea an incisionem et post Ulla ac acanthidibus." &c.

Arrigo, who flourished probably in the second century of the Christian era, and was contemporary with, or at most a few years later than, Arthigenus, writes thus:—"Materie vesicatorie rebusque cupis acanthidibus, uillibus quibusdam pinguibus aqua proposita sed his uillibus ut aqua ac acanthidibus uillibus; uillibus uillibus aqua. his uillibus ut uillibus uillibus Materie has quibus cauterizatione uillibus uillibus." &c.

Matter of cauterization, as we are told by Freind, (2) were also employed by Alexander Trallian in Asia, where he says, by discharging a large quantity of serum, they give immediate relief. I have mentioned the slight mention of cauterization by Celsius, Pliny, Galen, and Serapionus Largus, all of whom seem to have limited their application to chronic diseases of the skin.

The employment of Matters appears to have originated in the sixteenth century, although, if we may trust to one authority, Dr. Cass (3) they had been used in the plague by Rufus Ephesus, a contemporary of Arthigenus. Dr. Freind (4) has the introduction into Indian practice about the year 1678, and this is probably the passage in which W. M. alludes; but he will see, on a re- perusal of the chapter, that this does apply exclusively to the employment of Matters by the Indian physicians in plague and post-mortem fever. Dr. Freind assigns the merit of their introduction in the treatment of these diseases to Mercatorius, admitting, however, that within a more restricted scope they had previously been used and recommended by Jacobus de Passerat, Marcellus Peiron, and Alexander Benedictus.

WILLIAM MORRIS, M.D.

February-place, April 24, 1897.

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Medical Times & Gazette.

SATURDAY, APRIL 11.

POWER OF THE ARMY MEDICAL DEPARTMENT.

Our contemporary, the British Medical Journal, in its number of the 14th instant, asks the question, "Is there such a thing as military science in our Army?" and takes the opportunity to make an onslaught on the Army Medical Department, accusing the officers of withholding the soldiers at home and abroad, by their neglect of the light of modern science, and suggesting as a remedy the substitution of a Board for a Director-General. It is a pity our contemporary had not studied the past history of the department, and taken some pains to ascertain the real facts in the case, for address in support

(1) Med. Chron. L. vol. 8, p. 87.

(2) Ed. Kahn, p. 103.

(3) History of Physick, Part 2, p. 78.

(4) Observations on an Historical and Comparative Description of the

Medicine, Lond. 1782, p. 128.

(5) The Physicians' Commentaries, in Opera Omnia Medicæ, P. 2, Lond. 1782, p. 108.

of his views, before he then attacked a body of officers, of whom Mr. Sidney Herbert said:—"Every account I get puts this, the Medical men in their position are beyond all praise . . . their humanity, their zeal, their energy, are mentioned by every one, friend and foe;"(2) and the *Times* of Cambridge more recently have strong testimony to their philanthropy and great exertions.(3) In the *Medical Times and Gazette* of January 15, 1894, we gave a short sketch of the administrative arrangements of the Army Medical Department since it first received a distinct organization in 1795. In this it was shown that, during the first fifty-four years of that period, it was governed by a Board; but in great want the disadvantages attending that system, that in 1819 the Board was abolished as the recommendation of a Parliamentary Commission, and a Director-General appointed as the responsible head. This condemnation of a Board was repeated by Mr. Staffell's Committee of last session, after a careful examination of the whole question.

Our contemporary brands his charge against the Army Medical Department upon an abstract of a speech, delivered by Lord Grey in the House of Lords in April, 1894, on the subject of Army Reform, in which his Lordship pointed out the terrible losses of the troops by disease in Jamaica; their sufferings in the West Indies generally from improper diet, and the deplorable state of the barracks and hospitals in that command. But had he carried his inquiries a little further, or remained longer acquainted personally with the subject, he might have ascertained that the facts adduced by Lord Grey were all taken from the statistical reports on the health of the Army prepared by Inspector-General Marshall, since dead, Captain Talbot, now well known as Colonel Talbot the Colonel-Commissioner, and Assistant-Surgeon Ballou, now the Medical Officer of the Chelsea Military Asylum. When these officers prepared their report, they did not content themselves with pointing out the evils, but suggested the remedies, which Lord Grey takes to himself the credit, and more justly, of having carried out. The very measure for which our contemporary gives so much credit to Lord Marshall for having adopted in 1844, was strongly recommended to the military authorities in 1826 by the gentlemen above named. But to effect reforms in the Army is a more difficult matter than our contemporary seems to think it. The plan then proposed of halting the troops in the Elba Mountains interfered with the Royal Engineers' Department, and was, for the time at least, overruled. The introduction of fresh meat rations in lieu of salt was resisted by the Commissariat as trenching upon their province; and heeded as they were by the Treasury—of which the Commissariat was then a branch, it required all Lord Grey's characteristic energy and determination to effect the desired reform. In like manner, when improvements in the barracks and hospital accommodation have been proposed by the Medical officers, difficulties have been constantly raised on the score of expense; and when they have been sanctioned, the Royal Engineers and the Barrack Department have adhered to certain red-tape rules, held down by themselves, despite the remonstrances of Medical Officers of all ranks. Again, when troops take the field, the Medical officers are never considered as to the suitable nature of the management ground; and we are aware of an instance in which the senior Medical officer was threatened to be put under arrest for having ventured to remonstrate with his commanding officer, when an unhealthy spot had been selected for their purposes.

For the consequences arising from this state of things it is the military and financial authorities who are responsible. The Army Medical Officers have done all in their power, from

the Director-General down to the Assistant-Surgeon, to have the evils remedied, and the condition of the soldier improved. But so long as they are refused the power to carry out their suggestions, and so long as their suggestions are unheeded by those who have the power, so long must the officers of the Department be constrained from changes of the various nature now brought against them. If our contemporary will take the trouble to examine the question carefully, he will find that there has been no sanitary reformer who has worked harder than the late Dr. Marshall did to improve the condition of the soldier; and that foremost among the works on practical hygiene, whether British or Foreign, must be ranked those admirable Reports on the Health of the Army originally suggested by him, and prepared by him and his two colleagues, Colonel Talbot and Dr. Ballou. Lord Palmerston has already introduced some important modifications into the Medical Department, but much yet remains to be done in the way of granting it an efficient control in questions affecting the health of the soldier. His Lordship has not yet stated to what extent he means to act upon the recommendations of Mr. Staffell's Committee, but we trust he will never forget that prevention is better than cure, and that it is less expensive to keep a soldier efficient than to provide for and replace him when disabled. There is no more certain mode of doing this than by improving the condition and status of the Medical Officer, and giving him a practical voice and efficient control in all sanitary questions affecting the Army.

THE RELATIONS OF FOOD AND DISEASE.

In considering the subject of diseased animal food in our last number, we referred incidentally to the question, Whether diseased structures can or do convey disease to the human body receiving them as sustenance?

This question is now surrounded with difficulties. It must be met fairly and frankly, it must be answered scientifically. It must be answered positively.

Looking at the subject in its simple form, the evidence, I repeat, would be strongly in favour of the suspicion that, by the medium of diseased milk as food, almost any poison may be transmitted from the body of one animal into that of another. Through her milk the syphilitic wet-sore transmits in some cases the disease to the suckling child. Through the milk secretion every suitable vegetable and mineral poison is easily transmissible. We have ourselves thus detected the transmission of ordinary mercury, and iodine, from parent to offspring; and we think it possible that in one case of cholera it is an infant at the breast, the disease was directly conveyed by the same channel from the suffering mother. If there be, then, any truth in these propositions, it should obtain that the milk of diseased cows, taken as it often is uncooked, must needs be a prolific source of disease in the human race.

But is it so in fact? Can fifty, say, twenty well-marked instances be adduced indicating that any disease has originated in the child, the man, or the woman, from the use of diseased milk? In what way does diseased milk act? Grant that a cow has cow-pox, is there proof that the drinking of such cow's milk will propagate to the drinker cow-pox, or small-pox, or any disease? Grant that a cow has typhus, will her milk convey typhus, or a modified form of it, to the human subject?

From field fresh to solid.—Can fifty, say, twenty carefully observed instances be enumerated, in which from the eating of diseased flesh, well-marked signs of any special and communicable disease has originated? We have some positive facts about the mange-poxes, but these, comparatively speaking, have sprung up accidentally; the symptoms have been such as to belate the cause from any general and classified

(1) British and Foreign Review-Chirurgical Review, Dec. 1884, p. 295.

(2) Report of Commission on Army Medical Department.

disease, and the poison itself is possibly generated in the process of decomposition in the dead substance.

Allowing for a moment that the flesh of diseased animals converted into the human body has the effect of spreading as a poison, what are the modifications of symptoms which it induces, as compared with the original symptoms in the diseased animal? What positive relations do the epidemics in the lower animals bear to the epidemics in man? What modifications in type are produced in the passage of the epidemic disorder from an individual of one class to an animal of another class? Some flickering light on this point, in reference to small-pox and the cow, and cow-pox and man, is all that relieves the darkness of science here at the present time.

Another point. We will not dream of going back to the efficient causes of epidemics; but we would propose this first and broad inquiry. Is the propagation of epidemic diseases limited to the animal kingdom? Are all the germs of epidemics formed and circulated only in the animal domain? Or does the epidemic phenomenon take a wider root; can it be traced back to the vegetable world? Again, can an epidemic arise spontaneously, as from causes external, &c. independently altogether of the idea of simple propagation of animal or vegetable transmission? Can variations of heat, of electricity, of humidity, excite any special disease which, once communicated to man or animal, shall be communicable to other men and animals?

In the absence of labors bearing on these all-important and primary inquiries, the so-called science of epidemiology is no science at all, but a perplexing, chaotic mass of confusion.

Returning to the question of diseased food, and assuming for the moment that contagious diseases are transmitted to man through this medium, what we would inquire, are the circumstances which favour, what are those which hinder, such transmission? Will a portion of the worst form of diseased food, after being subjected through its whole structure to the boiling temperature, by any possibility convey disease? Judging from experiments on the effects of heat upon small-pox virus, the answer, *a priori*, would be against such a proposition; but "the proof of the 'poison' lies in the eating," and the proof has not been given.

Assuming, further, that diseased animal food may, after exposure to heat, retain its elements of disease, the effect of digestion upon it must not escape attention. Foods poisons received into the body through a wound soon dies its work, but received into the stomach is simply innocuous. A piglet from a weekly charge with an infinitesimal dose of some unknown agent in the dead human body, is often a deadly, and is always a diseased poison. Yet sometimes that on their mothers, and are none the more susceptible for the reason, or, at all events, are not poisoned. It would be rather difficult to suppose, after the experiments of Magendie, that putrid venous could be thrown into the body by inoculation without producing poisonous effects; yet your high venous cater takes with impunity an animal diet which, in the most liberal sense, may be said to have been dead and alive again. We are informed by Professor Spencer, that he has established the virus of glanders in animals, by the mouth, without any harm whatever resulting. But a pint of this virus injected into the flesh is sufficient to propagate the disease in all its virulence.

The contemplation of such subjects as these we have thus briefly sketched out suggests, doubtless, various perplexities, and the idea of an amount of work which must be anything but pleasant to the superficial and idle. Still, from what is known, little can be said at present regarding any of the difficulties referred to. Small-pox, in a modified form, may be transmitted to the human subject from the cow by inoculation; by the same process, glanders may be transmitted from

the horse, and rabies from the dog. These are, perhaps, the only poisons here we possess about transmission. Next, in their approach to a positive position, are the new and important views on the transmission of prairie. There are so many men who have agreed in observation, or in argument, on this point, and the evidence brought forward by them is so irresistible, that it must be well nigh conceded as a fact in science, that the viruses are not only supported in a great faculty, but have also their dissolves of race kept up by their constant migrations from one faculty animal to another.

We have evidence also that the cholera poison, whatever it may be in nature, is a thing; we know somewhat how it moves, we conceive that it makes water its chief vehicle, that it passes off in the excretions of the cholera patient, and that its pathological, or better, perhaps, its physiological effects, are analogous to those produced by some of our more active narcotic agents.

Hitherto we have gone, and so farther. Beyond is the open sea and land unknown. Whenever, sailing forth towards this unknown, shall, by design or accident, make new land, need not fear the his fate in history; a new world would not be a greater discovery, nor the fame of Columbus remain without its rival. Neither need we cease to live in hope for true discoveries in this direction. We are making immense strides in physiological research, and if in these the epidemiologist shall pertinaciously follow, his success is secure. The question of the transmission of disease by diseased food is the topic of the day, and affords a grand opening for such investigations as have been glanced at above.

THE WEEK.

The Medical evidence at the trial of Thomas Nation for murder last week at Taunton must not be allowed to pass without criticism. The Medical points of the case were as follows:—A man had been murdered by having his throat cut. The prisoner was suspected, and in his pocket was a knife all over blood. There was blood upon his trousers' pocket and also on his hands. He said the blood upon his knife was attributable to his having cut some raw beef with it. Here is Mr. Serpente's evidence, as reported in the Times:—"Mr. Serpente stated that on the 11th of December he received a knife, made of steel, black wood, silver, and one legging. There was a smear of blood inside the flap of the handle and many spots on the outside. There was a blood spot on the sleeve, two on the inside of the sleeve. On the shirt, three marks on the cuff of the right sleeve (inside); on the left cuff many blood marks. On the waistcoat, blood in the right-hand pocket, a smear, and two spots. Afterwards received another legging, on which was a small smear of blood. Minute portions of blood were taken from the knife for purposes of examination. The blood had been immersed in living blood up to the hilt. The blood had not coagulated until it was on the knife. Blood from a human body would coagulate in about twelve minutes—could not say positively from what animal the blood had come. The globules were the size of those of his own blood and of other men. Had compared these with the blood of the ox, the sheep, and the pig, and these globules were larger than those of either of the three animals. The difference in size was considerable. It was a received axiom in science. They were 1.200000 of an inch; of the ox, 1.300000; of the sheep, 1.300000; of the pig, 1.400000. The relative sizes would be as 20 to 24 of the ox, 22 to 24 of the sheep, and 24 to 24 of the pig. The inference was that it was not the blood of either of these three animals. They approximated nearly to the human blood. The blood of a man cooled by drink would make no difference. He used strong microscopic power; the proportion would be an inch to thirty feet. He

peated the experiments many times with the same results. There were on the knife certain scales such as are found in the mucous membrane of the throat. They are a kind of empty cells. They were much larger than the globules of the blood, and were perfectly distinguishable. They were totally different to those of an animal. From the appearances, the knife had passed through the mucous membrane which forms the lining of the throat. There were a few fibres in the red mesh of the knife. They were fibres of cotton, and were as if the knife had passed through cotton twice. They were plainly visible with the microscope." On the part of Watson it was urged by his counsel, and proved in evidence, that on the day of the murder the prisoner had had three teeth drawn, that he refused to wash out his mouth, and that he left the shop of the dentist with his mouth full of blood. In this way the blood on the trousers was accounted for, and that on the knife by the assertion that it was not human blood. The Lord Chief Justice said, "It had been proved that on that day the prisoner had three teeth drawn. It would be dangerous, therefore, to attach any great importance to the fact of some few minute spots of blood being found on his clothes. But then came the knife. The question was, Was there blood found on the knife? Was it human blood? They would take the knife and look at it. Mr. Harpagth had explained to them his view of it. He said it could not be the blood of an animal, as described by the prisoner. It excited surprise when they heard that he had seen the man run. Well, that might be so. But Mr. Harpagth took upon himself to say it was not the blood of a dead animal. It was living blood, and it was human blood, and he had shown them the marvellous powers of the modern microscope. At the same time, admitting the great advantages of science, they were coming to great mistakes indeed when they speculated upon things almost beyond perception, and he would advise them not to consider it as a scientific speculation alone." Now we feel bound to say that the Chief Justice did right in condemning the Jury against the acceptance of Mr. Harpagth's pseudo-scientific evidence. It is really deplorable that such unaided, imperfect testimony should be given in a case where human life is at stake. The prisoner was condemned to death, and as the evidence was wholly circumstantial, the Jury appear to have been misled, or rather misled, by inaccurate scientific evidence. It is very questionable if it can be determined whether a knife has been dipped in blood in a living condition, or dipped in after the blood has coagulated, or has been stirred to prevent coagulation. We do not believe it possible to tell when, where, or under what circumstances blood has coagulated, if it be tried on a knife when presented for examination. The epithelial scales might be seen to with some certainty; but we do not believe it possible to distinguish the blood of man microscopically from that of many other animals of his class. On the whole, we took upon Mr. Harpagth's evidence in this case as most distinguished slipshod, and rather what we might expect to hear at some popular lecture, where the "wonders of the microscope" form the theme of declamation to a gaping audience, than the solemn conversation on such a case of science in a court of justice.

Mr. Griffin continues to carry on his indefatigable crusade against the Weymouth Board of Guardians with great vigour and with partial success. He continues to expose the mismanagement and injustice of the Local Board, and to report faithfully its proceedings to the Poor-law Board, to the *Frederician*, and the public. The Weymouth *Guardian*, irritated beyond measure at his indefatigable perseverance, and feeling their inability to meet him with fair arguments, are of course, as is usual among similar bodies, anxious to denounce him severely

from his office; the Poor-law Board, on the other hand, though evidently disliking Mr. Griffin, and willing to allow him to be denuded if it could be accomplished privately, is quite unable to devise any pretext for requiring him to resign, although it would, doubtless, be annoyed if Mr. Griffin could be ousted or lashed into silence. Mr. Griffin has clearly the best of the argument; and his vigorous philippic, his unanswerable statistics, and his straightforward appeal, must be like gall and wormwood to the impetuous placidist at Weymouth, who sometimes pretends to take his letters "into consideration;" sometimes carelessly begs for delay; and sometimes (and this is the most common course) takes no notice of his communications at all. Mr. Griffin has just addressed to the Poor-law Board another letter, which, for vigour of style and clearness of argument, exceeds all his other productions. In this communication he recapitulates with great force the circumstances in relation to his duties at Weymouth, which are already known; so, for instance, the inequality of his payment compared with his duties and compared with the emoluments of the other district magistrates; he reminds the Poor-law Board that he possesses the power of controlling the proceedings of the Local Boards, and strongly recommends the exercise of that power in the present instance; he complains, not unreasonably, that his letters, which it was promised should receive early attention, have not yet been answered after the lapse of nearly a year; he recalls to recollection the large meeting of the parishes in last May, and the more recent demonstration on the part of the Medical Students in London and in Edinburgh, and he reminds the Board that petitions from those bodies have been so far to be presented to Parliament; he recalls the fact that 100 medical officers of various ranks had their posts in 1850 and 1851 in 1856, and he asks why the medical officers of the army and navy and those connected with ports, do not throw up their appointments in like manner, and why the clerks of various courts retain their positions so much longer than the Union Surgeons? He also quotes the evidence given before the House of Commons, showing that 75 per cent. of all the papers are made so by mistake, and hence he points out the importance of paying the medical officers sufficiently well to enable them to do their duty conscientiously to the suffering poor. "Can this be done," writes Mr. Griffin, "by the £s. 14d. per case, or even at the average of £s. 10d.?" Would any member of your Honourable Board like to be attended during a month's illness for such a sum? To multiply your medical officers is like economy; humanity demands that the evils of the present system should be speedily redressed." We wait with considerable anxiety to learn what answer will be returned by the circumlocutory officials of Quayle House to this admirable and expostory communication.

The financial report of the British Medical Association for the past year presented by the Committee of Council shows not only that the whole income of the Association is absorbed by the expenses of its Journal, but that the income is inadequate to meet this expenditure. Notwithstanding a special call of ten shillings upon each member last year, the Association was in debt at the commencement of 1887 to the amount of £1000 11s. 5d. To meet these liabilities, the names of subscribers and names due for advertisements are stored by the Committee as follows:—

Subscriptions, about	2500	0	0
Advertisements, about	150	0	0

Total, 2650 0 0

So that, if every shilling of these subscriptions and debts be collected, the Association is still behind-hand. Out of

1866-72. It appeared in 1866, it appears that the whole was on the General account, with the exception of £600 Balance Committee, £12 £000 for special meeting, and £21 10. 10. for sundries, — or £21 10. 10. in all; while the liabilities on the General account on December 31, 1868, were £271 15s. 10d.; so that the expense of the Journal for the year has been £200 10. 10., while the actual receipts for subscriptions due in 1868 were only £1000 10. 10. The British Medical Association is clearly, therefore, an Association whose income is almost entirely devoted to the support of a weekly Medical Journal.

We have received several communications on the subject of the late trial of Alfred Warburton by the manufacturer of a pregnant woman at Loozestadt in August last; and, although we have already adverted to the monstrous perversion of justice which has characterized this extraordinary case, yet we cannot refrain from reiterating our expressions of indignation at the shameful manner in which the accused for the printer thought proper to vilify the character and to impugn the motives of the highly-responsible members of our Profession who were called for the prosecution. Every successful event has its private as well as its public history, and especially this private history is more accurate and trustworthy than that which gains general acceptance. This remark is especially true of this case. The account of the affair derived from the record of the trial, would, without further explanation of the circumstances, make it appear that Mathison was, in some respects, as stated by the Judge, an ill-used man. The witness, as it would, no doubt convey the impression that this man really possesses a New York medical diploma; that he is a successful and respected, though as far as England is concerned, an unqualified practitioner; that he has consequently become the object of envy and persecution among the Saxon residents in Loozestadt; that the matter for which he was brought to trial was only one of those unfortunate accidents to which all men are liable, and that the whole course of the prosecution was conducted in an unfair manner, and by some veritable combination. On the contrary, had the medical men of Loozestadt, who were spoken of by the Chief Baron as the instigators and conductors of this prosecution, really been so, it might have been proved from sources of information open to them, but unknown to the witnesses employed, that nearly every supposed fact or argument upon which the Judge so confidently directed the jury, was also a fabrication or a baseless plea of legal imposture. Thus it might have been and can be now shown by the clearest proof, that this pretender to medical equality can have no qualification, either British or foreign. He asserts that he possesses a diploma from some college in New York. He admitted the imposture, in answer to a question put by one of the jury, that he had never been out of England, but that he was examined in London by some individual who gave him a diploma, and that his name appears on the British list of qualified practitioners. It might have been shown by the evidence of the chemist, who has since the trial issued an explanatory declaration, that it was at the husband's request he went for the Coroner, in order, as he expressed it, that his wife's friends might be satisfied. It can also be proved by the same declaration, that instead of being unfairly treated by the Coroner's jury, and excluded from the post-mortem examination, the coroner's jury was actually accompanied to the door of his house, and sent in with a special message, explaining what was about to take place, so as to give him the opportunity of either witnessing the operation or sending a deputy. It can also be shown by a declaration, unanimously signed by the jury, that from a sense of justice they deliberately selected Dr. With, of whose impartiality

they had long experience, to be present at the examination on Mathison's behalf; and that this choice of a representative was made spontaneously, without any reference to the other Medical men, and for the sole purpose of securing ample protection to an accused man. We may close this notice with a brief abstract of the Medical facts of the case. The instruments exhibited as having been used in the case were—a pair of straight, wide-shafted forceps, usually known as Haigbee's, and a common professional table-spoon. These forceps were introduced to manipulate with the spine of more than two hours, without any other result than the infliction of local injury; and the delivery of the foetus took place coincidentally with the loosening by means of the spoon. The larger wound, extending from the back part of the perineum along the right labium and upwards through the vagina, was fully six inches in length; the smaller one, on the left side, corresponded with the size and shape of the handle of the spoon. All the pelvic structures were much ecchymosed, and showed marks of great violence. The only reasonable opinion as to operative proceedings was that, that one blade of the forceps must have been thrust into the vaginal wound, and the other passed on to the depressed sac and its contents. In this way it may be understood how so much mangled tissue was used, and so much injury done. The whole facts of this case are before the Society of Apis-theurists, and it remains to be seen whether this body will perform the duty entrusted to them for the protection of the public.

At last, after nine months' delay, the Government has done something to prevent the importation of foreign cattle. An Order in Council, dated the 2nd of April, provides that "no cattle, and no horses, hinds, or swine or swine hinds, or skins of cattle, shall be imported or introduced into the United Kingdom, which shall come from, or shall have been at any place within those territories of the Emperor of Russia, or of the King of Persia, or of the Grand Duke of Mecklenburg-Schwerin, which respectively are in or border upon the Gulf of Finland, or any other part of the Baltic Sea between the Gulf of Finland and the territories of the free city of Lubeck, or which shall come from or shall have been at any place within the territories of the free city of Lubeck." This Order is just such a blow as might be expected from a Government acting under the advice of the Board of Health, with an Ordnance Clerk as its President, and a Canadian for its Secretary, and with undoubted powers divided with the Board of Trade and the Board of Customs. Nine-tenths of the cattle imported into this country come from Hanburg, and the Order does not prevent importation from Hanburg, though it is known that a fatal epidemic is prevailing in the low lands about that city. Importation from Hanburg, our chief source of foreign supply, is now going on, while it is stopped from the shores of the Baltic, from whence the number of cattle imported is comparatively trifling. The Agricultural Society and Highland Society have taken an unpropitious course, by appointing Professor Semmels, of the Royal Veterinary College, to go to the Continent immediately to investigate the subject at the spots where the disease prevails. It would be impossible to find a more competent man for the work.

The Government has the choice of two modes of impeding the introduction of the cattle plague from the Continent into this country—the one by forbidding importation altogether, the other by establishing quarantine regulations at our seaports. The former plan has been adopted, but to a very limited extent. If it were carried out to the degree in which

it could alone be of any avail, it would raise the price of meat in this country in a very appreciable degree. In 1885, 55,105 head of cattle were imported, 148,850 sheep, and 1923 pigs. Such a supply as this could not be cut off without a material advance in the market price of meat, as it is calculated that not more than two million head of cattle are annually slaughtered for consumption in Great Britain and Ireland. Absolute prohibition of importation, therefore, might be expected to raise the price of meat from 15 to 30 per cent. Even this would be far better than running any risk of inflicting the slight or else serious head of cattle fevers in those islands with a deadly disease. Then comes the question, Can we permit importation with safety? If we are to limit to simple inspection at the ports, the only answer would be, No. No inspection, however strict or vigilant, can detect disease in its latent form; and an animal might arrive in this state, be passed as healthy, and the disease not show itself until some days afterwards. It is clear, therefore, that the only plan left is a system of quarantine. Ships and pigs should be quarantined on the Thames, at Lowestoft, and Hull, the three principal places of import, in which cattle arriving from the Continent should be kept for at least fourteen days before they are admitted into contact with other cattle. There would be many difficulties of detail in carrying out this plan, but they might all be met; and there is in the question of expense, but this is a very minor consideration in comparison either with the loss which must ensue if the various islands are struck and herds, or with the increased price of food consequent upon a total stop to the Continental supply in our meat-markets.

The extraordinary general meeting of the Governors of the Royal Medical Bursar's College, held at the Freemasons' Tavern, in consequence of the increased annual charge for maintenance, voted in a vote of confidence in the Council, and an expression of opinion that the annual amount of £28 charged for each student is just and reasonable. We think it a matter of regret that the resolutions were not put to the meeting, as the disposal of them by the amendment will not be looked upon as a settlement of the question. Those who were most in favour of the reduced payment were quite ready to join in a vote of confidence in the Council, while regarding them in other a *hij-vivo*. There can be no doubt, from the feeling of the meeting, that the resolutions it was called to consider would have been supported by a large majority, and the minority must have accepted the decision, while the course adopted will probably lead to renewed agitation.

The legend upon the body of the woman supposed to have been poisoned by arsenic and antimony at Chorley has just terminated, and a verdict of Wilful Murder has been returned against the husband of the deceased. We alluded to this case last week, and described its principal features. The evidence adduced at the inquest only amplifies and confirms the statements which we then made. It was shown that the deceased and her husband lived happily together; and it would appear that the latter was an intemperate person. He was seized, and in due course, money from various local clubs, on account of his wife's death. The medical evidence was remarkably clear as to the fact of poisoning; the symptoms were precisely those which might be expected in a person who had swallowed antimony and arsenic; the body, when examined some time after death, was in an extraordinary state of preservation, owing, no doubt, to the antiseptic agency of arsenic upon the tissues. The portions of the viscera subjected to chemical analysis gave unmistakable evidence of the existence both of arsenic and anti-

mony; and Mr. H. H. Watson, of Bolton, describes great credit for the careful manner in which he appears to have conducted the chemical investigation. We may state briefly that the arsenic was deposited upon copper by Reichen's process, and the metal thus developed was treated and volatilized, and subsequently converted into arsenious acid; this latter was then dissolved and acted upon by ammoniacal silver, ammoniacal sulphate of copper, and hydrochloric acid, which gave respectively the characteristic yellow, green, and brown-yellow precipitates. The antimony, which was also deposited upon the copper, was boiled in a solution of permanganate of potash, with a little excess of potash, and then after being acidified with hydrochloric acid, an orange-red precipitate was produced by hydrochloric acid. The latter precipitate was collected and dissolved by heating it in strong hydrochloric acid, and on adding water to the solution, a white precipitate of metastibic acid of antimony was obtained, which was again dissolved by the addition of tartaric acid. This series of tests proves beyond question the presence of arsenic and antimony.

REVIEWS.

Torquay in its Medical Aspect, as a Resort for Pulmonary Invalids. By C. HANCOCK HALL, M.D., Physician to the Torquay Hospital for Consumption. Pp. 165. London, 1887.

The author of the little book before us has acted with much care and watchfulness the effects of Torquay upon the consumptive invalid. He states, that on first coming to Torquay the patients find the bowels acting with regularity; but that frequently, in a week or two, they become sluggish, the appetite flags, and the invalid feels a certain amount of malaise, and says he is ill again. Dr. Hall remarks that—

"This little ill-humour is a sign that the climate is exercising a sedative influence upon his system, which is very salutary in his lungs, although leading to a large temporary indigestion in a new form."

Dr. Hall then proceeds to consider what objections are, and what are not likely to be brought by a residence at Torquay—

"An infinite invalid, meaning by this a person affected with the pure epidemic form, is either exactly suited to Torquay or not at all. The vital is the only test. Another form of so-called asthma, which depends upon an inflammatory state of the lungs, in which the difficulty of breathing to some extent is permanent, is relieved by Torquay in proportion to the relief afforded by the climate to the bronchial irritation, which to a greater or less extent habitually accompanies this disease. . . . Pigeon's disease (Grippe) is made worse by residence in most parts of Torquay."

Chapter the third is devoted to a consideration of some of the local peculiarities relating to the climate of Torquay, which seems to have "not one climate only, but several climates," all pertaining, however, of the general characteristics of being soothing to the respiratory organs, but differing very considerably in their effects upon the nervous, digestive, and muscular systems. Dr. Hall informs us that,—

"As far as any general direction can be given, it is desirable to place a febrile, consumptive man close to the sea, in some one of the most defended situations, provided the sea be unobscured, is not known, notwithstanding to disagree with the patient. When freshness is less marked, and there is more danger to be apprehended from striking of the power of life, a situation part way up the hills will better."

After a residence at the sea-level for some time, relieved by dips up to even the highest houses on the southern face of the hills, often proves more advantageous than a longer continuance in the part which was originally most useful."

It must excite the envy of the inhabitants of this metropolis, to read the story of the large manufacturing towns, to read that there are no head-fogs at Torquay; and that they there consider November to be one of the most delightful months in the year; days described in the paper elsewhere as dark, dense, and foggy, are bright and sunny, so, at least, they say

of malarial" in this favoured locality. Dr. Hall, however, is of opinion that, as a general rule, a consumptive would last longer than remain the whole year at Torquay; he it appears that after spending the winter at this place "the digestive organs will gradually show signs of debilitated energy," for which a change to an inland situation is the natural and appropriate remedy.

The hints on the pathology of phthisis, in the fourth chapter, invite the careful consideration of the Professor. Recent researches have led to the strengthening of the conviction, that the affection, at its onset, may either be, for the most part, local, or general; or, as our author expresses it, that "either the local state, or the constitutional state, may precede and occasion the other. . . . The poverty of the blood may impair the healthy nutrition of the lung; . . . or, the impaired nutrition of the lung may be the first thing that occasions a deteriorated condition of the blood."—P. 16.

This work, from the pen of so accomplished a physician as Dr. Nathaniel Hall, is well worth the attentive perusal of those who, having patients labouring under pulmonary disease, think of prescribing a residence during the winter at Torquay.

Report of the Council of the British Meteorological Society, read at the 4th Annual General Meeting. See, pp. 28.

Two members of the British Meteorological Society have just been furnished with the above report; it contains much that is interesting, and from it we learn that this Society has succeeded in drawing the attention of government to their efforts, and that the Board of Health has deemed it necessary to supply its medical officers with instruments for making meteorological observations, nearly all of which have been supplied through Mr. Washburn. We shall look forward with pleasure to the results of the joint labours of these gentlemen, and we doubt not, when they are analysed and then collated, that many important facts will be brought to light.

The point of the greatest practical interest to the physician is the one by Dr. Moffat, whose meteorological labours are so well known to the profession. The subject of this contribution is the effect on the human system of certain conditions of the atmosphere, especially as regards the existence of malarial fevers in the tropics. Among our patients we often hear their descriptions of the effect of a dewy or a light atmosphere, and we know that, generally speaking, our feelings in this respect do not always lead us to judge correctly; inasmuch as the air which is really the lightest often impresses us with a sense of weight, and that which causes the mercury in the barometer to rise or sink and spring, giving us a notion of the lightness of the air, when really it is approaching its maximum of density. Now it is in the real effect of this difference in the weight of the atmosphere upon the system that Dr. Moffat has discovered his hypothesis, which has been verified on the last five years at Kew Gardens.

Having ascertained that a certain relation obtained between several conditions of the air and the maximum amount of disease and deaths, Dr. Moffat sought for a solution of this remarkable fact by examining their effect upon a healthy subject. He therefore selected one of a bilious temperament, whose occupations kept his mind and body well employed. He was exposed during all weathers for six or seven hours a day. In this subject Dr. Moffat searched minutely the effects of weather upon the amount of acid secreted by the kidneys. The results were remarkable. What led to this investigation were the facts which have already been before the scientific world, and which we will briefly give. Dr. Moffat finds that the maximum of disease occurs when the readings of the barometer and thermometer descend, and when the wind blows from the points N.E. and N.W. by way of South, that is, when some is most prevalent in the air. The maximum of death occurs with similar readings of the barometer, but with the direction of the wind from the points between N.W. and N.E. by way of North, or when some is without disease present. From this it would appear that disease requires for their development a light atmosphere charged with some. Unfinished processes may act by itself or in concert with some of humors, both good and bad, or in concert with some of putrid miasmata, when it brings about a certain amount of development in the system. Now, Dr. Moffat proves very satisfactorily that the very same atmospheric conditions which coincide with the maximum of disease, induce the system to throw off by the kidneys the maximum amount

of acid, which, after giving us a detail of his experiments, he happily illustrates in the following manner:—

"Taking the whole population of London at two millions, and assuming that all the acids secreted by their kidneys are carried into the Thames, that river must hold in solution, or have suspended in its waters, a mean daily supply of 181 tons of solid uricary products. The quantity, however, varies with the weather; for, according to the above results, the Thames will contain 10 tons more on days when the readings of the barometer and thermometer are decreasing than when they are increasing; a daily mean of 1 ton more when the humidity of the air is decreasing than when it is increasing; 7 tons more on some days than when there is no rain; about 19 tons more with south than with north winds, and a daily mean of 74 tons more during calm and gentle variable breezes than when there is a current of air. Let spectators bear in mind, that from the action of the kidneys alone of a London population 60,000 tons of uric acid gases are annually swept into the Thames."—P. 27. Dr. Moffat does not state what the increased reading of the barometer was owing to; whether from the density of the air being increased in consequence of an unequal amount of the atmosphere being accumulated elsewhere,—which decrease indicates storm,—or whether they depend upon thermal dilations and consequent lightening of the air by the addition of moisture. He, however, says that the amount of acids is greater with dry than with wet air.

The next paper is upon the relative value of the measurements of Schickelin and Moffat by Dr. Basire, from which it appears that Dr. Moffat's is the most accurate. An important addition is made in it to our knowledge of some of the conditions, dependent on the same facts made in Thailand was used during the investigation.

We have to congratulate the members on the beautiful illustration of snow crystals lately published by the Society, and the handsome banquet lately received from the courtesy of Henry Lawson, Esq., one of their vice-presidents, of whom an interesting account is included in the Transactions before us. Among other papers it contains Mr. Fogarty and Kemp's Memorial Museum Thermometer; and another on Weather in connection with the Wheat Crop, by Mr. F. W. Duggan.

PROGRESS OF MEDICAL SCIENCE.

Selections from Foreign Journals.

CASE OF COMPLETE DISLOCATION OF THE CERVICAL VERTEBRÆ.

By J. ZIEGLER.

This case was occurred in the person of a labouring man, 20 years of age, having an unusually long neck, who, brought home in a state of intoxication, was supposed at first to be suffering only from a stiff neck. The man, however, looked more serious, the patient was examined on the third day. The head was found to be drawn back, and prominently fixed. The neck and anterior part of the neck, bulging forwards, was the strongly convex, rendering the larynx very prominent. The integuments here were exceedingly tense and intolerant of pressure. The posterior portion of the neck contained a sharp, sudden angle at the junction of the fifth and sixth cervical vertebra, around which the integuments lay to thick. It was difficult to reach the bottom of this angle, even with strong pressure of the fingers, and, of course, the regular line formed by the projecting spinous processes was already lost. As this point is a well-known point, he could only perceive small quantities of fluid, and that with difficulty. Some extravasation of sanguis was present, which seemed to be due rather to the tense condition of the soft parts of the neck and not to the pressure on the spinal cord, as no paralysis whatever was present on the spinal cord, as no limbs either were stiff and numb. The entire state manifestly on both sides were completely relaxed.—The case concludes itself in the death of the man, in all that the oblique processes of both sides were completely dislocated. The marked rigidity of the head seemed to preclude the probability of fracture through the cervical vertebra, and although the cartilages might be separated, certainly, when the body not pressing backward sufficiently to produce pressure on the cord.—It was hoped that the posterior vertebral ligament remained unruptured.

Assisted by numerous assistants, who all agreed as to the

nature of the accident, Dr. Agnew proceeded next day to the reduction. "The patient was placed upon a strong table, in a recumbent position, with a pillow resting under his shoulders, the head being supported by the hands during the administration of chloroform. Certain motions being made by two lotted sheets placed obliquely across the shoulders and properly held, the head was grasped by one hand placed under the chin, the other over the occiput, and by steadily and slowly drawing the head directly backwards, and then upwards, an attempt was made at reduction, but failed the want of sufficient power. Dr. Lapworth was then requested to place his hands immediately over my eyes in the same position as before, and steady traction was again made in the same direction. Our united strength was required in drawing the head backwards and upwards, to discharge the superior oblique processes from their abnormal position. When this was felt to be yielding by Dr. Collier, (who keeps my hand constantly on the seat of dislocation) Dr. Foster was directed to place his hands under my eyes, still in position, and assist in bringing the head forward, at the same time the sheet was depressed towards the table. The bones were distinctly felt to slip into their places; the line of the spine was instantly restored, the head and neck assuming their natural position and aspect." All the patient would recollect respecting his accident was, that while going up a somewhat steep ascent he was struck from behind, over the lower portion of the neck, and fell forward against some object. The authorities in a case given in North's *Chloroform* from Withers, as having determined his diagnosis and treatment of the present case.—*New York Journal*, Feb. 17, 1914.

STATISTICS OF THE MASSACHUSETTS HOSPITAL.

By Dr. KNOXWOOD.

Review the preparation of an index of the Hospital records of the Massachusetts General Hospital, running over a period of twenty-five years (1821 to 1906), Dr. Knoxwood has secured some statistical facts which he deems worthy of record.

Operations of the year 1906, of which 4 were fatal, but in 2 death was independent of the operation; of the previous 1905 cases and one death; of the 1904 cases and 12 deaths, caused either by the severity of the accident, fracture of the skull, or other accompanying injury; of the thirteenth year 3 cases and one death; of the third 21 cases and 10 deaths.

Age of Patients.—The average life was 34 in 4 cases, with 1 death in two days. The smallest life was 10 in 1 patient, who died in a week.

Gender of the lower 35 cases, 4 only occurring to females. In most of the cases the habit of pipe-smoking was acknowledged. Gender of the upper 10 cases (fatal always in the case of tobacco), 5 being females.

Spine.—9 cases, all women, whose ages varied from 31 to 45. Fracture in 6.—12 cases, of which only 10, or 1 in 124 were females. This disproportion cannot be accounted for by the exposure of women to so high such injuries in the Hospital, no more such is observed in the case of hemorrhoids and other diseases of the rectum.

Papae Hemorrhoids.—11 cases, 5 occurring to males. Nine 45—50 cases, of which 23 to females. Epileptic Disease.—13 cases, of which 12 females. Age.—8 years, of which 7 females.

Division of Strain.—For absolute aneurysm 2 cases, fatal in 2 cases; 1 relieved, and 1 not so; inferior maxillary, 1 case cured; inferior dental, 1 case cured; infraorbital, 2 cases, 2 cured, and 1 death relieved; and other, 1 case relieved.

Recovery of Oculopople.—21 cases, 5 in females. Success and Failure.—5 cases, 7 of which proved fatal in less than 10 days.

Fortitude.—10 cases, 5 males. Duration of Operation.—5 cases; operation in 5 cases, 1 being cured and 4 relieved.

Introduction of Air into the Vein.—3 cases; in one air entered while removing a tumor of the neck, and necessary both places; and in the other (2), it entered the axillary vein.

Salivary Gland of the Throat.—20 cases, 4 being females. Only 2 proved fatal. It is seen that the salivary gland is the object, as the rest is usually made too high up and too much in front. By the use then the skin is cut the pain prevents the completion of the act, the trachea being cut. Not the great vessels escaping.—*British Journal*, vol. 19, p. 342.

FOREIGN CORRESPONDENCE

FRANCE.

[From our Paris Correspondent.]

Paris, March 20, 1907.

The Ministry of War publishes in France every year two volumes of Medical Transactions, hardly known in scientific literature (1). The rightmost volume of the second series of that periodical publication has just appeared. It contains several essays upon the diseases of the army, a subject (not new of great importance)—1. The Medical history of the last campaigns of Boulogne. 2. A notice of the epidemic typhus at the hospital of the Lazarets of Marseille. 3. A letter of Dr. Baudouin upon the typhus of the Crimea. 4. Some remarks upon the treatment of typhus fever at Constantinople. 5. An account of the cholera of Yuma. 6. Some remarks upon the use of the vapor-bath in the stage of collapse of cholera. 7. A notice of the cholera in the garrison of Nancy in 1841. 8. A report upon the use of blood in the army. 9. An unpublished report of the celebrated Fournier upon the leucal of the troops.

I cannot dwell a sufficient time upon each of these essays to give a complete account of them. I must say that all the Medical men are delighted to possess data and good pathological knowledge. You will see that a Medical history of the army of Boulogne should give sufficient and reliable information upon the diseases which prevailed among the troops—cholera, erysipelas, dysentery. The writer, M. J. Prieur, the head Physician of the Army, does not seem to undervalue the value of such remarks. He relates at length all the incidents of the Emperor's journey to the camp and to Boulogne, the various attacks of bands of the countryside, the dinner parties at the Imperial table. As for the other pathological observations, I can but note; or, at least, they are so important that they can be of an scientific value. Positive data as to the origin of the disease of troops in movements are still completely wanting. No such information is to be had, unfortunately. In the history of the greatest campaigns that has been made in France since the beginning of the century.

The letter of Dr. Baudouin, Medical Inspector in the Crimea, upon "Typhus," is a brief account, which was first communicated in the *Academy of Sciences*, and which is full of good practical information upon the causes of typhus in the army, and upon the best means of preventing or stopping the development of that terrible scourge. How is it, then, that all these perfect hygienic indications were not followed in proper time!

The unpublished report of Pannetier upon the leucal of troops, is a curious and valuable historical document. It was read by Pannetier himself to the National Institute the first Decembris of the 4th year of the republic.

The Congress at the Faculty of Medicine will be soon at its end; the subjects of the themes are now known. These competitions must be printed in a fortnight. They are as follow: 1. Comparison of Typhus and Typhoid Fever. 2. Regeneration in the Fracture of Medulla. 3. Metastasis. 4. Pathology without Organic Impairment. 5. Nitro in Acute Diarrhea. 6. Inoculation in Diseases. 7. Chastity. 8. Experimentalism in the Fracture of Medulla. 9. Comparison of Gout and Rheumatism. 10. The Causes and Symptoms of Alcoholicism.

The last meeting of the Academy of Medicine will be recorded as one of the most painful in the history of that Society. The contest between Drs. Guéhin and Halpagut had been all the time a bitter one. Last Tuesday Halpagut spoke in answer to Guéhin with such an expression of personal hatred, without a contempt of the rules of an academic discussion, that I doubt whether next week that disagreeable question of the invention of the subcutaneous method will be taken again. For the readers of the *Medical News and Gazette*, I give the opinion of the *Union Médicale* and of the *Gazette des Epiphyse* about the speech of M. Halpagut. The *Union* says, "It is a duty for us to publish, as completely as possible, the oration of M. Halpagut, we feel obliged to say, also, that his discourse has been this time the least happy and the least

successful. We have seen with pleasure upon the slide another less the appearance in personal recollection. His speech produced upon all the assembly an enlightening feeling. The *Quartier des Médecins* gives the following opinion: "We give only the substantial and accessible part of the speech of M. Marignier. We leave to our readers the care of judging the question, in putting the mutual objections of the two opponents. We must say, also, that we have felt ourselves bound to suppress all the personal part of the discussion; more indeed of the dignity of the Academy than the Academy itself, we wish to spare our readers the painful feeling produced by that speech upon all those who heard it."

After that stormy sitting of the Academy, more than two hundred physicians of Paris joined at the Hotel de Louvre in the second dinner party, called the Banquet of the Union. Dr. A. Lassar, editor of the *Crain Médical*, founder of the banquet, was the chairman. The speakers were numerous. Dr. Michel Lévy, president of the Academy, spoke upon the mutual dependencies of medical sciences, and of the medical press. Mary, the legation writer, made a witty improvisation upon the banquet. A. Lassar paid to Dr. Karyer a just tribute of praise for his great scientific zeal. Dr. Addison of London was present, as were several other learned foreign physicians.

Dr. Cl. Bernard has made before the Society of Biology, new experiments upon the glycosmic phenomena of the liver. The learned physiologist has found, in the liver of dogs fed with meat, a kind of starch quite analogous to the starch of plants, and has proved thus the identity of the production of sugar in animals and in plants. This is another advance in the field of physiological discovery in which Bernard has taken an conspicuous share.

GENERAL CORRESPONDENCE.

DIAGNOSIS OF THE PNEUMONIC STAGE OF PHthisis.

[To the Editor of the Medical Times and Gazette.]

SIR,—In your report of the proceedings of the Pathological Society, at a meeting at which I was not present, Dr. Mackenzie took occasion, from a case of his under discussion, to object to "such terms as pneumonic stage of phthisis." The objection rests, I understand, upon the belief that no tubercle has been found in the lungs without its existence having been ascertained during life. It is impossible in any case to affirm that tubercle does not exist, and he states, "that the absence of physical signs is no proof of the absence of tubercle in the lungs." If this mode of reasoning were applied universally it is manifest that we should have doubts in every thing; but while it is not required of any one to prove a negative, it is the practice to throw the onus of proof upon him who affirms the positive, and it is also the practice of the world to recognize the existence of such things only as give evidence of their existence. Thus, reasoning clearly, if any one should object in any case to an assertion that there is no tubercle there, custom demands that he should prove that tubercle is there.

But, in so prevalent a disease as phthisis, surely an objection need not to rely upon metaphysical objections. When we have proved that tubercle is present, are we not necessarily constrained to admit that there was a period when it was first deposited, and further, when it was not deposited? And do we not probably admit that a large portion of mankind have not tubercle? Need we, or do we, hesitate for life insurance, and similar purposes, to testify that persons are not phthisical? and if we may do this we may certainly be permitted to affirm that tubercle is not then present. A period in which tubercle does not exist in some persons must be admitted, and it is not to be presumed that those who now have tubercle might have been, and in fact were, of that number when they did not at the period referred to, relative any of the signs by which we are enabled to affirm that tubercle does now exist? By what do we affirm the existence of any thing but by evidence which did not appear before its existence? and in a series of changes does not the positive evidence of one stage depend for its value chiefly upon the negative evidence of a former stage? Surely a case of the lungs without the existence of tubercle is practically admitted, and to state that we cannot prove the non-existence of tubercle is to do

that which science and reasoning have never required, and which only a distrust of an art, or of our knowledge of it, induces us to object.

But I go further, and affirm that there are marks of this pneumonic stage which are as positive as are the marks of the tubercular stage, and that it rests with an objection to limit such marks himself acquainted with them. It is unnecessary and derogatory to object that when the two stages merge the one into the other, the diagnosis may be impossible, as it is also irrelevant to object that this has often been a source of dispute amongst physicians. The disease is progressive, and hence any period of doubt is limited in duration; and in like manner the disease is progressive, and there is no reason why Dr. Mackenzie should not make that plain case which was a mystery to men as tubercle as himself; but I venture to affirm that there is something wrong where it is stated that in a case in which "miliary tubercles were found thickly scattered through every tubel of each lung," there was "nothing observed detected on a most careful stereoscopic examination" if found before death. It is needless to know what is meant by "miliary tubercles," or "tubes of the lung," in relation to them, and by a "careful stereoscopic examination." The written explanation of Dr. Mackenzie does not give this, but if a part of the lung be occupied by thickly-scattered miliary tubercles, it will contain a less volume of air, and although "healthy air-containing tissue might intervene," the relative proportions of air-tissue and solid contents of the lungs are altered, and the "percussion sound" must be altered also. So with the statement that the "respiration was loud and clear," the explanation that the respiratory murmur is clear because the air enters freely into the lungs, is opposed to the fact that the tubercle must have impeded the entrance of air at the points where it was deposited. To state that there is a deposition of solid material in parts which normally contain only air, and at the same time affirm that the air freely enters those parts, and that the "percussion sound" is unchanged, is opposed to all that common sense, and fully justified Dr. Theobald Thompson in his expression of surprise that in Dr. Mackenzie's case the respiratory murmur was normal. With such views, I do not wonder that any one should object to a pneumonic stage of phthisis, or to any thing else. Should the opinion that isolated masses of tubercle cannot be diagnosed, be inapplicable here, since in the case which appears to have given origin to these objections, "miliary tubercles were found thickly scattered through every tubel of each lung." I do not gather from Dr. Mackenzie's statement that a question is raised as to the difficulty of diagnosing tubercle in so severe a case apart from other deposits, but that there was an deposition of any kind which could be detected; nor that he considers the tubercle then so largely contained to have been deposited in the interval between the "careful stereoscopic examination" and the death of the child, or his objection would have been inapplicable, and he would have begged in this objection, to the use of a term in a subject foreign to it; but I understand him to state that he was unable to detect the "miliary tubercles scattered through every tubel of each lung" seven years before death. I am, &c.

W. CROFTLAND, M. D.
March 23, 1887. EDWARD SMITH, M. D.

USE OF SULPHUR IN ERMATISM.

[To the Editor of the Medical Times and Gazette.]

SIR,—Among the announcements of Professional society may be reckoned the looking up at the north of clinicians the priority in discovering some old acquaintance among our ways and means of treating the life that both is both in. The letter of Dr. O'Connor in your last number is an instance in point in the *Lancet* for March 7, 1884, (No. 3312); he may that a communication from Mr. Taylor, in which the treatment of ERMATISM by the external use of sulphur, whether rubbed in dry or included in boots and stockings, is recommended strongly by the results of detailed experience. During the last twenty years, I have noticed this application from time to time with varying success. Dr. Copland has given a summary of other old-fashioned modes of treating ERMATISM by the external use of sulphur.

I am, &c.

A. HARRISON FORTMAN.

SULPHUR EXTERNALLY IN BRONCHITIS.

[To the Editor of the *Medical Times and Gazette.*]

Sir,—In your last week's Journal is a letter from Dr. O'Connor, charging me with obtaining originally in the practice of applying sulphur externally in bronchitis, and stating that I had only derived my knowledge from him, but had actually written to him as lately as March, 1884, begging him to give me information on the subject.

The facts of the case are simply these.—On the evening of February 15, 1884, I dined by invitation at Dr. O'Connor's in the street, close to my own residence. He told me that he was returning home from a meeting of the Medical Society of London, at which a paper on Sulphur had been read by Mr. Hancock. I then expressed regret at having been unable to attend the meeting, on the ground that I should have liked to submit to the Society the details of a method of treatment (viz., the external use of sulphur), which, to me at least, was new, and on which I was desirous of obtaining information. I then related how a patient, who was admitted under my care at St. George's Hospital in May, 1881, had first directed my attention to the remedy, and how successful it had proved in my hands. In reply, he stated that the treatment was not new; that he had long since employed it in every form of bronchitis, and had that very evening described its virtues in his speech at the Medical Society of London; and that certain Physicians at Edinburgh and Dublin had actually written and published on the subject.

In the matter related I was about to publish the second edition of my work on Bronchitis, Rheumatic Gout, and Sciatica, when, being anxious to consult the writings on which Dr. O'Connor had referred, with the view of obtaining additional authority for the practice, and recording all that was known on the subject, I addressed a polite note to him, (the note alluded to in his letter), begging him to favour me with a reference to the works to which he had made allusion at our interview. That note is the only one I ever wrote to him.—Dr. O'Connor had not the courtesy either to acknowledge or to answer; and now, by the publication of his letter, I am exposed, for the first time, to his having received it.

Having proved unsuccessful in my search for the writings, if any such exist, alluded to by Dr. O'Connor, and having failed to obtain from him any reference to them, I found myself obliged to state, as I have done in the second edition of my work, p. 202, that "in an unquoted treatise with which I am acquainted he [I had the slightest notice of the curious action of sulphur, applied externally." In the way I recommended; but, as he has obtained any originality in the matter, I stated on the same page, that "in many parts of England the sulphur ointment of the Pharmacopœia is a favourite remedy among the poor for the cure of bronchitis, whether affecting the joints or other parts of the body."

But now, Sir, that the question of originality has been raised, I will not hesitate to say, that I consider your reporter was quite justified in giving me a priority over Dr. O'Connor. Certain it is that Dr. O'Connor was present, and took part in the discussion on Mr. Hancock's paper in February, 1884, for the *Journal* reports his speech on the occasion, though they do not make mention of his having alluded to the use of sulphur externally; and certain it is, that we do not find any record of his having so used it, until he referred to the fact in a discussion which took place at the Medical-Chirurgical Society in February, 1884, just two years after I had explained to him the mode of applying it, and the excellent results I had obtained from it; whereas those gentlemen who have watched my practice at St. George's Hospital are aware that I have constantly employed it since May, 1881, and my Hospital case books, which are open to inspection, bear witness to the same fact. Thus, then, as Dr. O'Connor does not even pretend to have made me acquainted with this mode of treatment before February, 1884, it is obvious that I, at least, am not indebted to him for the suggestion.

I will only add, that in a letter of this kind originality appears to me to be of little importance. I have no desire to lay claim to it, or to say more beyond that of having placed before the Profession the carefully digested records of three years' observation on this plan of treatment. But I cannot imagine that any one will attach Dr. O'Connor's claim, after perusal of the facts recorded in this communication, and of the statements contained in his own letter, that "two Physicians, one of Edinburgh and one of Dublin," had written

many years ago on this very subject. From the day on which I first became acquainted with this application of sulphur, I spoke of it to all the Professional men whom I obtained to visit; and the only reason why I did not publish it before I issued the second edition of my work on bronchitis was, that I am always very careful not to advance anything which will not bear the test of experience, and that, until I saw my manuscript in the printer's, I did not consider that I had had sufficient opportunities of observing the action to justify my expressing an opinion in its favour.—I am, &c.

HENRY WILLIAMS FULLER, M.D. Candab., F.R.C.P.L.
Physician to St. George's Hospital.

15, Manchester-square.

PERINEAL SUTURE FOR THE RELIEF OF PROLAPSE UTERI.

[To the Editor of the *Medical Times and Gazette.*]

Sir,—I observe that Mr. Ferguson has recently performed at King's College Hospital the operation for the relief of prolapse uteri, which has been repeatedly described in your paper as performed by me, and a full account of which will be found in my work; and in his observations appears to claim the merit of the operation for Dr. Savage, as being somewhat of a novel one, and does not in any way allude to me or to my operations. I wish, therefore, to assert at once my claim to be the first English Surgeon who performed it, and who has through good report and still report advocated and performed it, and on all occasions brought it under the notice of the Profession. When I first performed it many years ago, I did not know that any other person in the world had done so. However, after I had brought my work upon the subject, I learnt that Dr. Writtle of Hanbury had performed one of a somewhat similar character. I was also informed by Dr. Savage that it had been performed by Dr. Geddes of America in a more radical manner than myself, as he took away much more tissue. However, as the time I proposed since I did not know of either of these two, My operation has since been recognised and performed by many men, including Dr. Simpson of Edinburgh, Teak of London, Dr. Pinks of Philadelphia, Drs. Savage, Lister, and Barnes, and Messrs. Robson Child and Spencer White in London, as well as many others both in Germany and America, all of whom have cordially spoken of myself as the original advocate of the operation, and acknowledged its efficacy as well as certainty. I would also wish to observe, that very few cases require so complete a closure of the vagina as appears to have been done in the *Lancet* case operated on by Mr. Ferguson, as it renders it impossible for the woman again to become pregnant, or to be delivered, while by performing it as my plan, both can take place without disaster. Many of my cases have subsequently become pregnant, and been delivered without any tearing or rupture of the newly-sutured parts, and to all intents and purposes as well as though no operation had been performed.

I am, &c. I. BRUCE BARRETT,

Cromwell-square, April 8, 1885.

RESULTS OF AMPUTATION AT THE ANKLE-JOINT.

[To the Editor of the *Medical Times and Gazette.*]

Sir,—In the number of the *Medical Times and Gazette* for 25th March, I observed that Mr. Heywood Watson had stated at St. Mary's, "that from what he had seen he thought the operation of amputation of the ankle-joint would eventually be abandoned." He said that although the stump was exceedingly good-looking, none, he never that with a nice woman they were really useful, and that the stumps were too tender to allow of pressure." I refrained from writing last week, in hopes of some one having more experience of the operation relying to his assertions, but as no one has done so, I must now state that I have seen a good number of people after amputation at the ankle-joint, and not one of them, that I can remember, either complained of tenderness or any unpleasant feeling in the stump. One case occurred in my own practice, now nearly two years ago, when, in consequence of a mid-way accident, I resolved to remove both feet, one partially by Chopart's operation, the other at the ankle-joint. I saw the woman very often; she is able to move about and look after the little shop which she keeps, without either crutches, or

any support, except her pair of boots, which were made on purpose. She never was so without thinking me for the operation, and was especially for the ankle-joint, and, as she says, if anything, it is the least of the two. I saw her yesterday, and questioned her very particularly; she says, from the day she began to walk (about two months after the operation) up to the present time, she has neither suffered from pain, or stiffness, nor any unpleasant feeling in the stump. I think patients in private practice have more opportunity of witnessing the ultimate results of their operations than those in hospitals, who perhaps never see their patients again after leaving. Hoping these remarks may elicit further observations from other quarters,

Linn, So.
James Meyers, M.D.
Surgeon.

Medica, Philadelphia,
April 9, 1907.

REPORTS OF SOCIETIES.

THE PATHOLOGICAL SOCIETY.

THURSDAY, MARCH 17.

Dr. QUAIN presented the Dr. FERRISS and himself their report on Dr. Markham's specimen of

DISEASED HEART.

The report stated that the specimen submitted for examination had been a good deal injured by previous inspection. In the however as it was possible to judge, there was nothing abnormal in the ventricle, the valves, the tubes or contents of the heart, save the open foramen ovale and the band stretched across it, as described by Dr. Markham. They were surprised to say how far this malformation was capable of producing the morbid sound described by Dr. Markham.

Dr. CHAMBERLAIN showed a specimen of
CHRONIC RHEUMATIC ARTERITIS OF THE
HIP-JOINT.

This preparation was removed from a subject in the dissecting-room of the Westminster Hospital. The subject was a male, aged 72, and the only history that could be obtained was, that he had been bedridden for four years, and had suffered from rheumatic pain in the hip for many years previously. The articulation is considerably collapsed; over a large portion of it the cartilage is absent, and the bone abraded. There are no remains of Hyaline gland or ligamentous tissue, and the usual bony markings were absent. The cotyloid ligament was much thickened and flattened at its outer part, thus forming a considerable portion of the cavity of the joint. At the upper part was a projection of new bone, from the firm of the articulation, and the head of the femur is collapsed and elongated, and in its centre the articular cartilage is wanting, and the bone is abraded.

Dr. HAYWARD exhibited a specimen from a case of
MALIGNANT DISEASE OF THE LARYNX.

Mrs. M., aged 54, in good health. Last June 3, a severe cough prior to her death; she was attacked by a severe cold and sore throat, the throat being much swollen. After this she became hoarse, and two glandular swellings in the neck appeared. The sore throat, &c., subsided, but the difficulty of swallowing, together with a gradually increasing impediment to the breathing, continued. Five months afterwards Dr. Hawley saw her for the first time, and she then presented a most remarkable appearance, her breathing being very quiet, and both inspiration and expiration being accompanied by a loud shrill, raspy sound. She had great difficulty in swallowing; she had some little pain in the larynx, particularly at night, and the same night was unable to lie on her back. She spat up daily a large quantity of slime, jelly-like mucus, which contained under the microscope abundance of epithelial particles, in some instances blood-cells, sometimes gas globules, but always numerous cilia, more or less epithelium-like, but closely resembling the hoarse and over-developed form common to the different varieties of malignant growth.

The physical examination of the chest, which was carefully made, failed to discover any pulmonary disease. The symptoms went on getting worse until the diaphragm became complete, and she sank seven months after the commencement of the disease.

At the post-mortem examination nothing remarkable was discovered, excepting a tumour in the larynx. It was about the size of a large filbert, and its structure was fixed into the

neighbouring tissues, especially those of the pharynx, surrounding the attachments of the superior and middle conchæ, so that the coats of the tube were thickened and matted together. An elliptical abscess occupied the upper surface of the epiglottis, and extended down to the inferior vena cava. The tumour was connected to the right side of the thyroid and to the cricoid cartilage, making them into an indissoluble mass. By microscopic examination (Dr. Roberts and Dr. Hawley) the tumour was found to be indubitably cancerous. Large aggregations of cells were seen compressed into irregular forms by close packing, and exhibiting appearance of a more or less complete degeneration of their contents. Many of these, however, still contained nuclei, and had changed processes of great delicacy, which appeared to unite with those of adjacent cells into a rudimentary fibrous network. The contents of these cell masses were composed of ordinary fibrous tissue, mingled with the elements of the original connective tissue, the yellow or elastic fibres being extremely distinct and marked.

Dr. W. QUAIN exhibited for Dr. J. G. WILKIE

A SALIVARY CALCULUS.

The patient, aged 25, a German of regular habits, has never smoked. For the last two years he has suffered from general debility. Sixteen years ago he first felt a small lump in the left submandibular region. With the exception of occasional pain, referred to the angle of the jaw, and relieved by gentle pressure, and by holding the head downwards in the left, and outward, it did not give him much inconvenience till lately, when the under surface of the tongue became sore and excoriated.

On March 1 he complained of sore throat, the tonsils were found enlarged; on the 15th he found a hard substance working its way out of Wharton's duct on the left side of the human tongue. It came away readily; no blood or other discharge followed. There was neither pain nor oedema; the swelling of the gland is gradually subsiding. The calculus is about three-quarters of an inch in length, is of the thickness of a small goose-quill, and consists of concentric layers.

Dr. QUAIN HAYWARD exhibited a specimen of
MALFORMATION OF THE HEART.

The heart exhibited was taken from an infant who died excessively wasted, about four months after birth. The pulmonary artery is quite obliterated at its junction with the right ventricle, is about the size of a robin's quill, and divides into two branches of unequal size, one of which probably opened into the aorta; this was not, however, verified, the heart not having been examined *in situ*. The two branches opened freely into the aorta, and, by a deficiency in the upper part of the ventricular system, into each other. The aorta was large, and provided with three large, loose valves. The human aorta, as it is usual in such cases, was open. The right ventricle was as large, or larger, than the left, and its walls had a maximum thickness of two-fifths of an inch. During life a loud systolic murmur was heard over the front of the chest, the respiratory murmur was feeble, absent at certain situations; the skin remarkably white, its temperature very low, and the body excessively emaciated. Cyanosis was rarely present, and scarcely ever in a marked degree. The lungs were found after death, as was expected, but little expanded, large portions of them (nearly the whole of the left lung) being in the condition known as calcification. This kind of malformation has been described by Foss, Ferriss, and others; and in most of such cases the lungs have been found to receive a supply of blood through the ductus arteriosus, which remains pervious.

(To be continued.)

ARMY MEDICAL AND SURGICAL SOCIETY.

FEBRUARY 1.

The third meeting of the above Society took place on Saturday evening, the 7th of February, at the Society's new rooms, 24, Beckett-street, Finsbury, where Dr. Jackson, Surgeon of the King's Dragoon Guards, introduced the subject of gunshot injuries of the head; in illustration of which, eleven cases were detailed, which with one exception had been under his care in the General Hospital at the Cavalry, Balaklava. The following is an abstract of the paper:—

Abstract of Cases of Fractured Skull with Depression, showing the results of Trephining, at the Civil Hospital, Edinburgh.

Case.	Name.	Nature of Injury sustained.	Side affected.	Time elapsed since the injury sustained.	Time elapsed since the patient was brought to hospital.	Time elapsed since the patient was trephined.	Symptoms present at the time of trephining.	State of internal table at the time of injury.	State of dura mater at the time of trephining.	State of brain at the time of trephining.	Result of Trephining.	Result of Case.	Remarks.	Time elapsed since the patient was trephined.
1	Chilton	Skull.	Right parietal.	Extremes.	3 days.	3 days.	Of compression.	Depressed and splintered.	Lacerated.	Yes.	Healed.	Good recovery.	—	Days.
2	Blacklock	Crura.	Left parietal.	Up to 10 hours before the patient was brought to hospital.	3 days.	3 days.	Of pressure.	Markedly depressed and splintered, and lying loose in the brain.	Supporting.	Yes.	Healed.	Good recovery.	—	11
3	Parkie	Crura.	Right parietal.	Very slight depression.	3 days.	3 days.	Of pressure.	Markedly depressed and lying loose in the brain.	Depressed.	No.	Re-operated.	—	—	—
4	Levy	Skull.	Right parietal.	Very slight depression.	3 days.	3 days.	Of pressure, with opening of left eye, mouth, and left eye.	Depressed and lying loose in the brain.	Childhood, covered with lymph.	Yes.	Healed.	Good recovery.	—	3
5	Evans	Explains.	Left parietal.	Depressed.	3 days.	30 days.	Stupor and paralysis of right side of face.	Depressed.	Covered with lymph.	Yes.	Re-operated.	—	—	—
6	Osie	Skull and face.	Right parietal.	Depression from the fracture.	30 days.	30 days.	Partial paralysis of right side of face.	Depressed and splintered.	Lacerated, and lying loose in the brain.	Yes.	Healed.	Good recovery.	—	1
7	Worthinton	Crura of crura.	Frontal supra-orbital.	No depression.	3 days.	30 days.	Of compression.	Internal table of frontal bone depressed.	Supporting.	No.	Healed.	Good recovery.	—	7
8	Deverell	Skull and face.	Right parietal.	Markedly depressed and splintered.	—	3 days.	Of pressure.	Depressed and splintered.	Good recovery and healthy.	Yes.	Re-operated.	—	—	—
9	Percy	Skull and face.	Occipital.	Depressed and splintered.	3 days.	3 days.	Fracture of occipital condyle.	Depressed and splintered.	Good recovery.	No.	Healed.	Natural.	—	10
10	Macdonald	Occipital condyle of skull.	Right parietal.	Considerable depression.	3 days.	3 days.	Of pressure.	Depressed and splintered.	Supporting.	No.	Re-operated.	—	—	—
11	Page	Skull.	Frontal.	Markedly depressed and splintered.	3 days.	3 days.	Of pressure.	Large piece depressed.	Markedly depressed.	Yes.	Healed.	Good recovery.	—	—

10. Died of fever.

10. Wounded at Chillianwala.

10. Died of exhaustion from fever, to which he was liable prior to injury.

The author, in allusion to the cases detailed, remarked that one of them (No. 2), was, he believed, the first recorded of trephining being performed over the middle meningeal artery as it runs in the bony canal, in the anterior inferior angle of the parietal bone. The dura mater and this artery were lacerated by the fractured bone. The artery bled freely for some time, but was easily restrained; and the result of the case showed that the fear of hemorrhage need not deter the surgeon from operating over its course. This man recovered although the dura mater was torn, and a large fungus protruded from the brain; and he continued alive and well last year.

Most of the cases he thought showed that it was quite impossible to estimate the amount of internal injury, either of the internal table or other internal structures in cases of fracture from a wooden ball, by any external observation of the fracture. In all the cases internal pieces of bone were detached from the internal table; and in illustration of this point, cases 1, 4, and 7 were the more remarkable, as there was little or no depression, and the detached pieces lay quite loose on the surface of the dura mater. In case 7 the loose piece may have had some connection with the sinking owing to pulsation of the brain. In all the cases the internal table was much more extensively injured than the external. In cases 4 and 7 balls were found within the skull, one of which rested and compressed the left side of the transverse cerebellum, and the other was found above

on each in the substance of the brain, having penetrated the dura mater, but it was not discovered till twenty-three days after he was wounded, and in the former case it was not discovered till eight or ten days after. In case No. 10, a large piece of bone was turned sideways, pressing down the dura mater nearly an inch; and in order to remove it, a second application of the trepan of the trephiner was necessary. In four of the cases, the dura mater was lacerated. In all the cases loose pieces of dura were laid by the days on the dura mater, producing irritation and inflammation of this membrane and deposition of thick lymph-like matter, as observed in cases 1, 4, and 7, and thick purulent matter as observed in cases 1, 4, and 7 at the time of operation. As to whether the operation of trephining ought to be performed in cases of slight or inappreciable depression from injuries received in action, paralytic of the nature of postural fracture, before specific symptoms set in, or whether it should be delayed until such symptoms manifest themselves, are questions which the relation of these cases will perhaps determine. M. Hirschman, in some remarks which have been published in Rankin's abstract for June last, states "that during the three years which he attended the Hospital practice in Vienna, London, and Paris, he did not meet with a single case in which the operation of trephining the skull had been successfully resorted to, and consequently that nothing should be done, except the employment of antiphlogistic, antipyretic, and emetic treatment. The eleven cases ad- dressed might, in the opinion of the author, be termed ordinary

operations, as none were operated on before the fourth day, and the usual symptoms appeared calling for the necessity of its performance. No case had come under the notice, when the trephine had been employed immediately after the receipt of the injury, before symptoms of irritation, or inflammation of the brain or its membranes, had supervened or had had time to set up. Only one of these cases (No. 5) was under the author's care from the time of being wounded; the others having been drawn there to twenty-four days wounded before they were sent to the Cadiz Hospital. Three other cases of fracture of the skull admitted were not operated on, but were treated by antiphlogistics, cooling, the head, and necessary to collection; and they all died of cerebral abscess. In one of the cases, a piece of the internal table was found in the cavity of an abscess at the seat of injury, about the size of a walnut. He was wounded on the 16th April, and lived till the 16th of May. The other two were pretty similar. The author attended in one case of recovery from fracture of the skull, where the frontal and parietal bones were both depressed at the coronal line. He was wounded on the 16th of May, and pieces of bone were coming away till the 26th of June. He had no local symptoms of any kind. The fracture was much comminuted, and the pieces were easily detached by supuration. As far as he could ascertain from the man himself, in none of the 15 cases mentioned were there any local symptoms for some days after the date of the wound. In the one case last mentioned there were no local symptoms at any time; the proportion of cases of fracture where symptoms appeared immediately on being wounded in the cases where no local symptoms appeared could not be ascertained, as the former were treated in the front, and could not be sent to the General Hospital, seven miles in the rear. Of the fifteen cases, four were not operated on, three died, one recovered; eleven were operated on in consequence of symptoms of comminution or inflammation, and to remove matter; four recovered, and seven died—two of the latter was from exhaustion from fever, which he was unable to procure to subside. How far different the result would have been if the rule in surgery, regarding the immediate operation in fractured fractures of the skull, had been adopted, as laid down by most authors (and fractures from balls paralyze of the same nature), not according to any set of symptoms, but from knowing the almost certainty of there being loose and sharp pieces of bone irritating or striking in numerous more disposed to inflammation of the parts from than any other in the body, and which, if allowed to remain, are almost certain to be followed by suppuration and inflammation, and ultimately by supuration of the dura mater or brain, it was impossible to say. In some of the cases detailed, where men walked to the hospital and showed a small scalp wound, with a fracture of the skull and little or no depression, and stated that they felt a little dizzy when struck by the ball, but were quite well then; or, in such a case as that of a Captain of one of the Cavalry regiments, who was wounded in the clergie of Salabado, the fracture being very slight, and with no local symptoms. He was sent to hospital, and was walking about as usual in a month afterwards, when he fell down in a fit of convulsions. He was trephined by Messrs. Simpson, M. Hill, and a small opening of the internal table was found striking through the dura mater. He died, as the operation was performed too late, and supuration to a great extent had taken place. Dr. Sydenham considered it was difficult to know how to proceed in such cases, as few men had the moral courage to tell the patient he must be trephined, and he believed that it would be the better course to have pursued in any one of these cases, especially the most likely to get well, without an operation. He believed that many were delivered from the operation by the unfavorable results given in different surgical works. In Hutcheon's work, it is stated that of forty-five cases reported by Dr. Lisson, as having occurred in the New York Hospital, in which, however, there appears to have been no distinction made between the trephine and other instruments, such as the cranium, as they saw, only eleven, or one-fourth, recovered. Of six cases which had occurred in the University College Hospital, where the trephine had been used by Mr. Cooper, Mr. Lisson, and Mr. Richman, only one patient recovered; one died of injury of the spine unconnected with the operation, and the remaining four died of inflammation of the brain. Motator says that all cases of injury of the head, in which the trephine has been used in the Parisian hospitals during the last fifteen years, have terminated fatally. From the observa-

tions made by the author of the paper he was not disposed to look upon the operation in an unfavorable light as these extracts would make it appear. Of the eight cases operated on by the author, one had only died. In one of the cases Hay's saw was used, and in the other the trephine.

(To be continued.)

MEDICAL NEWS.

ROYAL COLLEGE OF SURGEONS.—The following gentlemen, having undergone the necessary examinations for the diploma, were admitted members of the College at the meeting of the Court of Examiners on the 10th inst.:

- BRACKENRIS, H. P., Salisbury.
- CARRON, A., Jamaica.
- COCHRAN, E. G., Glasgow, Cambridge.
- FRASER, J. J., Bristol.
- HARRIS, L., Southampton, Devon.
- HARRISON, T., Spaldwick, Huntingdon.
- KIRKMAN, G. W., Liverpool.
- NICE, J., Birmingham.
- PATTON, H. C., Marlow, Bucks.
- ROBERTS, W., Bridgton, Glasgow.
- TROTT, H. D., Newcastle.
- TROTT, J. L., Carmarthen.
- WILSON, J., Whitchy.

The following gentlemen were admitted members on the 10th inst.:

- BARRETT, W., Bath.
- BATE, G., Plymouth.
- CHAMBERLAIN, G. E., Middleham, Yorkshire.
- DEWAR, T. K. St. Mary's Hospital, Paddington.
- EVANS, H., Hammers, Cardigan.
- FRASER, G. R., Woodwick.
- FURBER, J., Manchester.
- GARDNER, W., Leeds.
- MORRIS, D., Swansea.
- PAGE, T. J. W., Oxford.
- PATON, G. R., Kilmarnock, Clackmann.
- POPE, J. J., Worthington, Lancashire.
- ROBERTSON, T. E., London Hospital.
- SIMPSON, E. W., Fins, Dorset.
- STEVENS, N., Liverpool.

APOTHECARIEN HALL.—Names of gentlemen who passed their examinations in the Science and Practice of Medicine, and received Certificates in Practice, on Thursday, March 26.

- BLAIR, HENRY SPOWEN, Chelsea.
- BLAIR, HENRY SPOWEN, Salisbury.
- BLAIR, GEORGE FLEMING, Fifehead, Wilt.
- BROOKS, JOHN, Newton, Bucks.
- CLARK, WILLIAM EDWARD, Exeter.
- COLE, WILLIAM THOMAS, Newcastle-on-Tyne.
- COLEMAN, JOHN SANDERS, London.
- DIVINE, CHARLES JAMES, Hampton, Middlesex.
- DUNN, WILLIAM, Coventry.
- LEWIS, EDWARD, Army.
- PATTON, JAMES, Kent.
- POPE, WILLIAM EDWARD, Canterbury.
- PRATT, NATHAN, Rochester.
- REID, DAVID HENRY, Newcastle, Kent.
- TETTER, JOHN, Burton-in-Lonsdale, Yorkshire.

Also, on Thursday, April 7:

- CHAM, THOMAS EDWARD, Colham, near Bristol.
- JAMES, MOSES FRANKS.
- LEE, HARVEY EDWIN, Ely, Cambridgeshire, Wilt.

DEATHS.

GRANT.—April 4, aged 65, George Grant, Esq., M.D., F.R.S., of Richmond, Surrey, beloved and deeply lamented. M.D. Edinburgh, 1821; L.R.C.S. Edinburgh, 1821; Surgeon R.M., 1823.

LAWSON.—February 18, at Albury, Graham Lawson, M.D., Surgeon of the 7th Native Infantry.

MANN.—March 28, at Mount-pleasant, London Hospital, London, suddenly, from excitement when visiting his son,

MENDEL, LANK AND LARA.

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portant City offering a highly remunerative position. It is situated in the
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heart of the City of London.

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is available either for office, situated in a very desirable spot in one of
the finest districts in the City of London. It is especially suited for
the Medical Profession. It is especially suited for
the Medical Profession. It is especially suited for
the Medical Profession.

Kent and Canterbury Hospital.—The

Board of Management give notice that a VACANCY has occurred
in the office of SURGEON, by the resignation of Mr. G. H. B.
of Maidstone, who has been elected to the office of Surgeon of the
Hospital for the Blind, at Maidstone. It is especially suited for
the Medical Profession. It is especially suited for
the Medical Profession. It is especially suited for
the Medical Profession.

The Queen's Hospital, Birmingham.

A VACANCY having arisen, due to the resignation of Mr. H.
of the Birmingham, candidates are requested to attend to their nominations
on the 14th of April. The office of the Superintendent will, in the first instance,
be held by Mr. H. of the Birmingham. It is especially suited for
the Medical Profession. It is especially suited for
the Medical Profession. It is especially suited for
the Medical Profession.

Natural Mineral Waters of Vichy.

The Vichy Water Company having the good from the French
Government, the right to supply of water in natural waters, (which water is
the most pure and most beneficial) is now being supplied to the
people of Vichy. It is especially suited for
the Medical Profession. It is especially suited for
the Medical Profession. It is especially suited for
the Medical Profession.

Cod-liver Oil with Iodide, Bromide,

and other active salts of Iron, Quinine, &c. &c. Purest
MACKENZIE and BROWN'S Compound, (which is the most pure and most
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An illustrated work containing the Course of Lectures and demonstra-
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Mental Affections.—"Harts," Wood-

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ORIGINAL LECTURES.

A COURSE OF
LECTURES ON ORTHOPÆDIC SURGERY,

DELIVERED AT THE

GROSVENOR-GARDEN School of Anatomy and Medicine.

[LONDON: BY GEORGE'S MARTIN.]

BY WILLIAM ADAMS, F.R.C.S.

Assistant-Lecturer in the Royal Orthopædic Hospital; Lecturer in Surgery at the Grosvenor-Garden School of Anatomy and Medicine; Lecturer in Surgery at St. Thomas's Hospital, &c.

LECTURE XL.

Continued from page 179.

CONGENITAL TALIPES VARUS.—RELAPSED
CASES.

Causes of the Tendency to Relapse.—Treatment of Relapsed Cases.—Nursing.—Dietary Remarks.

Relapsed Cases.—There can be no doubt of the fact, that in the past experience of the treatment of congenital varus, cases in which the deformity has returned, even after carefully conducted treatment by the highest Orthopædic authorities, have been by no means uncommon occurrences, and that at the present time relapsed cases are frequently met with. No doubt, indeed, has this been the case, that a feeling of distrust in the complete and permanent curability of these cases still exists in the professional as well as in the public mind. I have been repeatedly asked by Surgeons of eminence whether these cases do not generally recur; and in the province the *Rebel* appears to be stronger. A provincial Surgeon in large practice told me a short time since, that there were plenty of cases of talipes in his neighbourhood, but that nothing could be done with them; sometimes they were bandaged by treatment, but they always returned. This distrust is very much strengthened in the public mind by the cases among the poor, which return to the country after having been operated upon in London, even at the Orthopædic Hospital, and in which relapse of the deformity takes place, generally in consequence of neglect of the after-treatment. It may happen that two or three such cases may occur in a populous manufacturing district, and I have known them noticed by disorganised and Medical men in argument against the reported curability of this foot, and other cases thereby deterred from submitting to treatment. It becomes, then, a matter of the greatest interest to justify—

What are the Causes of this Tendency to Relapse.—In answering this question, especially in reference to severe cases, it appears that we must either assume the existence of an inherent tendency to relapse—an opinion entertained by Dr. Little, or believe that the tendency to relapse essentially depends upon some defect in the primary or after-treatment. I hold the latter doctrine as applicable to all the cases in which the primary treatment can be successfully adopted, i.e. in which the deformity can be removed; and the only exceptions, I believe, will be found in those rare cases of arrested muscular development, affecting the anterior and outer muscles of the leg, to which I have previously alluded; and even in these, although an inherent tendency to relapse undoubtedly exists, such an event, I believe, may be prevented by a continuance of mechanical means, as in paralysis cases.

The absence of any evidence of disturbed muscular action—any spasmodic affection—after the removal of the deformity
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is adopted by some as an argument against the dynamic origin of varus. But Dr. Little lays great stress upon the tendency to relapse depending in many cases upon a continued disposition to "make contraction" in the muscles which produced the deformity, and therefore regards the tendency to relapse as depending upon the continuance of this disposition, and at the same time as evidence of the spasmodic origin of the deformity. He observes, "Now it is obvious that if the dynamic property of the muscles of a joint be latent, and entire flexibility be obtained, either with or without operation, no tendency to relapse should exist; for if the muscles originally contracted be right in their functional activity, ordinary exercise would, as in the case of a sound limb, maintain the flexibility. But although rigidity exists in the former structurally shortened muscle of a recovered talipes, a tendency to re-contraction—make contraction—does in many cases (especially those most affected,) exist." &c. In other cases in which the dynamic cause has subsided, Dr. Little observes that the deformity is little inclined to relapse.

Now, it appears to me that a sufficient explanation of the tendency to relapse, in all but the exceptional cases previously alluded to, will be found—1. In the inherent condition of the various tissues involved in this deformity—such as the adapted growth of the bones in the deformed position, more especially the vertebrae; and also the adapted growth and relatively altered length of the ligaments; and 2. In the imperfect extent to which these inherent conditions are frequently removed in consequence of the great length of time necessary for the complete restoration of these deviations, when severe, leading as it frequently does to the neglect of the after-treatment. Therefore, to me it appears quite unnecessary to suppose the existence of any inherent disposition to relapse, such as a continuing influence of the original producing cause of the deformity. Moreover, there is no evidence of the continuance of any spasmodic tendency, unless the fact that the deformity does sometimes recur be regarded, and in this conclusion I cannot waver.

The principal causes of relapse, then, which I recognise in the ordinary cases of varus, however severe, have reference to some defect either in the primary or the after treatment, when the case is submitted to treatment at a sufficiently early period; and may be arranged under the following heads:—

1. Defects in the operative treatment consisting—(a) in failing to divide one or more of the contracted tendons, or more correctly speaking the tendons of contracted muscles; (b) in complete division of tendons; (c) division of the tendons in a wrong order; (d) inflammatory adhesions following clumsily performed operations, or some of the accidents, such as hæmorrhage, &c., which may occasionally occur.

2. Neglect, or discontinuance of the after-treatment, either mechanical or physiological.

Other causes of a tendency to relapse may also be mentioned, and it is certain that this may arise.

3. From the treatment not being commenced at a sufficiently early age.
4. From congenital defects of muscular development, such as absence of the anterior and outer muscles of the leg above described.

It would be tedious and unnecessary to relate the details of relapsed cases from all these various causes, I will therefore merely allude to some of the leading facts connected with them.

1. In reference to the defects in the operative treatment, I have already stated that the posterior tibial tendon was not divided subcutaneously in infants till the year 1843, previous to which it was either performed by open wound, when its division appeared to be absolutely necessary, or its division was altogether omitted. The general opinion was, that if a tendo-Achillis and the anterior tibial were the principal tendons requiring division, I believe Stromeyer held this opinion, and it appears to be entertained by some Surgeons even at the present day.

The division of the posterior tibial tendon, therefore, was very frequently omitted, and as a consequence of this omission I believe the more severe cases very commonly returned. I base this opinion mainly on the relapsed cases which have come under my own observation in private practice, and upon the

will know that, that since the subcutaneous division of the tendon has become the rule of practice in cases even of a moderate degree of severity, relapse of the deformity has been of less frequent occurrence.

With regard to the incomplete division of tendons, I have examined two cases after death (from causes not connected with the deformity) in which the posterior tibial tendon had only been cut half through in the operation performed for the cure of the deformity. In one of these cases the operation had been performed by a leading Orthopædic Surgeon, and in the other by a distinguished Hospital Surgeon of this Metropolis, and therefore this must be regarded as an accident which may occur, even in practical hands. I need hardly say that if it should occur in a severe case, the cure of the deformity must be incomplete, and relapse therefore certain.

With regard to division of the tendons in a wrong order, as a cause of relapse, I would observe that the case most frequently alluded to in dividing the tendo-achillis is the beginning instead of at the end of the operative treatment. The effect of this in severe cases is, that sufficient elongation of the tendo-achillis is not obtained, in consequence of the difficulty of accomplishing by mechanical treatment at the same time all the objects required in the restoration of the deformed foot. The tendo-achillis therefore, remains as a shortened, or, as it is called, a contracted tendon, at the end of the treatment, and has a strong tendency to produce relapse of the deformity. I have already insisted upon the necessity of observing a definite order in the division of tendons.

With regard to the influence of "inflammatory adhesions" following the operation, or some of the accidents, such as *arthritis*, &c., arising as a cause of relapse of the deformity, I would observe, that all subcutaneous operations have behind them slight adhesions between the tendons and their sheaths; but when the operations are carefully performed, these adhesions, the inflammatory origin of which may perhaps be doubted, are very few, and extremely slender, so that they do not interfere with the free play of the tendons. The absence of inflammation is the great feature in the pathology of subcutaneous operations; but when from any cause the operations are followed by a perceptible degree of inflammation, adhesions of a stronger and more important character take place. I have told you that I have witnessed suppuration along the tendon, and in case of division of the posterior tibial tendon, suppuration extending up to the popliteal space. I have also seen abscesses produced by deposits of matter in these operations. Now, in all these instances, and also when the same tendon has been the subject of repeated operations, close inflammatory adhesions must take place, and by their influence in hindering the free play of the tendons, an influence which is increased by their own inherent disposition to contracture, they become important agents in inducing a reproduction of the deformity. And of this I have witnessed several examples.

Thirdly, The cases of relapse arranged in the second class, viz. those arising from "neglect or insufficiency of the after-treatment, either mechanical or physiological," are of the most frequent occurrence. I have already told great stress on the importance of mental attention to the after-treatment, and the necessity of employing such mechanical means as the case may require, as a retentive apparatus, during the time required by the bones and ligaments to adapt themselves to the normal position of the foot; and also the necessity of improving the muscular power by active and passive muscular exercise, champing, &c. If by mechanical means, motion be allowed only in the right direction, and if by the physiological treatment, the walking agents, viz. the muscles, be proportionately improved, a sufficiently perfect state of ligamentous and osseous elongation, and balanced muscular action, will be obtained, and all chance of relapse of the deformity prevented; but neglect of any of these means in a case even of a moderate degree of severity will, most certainly lead to relapse of the deformity.

A temporary neglect or interruption of the after-treatment may sometimes be unavoidable during illness, and under these circumstances a ready excuse for the relapse is found equally by the parents and by the Surgeon; but it appears to me without sufficient reason, except when the child may have been the subject of some very protracted illness. In Hospital practice neglect of the after-treatment is a frequent cause of relapse, with poverty, ignorance and neglect are

necessarily common among the class of patients we have to do with; and in private practice, the great length of time during which a continuance of the after-treatment is frequently necessary—perhaps three or four years in severe cases—renders it matter of little surprise that the parents should weary of this very tedious and troublesome treatment. Moreover, they commonly argue with apparent reason and plausibility, that an muscular weakness appears to be the most prominent condition of the limb, mechanical support must retard and interfere with the increase of muscular strength. To this they are frequently supported by their Medical attendant, who says, "The child cannot gain strength so long as it wears the steel supports." Now, this prejudicial and erroneous opinion, which is so frequently urged against the mechanical treatment of curved spines and all other deformities, ought to be at once eradicated from the professional mind. The fact is, that this is not merely a question of muscular strength, but a question of strength and position combined. An increase of muscular strength might, perhaps, be gained in some cases by discontinuing the apparatus, but if irregular muscular action be allowed to remain uncontrolled, the deformity will certainly recur; and in case of congenital tortus, diminished instead of increased muscular strength will ultimately result, as a consequence of the wasting of the rectus trunci muscles. I have repeatedly known patients, acting under the advice of their Medical attendant, discontinue the mechanical supports, and resort to rubbing, sea-bathing, &c., instead of continuing all these necessary means of treatment, and a relapse of the deformity has been the necessary and inevitable result. I have a young gentleman from Philadelphia, eight years of age, now under my care, whose disto-foot had been cured, or rather the deformity removed, three times previously at intervals of two years. The relapse appears to have been the result partly of neglect of the mechanical treatment, but principally the cessation of the physiological means, which were not directed to be employed by the Surgeon under whose care he had previously been placed. After great perseverance I have succeeded in again restoring the foot, and the motion at the ankle joint and muscular power of the limb are rapidly improving under champing and passive exercises. I anticipate complete and permanent success.

Fourthly, With regard to the treatment not being commenced at a sufficiently early age, as a cause of relapse, I would observe that the difficulty of curing the deformity—both with regard to the mechanical and physiological condition of the various tissues involved—is always proportionate to the lateness of the period at which the treatment is commenced, because during growth the bones become ossified in the deformed position of the foot, and therefore retain their imperfectly developed form; the ligaments become adapted to the abnormal condition of the bones and joints; and the contracted muscles remain imperfectly developed, and also become more or less degenerated from disuse. It must therefore follow that as the cure is necessarily imperfect, a proportionate tendency to relapse exists in the cases operated upon at a late period.

Fifthly, With regard to the late cause of relapse mentioned, viz. congenital defect of muscular development, such as absence of the anterior and outer muscles of the leg, I have directed two cases, already described, in which this congenital defect existed, but in neither of them had any operation been performed. A tendency to relapse, however, would certainly have existed, though return of the deformity might probably have been prevented by some form of retentive apparatus which the patient would have been obliged to wear during the remainder of life, as in severe paralytic cases. Fortunately these cases are extremely rare.

The causes of relapse in which I have now directed your attention are, or regard those arranged in the first two classes, solely within the control of the Surgeon and the parents, provided the Surgeon has the opportunity of treating the case at a sufficiently early period. And the cases arranged in the third class is also very frequently within the control of the Surgeon, because it is generally by his advice that the operation is delayed. The cases arranged in the fourth class being essentially a congenital defect of development, is of course beyond the reach of art, but its influence may be in a great measure controlled.

TREATMENT OF BELLIDON CASES.

Having directed to you the various causes which produce

relapses of the deformity, I need hardly say that the treatment will necessarily vary according to the circumstances of the case. Speaking generally, the ultimate result of treatment in such cases are much less favourable than in cases in which treatment is undertaken for the first time. This depends partly upon the time lost and the structural changes thereby induced; and partly upon the effects of previous treatment, especially in reference to the adhesion of the tendons to their sheaths and neighbouring fasciæ, as above described. Such cases are therefore in a less favourable condition for operative treatment, and it is advisable to persevere with mechanical and physiological treatment as long as any advantage can be gained by it, before repeating the operations. In most cases, however, it will be necessary to re-divide one or more of the tendons, and the division of the tendo-Achillis alone is often sufficient. Sometimes the anterior tibial also requires division; and in the majority of cases it is also necessary to divide the plantar fasciæ. Occasionally the posterior tibial tendon may require division, but much less frequently than the others. I have found this more especially necessary in the case of relapses after the operations performed previous to the introduction of the subcutaneous division of the posterior tibial tendon in 1842, and in which this tendon had not been divided by open wound, or when the operation had been performed by Ferguson's style accustomed to treat these cases.

When any marked degree of inversion remains, and is accompanied with rigidity of the foot, I have adapted the plan of treating the case throughout as if nothing had been done, dividing all the tendons usually requiring division, and in the order which I have above recommended; and also dividing the treatment into two stages. I now show you the case of one of these cases, in which, by this method, a most satisfactory result has been obtained. Such cases of complete rigidity of the deformity are most commonly met with in Hospital than in private practice, and depend as much or more upon defective after-treatment as upon any defect in the primary treatment. In private practice, and in cases in which the after-treatment has not been neglected, the relapsed cases generally present the characters of *oppositum* with severe contraction of the plantar fasciæ and structures in the sole of the foot. The heel is raised about an inch from the ground, and the anterior part of the foot inverted, more by the contraction of the inner band of the plantar fasciæ than by the short muscles. In cases originally severe the toes are often remarkably inverted, probably from the flexor digitorum longus, the tendons of which had never been divided, remaining too short. The instep is very high and irregular from contraction of the plantar fasciæ, ligaments, and tendons in the sole of the foot. The foot is consequently very short and ugly. More or less inversion is apparent in walking, and the limited flexion of the ankle-joint produces lameness, and some cases relapse in walking exercises. As the patient walks principally upon the outer border and anterior part of the foot it is rare to suffer from trochanteric cysts in these structures.

All these conditions were very well illustrated in the case from which the casts I now exhibit to you were taken. Each foot was similarly affected, and in both I succeeded in accomplishing an equally perfect cure. The right foot before and after treatment is represented in Fig. 45 and 46.

FIG. 45.



FIG. 46.



One of same case as Fig. 45.

As this case illustrates many of the preceding remarks, the following notes may be worth recording:—

A young gentleman, Master H. A., aged 19 years, from Malden, was brought to me on June 28, 1852. He had been afflicted with severe congenital varus of both feet, supposed by his mother to have been caused by a strong medical impression made upon her by looking at Raphael's cartoon of the Griggle at the Sheaf of the Tropic, when she was about three months advanced in pregnancy. At the age of ten months this child was operated upon by one of the highest orthopædic authorities in this metropolis. Neither rupture nor trouble was spared, and the mother devoted an extraordinary amount of personal trouble and attention to the after-treatment. The raising and "kneading" were also conducted by a person specially employed. The subcutaneous division of the posterior tibial tendon was attempted, but this must have been one of the earlier cases, and possibly the tendon was not divided. However, partial relapse took place twice in both feet, and some of the tendons were more than once redivided during the first five years. At the end of this time the feet were still imperfect in form, but the parents were assured "that what remained was in the bones, and could not be removed." Passive motion was directed and unobscuringly attended to, but no improvement resulted, and the boy grew slowly but progressively got worse. The parents had now no hope of preventing their child cut being a cripple, when they were induced to consult me.

In consequence of the repeated operations which had been performed in this case, and the very tight condition of the foot, I was not disposed to promise success, but, in the hope of improvement, further treatment was submitted to, and commenced on the 12th of August, 1852.

In the operation in this case I re-divided the anterior and posterior tibial tendons; the tendons of the flexor digitorum longus and the extensor pollicis, the tendo-Achillis, and the plantar fasciæ. The mechanical treatment was conducted with the greatest care and attention, and in a few months both feet were so thoroughly perfect in form to allow of the boy returning to the country. Under a combination of mechanical and physiological treatment, such as I have already described to you, both feet continued to improve in form and function.

My report nearly two years and a half afterwards—January 15, 1854—says, "Both feet very perfect in form and position; also physiologically very perfect. All the muscles are strong, and pretty well developed. The calves rather high, but are very much, measuring 24 inches in circumference. Can stand on his toes, and has a good spring from the ankle-joint. Can play at hopscotch as well as any boy in the school. Dances well; and his first-master states "that he had examined him extremely, and could not detect the slightest defect or weakness." Does not really tire in walking exercise."

I still see this young gentleman occasionally, and he not only remains well, but continues to improve. In form the feet are quite perfect enough; and in function they are totally perfect. The cure is complete, and relapse now impossible. I could not relate to you a more successful or encouraging case.

Now, gentlemen, in this concluding my description of the Pathology and Treatment of Congenital Varus, I would add a few words of general advice. Let I trust you will see the necessity of thoroughly examining yourselves, before undertaking the treatment of these cases, with the surgical anatomy, and all the principles and details of treatment which I have been my object to bring before you in a plain practical manner (and finally, I beseech that those cases of necessity will be a long continuance of close personal attention, and therefore a great sacrifice of time, and unless you are prepared to devote an amount of time and attention to them far beyond that required by the ordinary run of cases you will meet with in practice. I trust sincerely advise you not to undertake them. If you do, the result will certainly be disappointment to your patients and their friends, and discredit to yourself. It leads to distrust in Orthopædy generally, and therefore a want of confidence in the advantages of one of the most brilliant discoveries of modern Surgery. This remark will apply to the treatment of all deformities, but to none more than congenital varus; and as this is more particularly the affection which it is our great boast to have brought within the scope of Surgical science, so completely and so satisfactorily that the complete curability of this distressing deformity is now a matter of absolute certainty, I urge these observations the more strongly upon you.

LECTURES

ON

GENERAL NATURAL HISTORY.

By THOMAS H. HUXLEY, F.R.S.

Lecturer on General Natural History at the Government School of Mines, and Fellow and Professor of Zoology, Royal Institution.

LECTURE XIII.

(Continued from page 184.)

The Copepod and Spine.—The common Copepod, as described in all our fresh water, affords an excellent illustration of the structure of the whole of this division. This minute animal is shaped something like a split pea, the larger end corresponding with the head, and the convex side with the dorsal surface. The anterior third of the body is covered by a large carapace, which at the sides extends downwards as a free fold over the base of the appendages, but is hardly at all free posteriorly. Anteriorly in the middle line, it curves forward and downwards, and is produced into a short carapace, on each side of which a considerable excavation helps the base of the long antennae (partons of Huxley), by whose rigidity one-like enables the animal occasionally dash through the water. At the anterior boundary of the carapace the double, black, median eye, which, unless very closely examined, appears single, shines through the carapace.

Four distinct and movable scutites succeed the carapace, and gradually diminish in diameter. The body then suddenly enlarges, and becomes divided, in the female, into four segments, the last of which gives attachment to two long setose eyes, which possibly represent another scutite. There is a well-developed and prominent labrum for respiced epistoma and labrum in front of the mouth, and behind it is a bifid, setose, [?] The long and many-jointed antennae are succeeded by short and few-jointed antennae. The mandible is strong, and has a setose palp. The second pair of gnathites are strong and incurved; the third are divided into an endopodite and an exopodite, the latter being far the larger, and so constructed, that the three distal articulations can be bent back upon the proximal ones, and opposed to the internal division, constituting a prehensile organ, the "hand" of Purkin. At some distance behind the third pair of gnathites the first pair of biramous thoracic appendages is attached to the hinder part of the cephalo-thorax. Three similar pairs are appended to the three anterior free scutites, while a fifth rudimentary pair is connected with the rear and smallest of these scutites. The suddenly enlarged following segment of the body carries the apparatus of the reproductive organs in the female, and supports the ovium. It is commonly regarded as the first abdominal scutite; but I conceive it may consist of the united last thoracic and first abdominal member; for, according to Dr. Claus, it is composed of two continued segments, which only become united after the last moult. A

proportion of the anterior scutite, possibly a rudimentary epipodite, overhangs the mouth of the valve.

The male is much smaller than the female, and the two scutites constituting the enlarged remain distinct. His antennae are thickened, and provided with a peculiar flagellum, by means of which he firmly seizes the fourth pair of swimming legs of the female during copulation, and then leading up his abdomen, deposits one of the spermatophores in which his spermatozoa are inclosed (first described by Van Siebold) on the second abdominal scutite of the female, close to, but not on the valve. Dr. Claus considers that the spermatozoa enter the female organs not by the valve, but by a special passage.

In each sex peculiar glands are contained in the two anterior abdominal scutites, and in the female supply the material for the ovium, in the male for the spermatophore. The eggs are carried about in the ovium until they are hatched. The young leaves those provided with three pairs of appendages, which, according to Rathke, are the rudiments of the antennae, antennae, and third pair of gnathites, and only attain their adult form after a series of moults.

There are a few other fresh water and many marine, genera of Copepoda, among which Cyclops, with its two large eyes or less lateral eyes and subulate antennae, and the beautifully brilliant Sapphirina of warm latitudes, with its extremely depressed body, short filiform antennae, two eyes, and rudimentary gnathites, are particularly worthy of notice. Dana's excellent "Crustacea" is a storehouse of information with regard to these forms.

Imaginally connected by such genera as *Leptocope* and *Calanus* with the typical Copepoda, are a great number of very singular Crustacea, which, from their habit of living parasiti-

FIG. 1.



1. *Leptocope*, A. 2. *Calanus*, B. 3. *Leptocope*, C. 4. *Calanus*, D. 5. *Leptocope*, E. 6. *Calanus*, F. 7. *Leptocope*, G. 8. *Calanus*, H. 9. *Leptocope*, I. 10. *Calanus*, J. 11. *Leptocope*, K. 12. *Calanus*, L. 13. *Leptocope*, M. 14. *Calanus*, N. 15. *Leptocope*, O. 16. *Calanus*, P. 17. *Leptocope*, Q. 18. *Calanus*, R. 19. *Leptocope*, S. 20. *Calanus*, T. 21. *Leptocope*, U. 22. *Calanus*, V. 23. *Leptocope*, W. 24. *Calanus*, X. 25. *Leptocope*, Y. 26. *Calanus*, Z.

cally upon aquatic animals (whence their vulgar name of "fish-louse"), have received the title of *Amphicoela*. The genus *Amphicoela*, commonly found in great numbers on the walls of the branching chamber of the Fishing-Ping (*Lophium*), may serve very well as an illustration of the most remarkable peculiarities of this aberrant group.

The female is not more than half an inch long, but particularly two long slender cylindrical Mammas, (like the rest of the animal, of a whitish or yellowish colour) are attached to its body, which is broad and flattened, and as it were striped at its edges, so as to present two principal transverse folds. The angles of the folds are elongated into lateral processes (A, A'), and median processes (B, B') proceed from the middle line of the body, which by these outgrowths and ridges become singularly distended; and the protrusion of the animal's appearance is not a little enhanced by the bowing motion, accompanied by a flapping backward and forwards of its greyish limbs, which it executes when detached from the integument of the *Lophium*.

The head is expanded into a sort of hood, whose convex

[?] I have not actually any two writers are probably in accordance with each other as to the female side of the cephalo-thorax, and the position of the mandible in female, I have thought it of value, to apply the terms named and third gnathites, which applies to the cephalo-thorax, to them. In Huxley's view these appendages first and second feet, and then not mention the antennae. Ellingsby and Claus in the same manner, and regarding the third gnathites as two pairs of appendages the second of which is smaller. However, if I do not mistake his description, I apply the antennae to the first pair of feet, the second gnathites as antennae; and the third, or first pair of feet. I imagine that it would be well just to consider the second gnathites the rudiments of one of the two pairs of mandibles of Purkin, etc. The third gnathites of the female being, certainly, homologous with the female of the same. The first pair of feet, therefore, would be represented in figure, 1 to 26.

anterior margin bears the antennules and antennæ, the latter being metamorphosed into the strong curved hooks by which the *Chondrocephala* is securely attached to the infested animal. A subordinate labrum overlaps the mouth, but does not include the mandibles and form a buccal apparatus, as in some species.

The mandibles and two pairs of maxillæ resemble curved hooks or claws. Two pairs of feet, composed each of a basilar protopodite, terminated by an endopodite and exopodite, and exhibiting hardly any traces of articulation, are attached to the anterior part of the body behind the head.

The body ends in a rounded segment, situated in the deep notch between the last marginal processes, and bearing the two propelling valves. Above each of these is a small triangular papillose lobe, probably a modified appendage, to which, as we shall see, the male attaches himself, while below there are two other rudimentary appendages. The alimentary canal is a straight tube running from the mouth to the opposite extremity of the body; but I could not verify myself of the existence of a distinct œsoph. No heart (3) could be discovered, and the nervous system and organs of sense (if any) were equally undistinguishable. The interspace between the alimentary canal and the walls of the body was almost wholly occupied by the ovaries, which consist of four tubes, situated on each side of the intestine, and giving off ramified areas, in which the ova are developed. An entirely each pair of tubes open into the exterior of its side, which passes down along the side of the body to terminate at the valves. I found the lower part of the widest full of a clear gelatinous substance, and very similar in aspect to the "cœcæal dust" of a carp-pole. I imagine that this substance is secreted by the walls of the exterior, and forms the walls of the ovigerous sac. The latter, as has been stated, has the form of a long cylindrical filament, whose upper end is, as it were, firmly held between the prominent lips of the valves.

The male *Chondrocephala* does not attain to a twelfth the length of the female, and looks at first like a pupilla upon her body near the valves. His clear examination, however, he is seen to be firmly fixed by his antennary hooks to one of the two triangular lobes described above. The hooks are densitate at first attached to the lobe by muscular contraction; but the connection soon effected seems indissoluble—at least I found that necessary in certain cases did not cause the male to release his hold. I never observed more than one male attached to a female.

The body of the male is post-ure, and exhibits indications of a division into six segments behind the head. The anterior extremity presents a black eye-spot included in its substance,

The caudal extremity is terminated by two styles, and there are two prominent tubercles on the ventral surface of the post-urethral cavity, to which the genital apertures are united. The alimentary canal is a delicate, irregular tube, having many branched processes included in its walls. A wide oesophagus is connected with its anterior extremity; but the latter did not appear to be rounded, and connected with the ventral surface of the integument only by connective tissue. A complex muscular eye, composed of striped fibres, is visible through the integument, and the oesophagus appeared to be connected with a subgastric ganglionic mass. The body was sufficiently transparent to have allowed the position of a heart to have been seen, but none could be discovered. The testis is a large oval lobulated mass (4), lying like a saddle upon the anterior part of the intestine. From this body a thick sac detaches runs back upon each side of the intestine, and dilates in the post-intestine and antepost-intestine cavities into a thick walled pyramidal sac—a sort of vesicula seminalis. The ova in the ovigerous sacs of the females of *Chondrocephala* which remained were not sufficiently advanced to enable me to describe the embryo. In all probability, however, it resembles that of other species.

There are many genera of these parasites, some of which derive even more widely than *Chondrocephala* from the ordinary form of *Cyclops*, while others, such as *Diplocephala* and *Neohelice*, are distinguished in an essential respect from the ordinary *Cyclops*.

In *Cyclops* the labium and maxillæ are elongated and united into a tube in which the sharp styliform mandibles are contained; and from the prevalence of this buccal form of mouth in some of the best known species of parasitic *Cyclops*, they are frequently termed "buccal" crustaceans. Buccal-like parts for attachment are developed from the posterior pair of thoracic members in *Aschisera*, and in this genus the head, as a distinct part, becomes almost entirely obsolete.

Dryops, the parasite so common on the *Stetholeberis*, is worthy of notice as one of the most extreme modifications of the epibiotic type, so much so, that Linnaeus has even proposed to put it in a distinct order. It is extremely flattened, and is composed of an anterior epibiotic-thoracic disk, surrounded by two long thoracic members and a very short anterior abdomen. A median styliform weapon lies in a sheath in front of the mouth, and the mandibles are rudimentary. Six pairs of appendages lie behind the mouth, the anterior being metamorphosed into suckers, the next pair into strong limbs with a hooked second joint, and the four others constituting biramous swimming feet. There are two pairs of sensory organs, and two compound eyes. The suckers are, according to Ledy, provided with capitate thin parallel plates swimming hair; and during respiration these are filled with the animal fluid, which in this case is considered in the valve of the female, and thence to the spermatozoa. The eggs are laid, and not carried about in crinoids. The larva is provided with two pairs of swimming appendages, the former anterior and the mandibular palps, the latter eventually entirely disappearing. They have, besides, a pair of strong legs in the place of the suckers, and behind them the rudiments of the prehensile legs and the first pair of biramous appendages, the others being rudimentary. Finally, the *Stetholeberis* of *Aschisera*, which may be found very commonly in the branched net of *Aschisera*, closely resembles an ordinary *Cyclops*, except that it becomes much distorted, and that it carries its ova in a chamber formed by the division of the oesophagus. However strongly modified the adult form may be (and it must be remembered that it is always the female which undergoes the greatest amount of change), the larva of all these epibiotic parasites resemble those of the ordinary *Cyclops* in possessing only two or three pair of appendages, and at least exhibit considerable locomotive powers. But it is certain that while two pairs of the locomotive members of the larva of *Cyclops* are the former anterior and antennaries, all the locomotive members of these epibiotic *Cyclops* whose development has been carefully traced, are rudimentary thoracic appendages, as in larval *Diplocephala* and *Chirocephala*.

The two succeeding orders of the Crustacea present little analogy with the *Cyclops*; the *Kliphona* perhaps offering more points of resemblance with the ordinary *Cyclops* than the *Chirocephala* do with the buccal-like form. The former carry by the utmost extent that conversion of all the appendages into locomotive organs which is so obvious a tendency

FIG. 2.



C. Male *Chondrocephala*, in situ, enlarged. a. Valve of female. b. Papillary papillous lobe. c. Intestine of male. p. Eye-spot. i. Testis. 3. The intestine. 4. Spermatozoa. v. Rudimentary appendage. female. p. Ovary.

and give origin to a pair of rudimentary antennules, and to the strong hooked, prehensile antennæ. Behind and below them is a large labrum and three pairs of hook-like papillæ. These are succeeded by two pairs of rudimentary appendages, apparently representing antehumeral limbs.

3d. *Stetholeberis* (see *Fauna Boreogalliæ*), from whose mouth of *Chondrocephala* I first reported the existence of a disk, described a hook consisting of a basilar lobe, extending from the end, backwards to the dorsal surface of the body. However, the existence in front of the anterior margin of the organ which by description is not very strong. The nervous system consists, in males, of six very distinct pairs, one connected with a rounded sac, and emerging at field four pair of joints in the body.

in the ordinary *Copepoda*, while the latter exhibit a more extreme mesocephalism and more complete Sely in the adult state than any of the *Spinæ*.

FIG. 2.



A. *Spinæ* *Microseta* (third view). B. *S. striatulus* (second view) after Miller & March. C. *Spinæ* *Microseta* (first view). D. *Spinæ* *Microseta* (second view). E. *Spinæ* *Microseta* (third view). F. *Spinæ* *Microseta* (fourth view). G. *Spinæ* *Microseta* (fifth view). H. *Spinæ* *Microseta* (sixth view).

The *Spinæ* are represented by the genus *Spinæ*, the "King-crabs" or "Horseshoe-crabs" of America and the Malacca, — a group of species which not merely present the many points of affinity with the *Copepoda* which have just been pointed out, but which also offer relations of analogy (if not of affinity) with the *Phlebotomæ* and the *Stratiotomæ*.

The body of *Spinæ* is naturally divided into three portions — a cephalo-thorax, very similar in form to the carapace of *Apele*, but in composition more closely allied to that of *Cypris*, an abdomen consisting of six combined segments, and a long, spiniferous, pointed and serrated caudal appendage, or "tail." The convex dorsal surface of the carapace is divided into three longitudinal lobes, and presents anteriorly a smooth spot, on each side of which is the corner of a simple eye; at the sides are the two large and compound eyes. The edge of the carapace is thickened, and its sides are prolonged into points posteriorly. Anteriorly, its under surface presents a flattened, cartilaginous, subventral area, behind which it is deeply incised (as in *Apele*), so that the cephalo-thoracic lobe and the lobes are hidden in a deep cavity formed by its shelving walls.

The edges of the abdomen are provided with great movable spines, and its under surface is incised, as in many *Copepoda*, so as to lodge the abdominal members. On its surface it presents traces of the primitive divisions of its members.

A movable labrum projects forwards in the middle line from the upper part of the incised wall immediately behind the subventral plate, and on each side of it is a three-jointed appendage, with its second joint as prolonged as to form a pincer or tibia with the third.

The attachment of this appendage is completely in front of the labrum, which separates it from the mouth, and with whose anterior edge its basal joint is articulated. The second and succeeding appendages to the sixth, are, in the general, very similar in appearance, but a close examination reveals certain important differences among them. In each the basal joint is much enlarged, but in the anterior four it is bent on its inner edge, which projects more or less into the cavity of the mouth, with very numerous movable spines, and is altogether behind the cavity of the mouth.

Again, the second appendage differs from the third, fourth, and fifth, in that the posterior and lower articulation of its movable tibiae place close to the basal part of the labrum, and in, therefore, entirely in front of the mouth. The prolonged spines posterior and lateral angle, however, may be made to project a little into the oral cavity. The basal joints of the other three appendages have their lateral articula-

tions at the posterior edge of, or completely behind the labrum, and their inner and upper angle is provided with a movable spine appendage, which projects freely upwards and forwards into the oral cavity.

Each of these appendages possesses five movable joints, besides the basal; and in the third, fourth, fifth, and sixth appendages, the corresponding joint exhibits a certain near its proximal end, indicative of a division of the joint into two, so that in these members the typical number of seven joints appears to be invariable. The second in the fifth member, in distinctly, are in the female *Spinæ*; in the males of many species, the penultimate joint of the second, and sometimes of the third limb, develops an opposable process, and hence ends in a simple claw.

The sixth appendage, again, differs from those which precede it in other particulars besides the almost entire absence of movable spines on the carapace. This joint is proportionally much larger and stronger, and is produced at its internal angle, which bears a movable curved spiniferous process, curves outwards, and directed backwards between the sides of the mouth and the carapace. The fourth joint supports a movable spine steadily and laterally. The fifth is thick and rounded, and its truncated distal end carries anteriorly four oval lamellæ, posteriorly a cylindrical joint, the continuation of the limb. With the end of this joint, two short, pointed, movable processes, forming a rudimentary pincer, are articulated. The seventh part of appendage consists of only a single joint, which on its inner broad edge, and spinose below.

I have entered at some length into these seemingly unessentially minute structural details, because they are essential to the determination of the homologies of the parts. The six anterior pair of limbs are by most writers demonstrated foot-jaws, some regarding the first pair as antennæ. The last pair are considered by some to be rudimentary foot-jaws, by others to be antennæ. The facts, however, that the two anterior pairs of appendages are inserted entirely in front of the mouth; that the next three pairs are inserted at the sides of and behind the mouth; that they agree with one another in structure, and differ from those before and behind them, and are the only ones the processes of whose composition lie in the mouth; finally, that the sixth and seventh pairs are entirely behind the mouth, and differ widely in structure from the others — point to the conclusion, which appears to me to be fully borne out by the muscular attachments, and nervous supply of the different appendages, that the two anterior pairs are antennæ and maxillæ, the next three pairs mandibles and maxillæ, while the two posterior represent anterior thoracic appendages, or some of the maxillipeds of ordinary Crustacea.

The appendages which follow are very similar in one another in form, and differ widely from those just described, so that it is not surprising to find them all considered of one nature, and hence designated "abdominal" appendages. Nevertheless the first of these appendages, which acts as a sort of operculum to the rest, and carries no branches, but bears the openings of the reproductive organs upon its posterior face, has nothing to do with the abdomen, but is proved by its connection and nervous supply to be the last thoracic appendage. The *Cypris* operculum consists of a basal plate, composed of two lateral lobes, united together in the middle line for the greater part of their extent. Each lobe is again subdivided by a longitudinal fissure into an internal small and an external large portion.

From the inner face of the anterior wall of the upper part of each lobe of the operculum a strong cylindrical, set semi-membranous pillar arises, and passes downwards, to be attached to an inward process of the posterior part of the cephalo-thorax, which may be called the "cephalo-thoracic large appendage." Below *F. Fig. 1*, is distinguished its form similar, but smaller processes, which proceed from the lateral wall of the abdomen, at points corresponding with the depressions visible on the anterior. By far the greater part of the large lateral muscle of the appendage is inserted into the tongue of the cephalo-thorax, and the nerve which supplies the limb is derived directly from the posterior part of the subganglionic ring.

10. If we consider the two anterior appendages of a *Cypris* to be antennæ, and the right to be mandibles, then, there can be little doubt, in the correct view, and I would suggest the next two pairs of appendages to mandibles, then the large appendage to be the last pair of maxillæ, and the two small ones to be the bases of the first pair of maxillæ, which is of little importance.

which surrounds the pullet, and supplies the other thoracic appendages. (C)

The five true abdominal appendages resemble the operation in possessing semi-cartilaginous pillars of attachment, but these are inserted into the material five abdominal tergal appendages; their levator muscles are wholly attached to the abdomen, and their nerves are derived from the abdominal ganglia.

FIG. 1.



Diagram of a vertical longitudinal section of *Limulus polyphemus*. A. Mouth. B. Stomach. C. Pullet. D. Ventral lobe within the same space. E. Cervical ganglion; the dotted line indicates the course of the sympathetic nerve in the great compressed sac, G. The posterior portion of the intestine ring (see above) and again back to connect with the abdominal ganglia a, b, c, d, e, f, g, h, i, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, which are the various ganglia present in the ventral nerve cord, and the various nerves which connect the esophageal duct and the dorsal cord. A, g, the lateral and posterior ends of heart.

The alimentary canal of *Limulus* is very peculiarly arranged. The pullet passes directly forwards and upwards, and gradually widens into the stomach, whose walls are provided with many longitudinal folds. The pylorus forms a narrow tube projecting into the intestine. The two biliary ducts on each side are far apart, and branch out into minute vesicles, which form a mass occupying the greater part of the cavity of the body. The rectum, a narrow tube with pliated walls, and very short, opens into a sort of ventral dilatation situated between the uterus and the ventral wall of the abdomen.

The heart in *Limulus polyphemus* is an elongated muscular tube, divided into eight chambers, and having as many pairs of lateral valvular apertures. It lies in a large pericardial sac, which passes on each side to the abdominal portion. Five apertures, the terminations of the branchial veins. The branches consist of numerous delicate semicircular lamellae, attached transversely to the posterior face of the five abdominal appendages, and superimposed upon one another like the leaves of a book.

The nervous system appears, at first sight, to be very concentrated, its principal mass being disposed in a ring, embracing the oesophagus; but on closer inspection it is found to consist of an anterior mass, representing the principal part of the cerebral ganglia in most other Crustacea, and of two ganglionic cords which proceed from the outer and posterior angles of that mass, and extend as far as the interval between the last and penultimate abdominal appendages. These cords are thick, and lie on each side of the oesophagus, around which they converge, so as to come into close union and almost coalesce, immediately behind it. In front of this point, however, they are connected by three or four commissural cords, which curve round the posterior wall of the oesophagus, and become gradually shorter from before backwards.

The first of these commissures unites the two cords opposite the origin of the nerves to the third pair of appendages (which I regard as the mandibles).

In front of this point the cerebral ganglion gives off later-

ally the nerves to the mouth, eyes, and frontal region, and from their posterior and under face those to the antennules. The nerves to the antennae arise from the cord close to the outer and posterior angles of the cerebral ganglia, and some distance in front of those to the mandibles. Those behind the latter arise the large nerves to the fifth and sixth cephalothoracic appendages.

The nerves to the rudimentary seventh pair of appendages are slender, and come off rather from the under part of the posterior cephalothoracic ganglia; those which supply the eighth pair of appendages, constituting the operation, are the slender, and seem to come off from the longitudinal commissures, though they are, in truth, only united in some places with them for a short distance, and can be readily traced to the ganglia, internal to the nerves of the seventh appendages. The longitudinal commissures are very long, and are included in the same sheath; they pass back into the abdomen, and then present four ganglionic enlargements, whence the nerves of the abdominal appendages proceed. The last of these ganglia is much larger than the others, and appears to consist of several sublinear masses. The nerves diverge from it in such a manner as to resemble a comb's teeth.

The reproductive organs of both sexes consist of a mass of vesicles, which readily through the body enclose the hepatic tubules, and eventually open on papillae situated on the posterior face of the operation. The males are much smaller than the females, and present, in many respects, an external sexual distinction in the protrusion of their second and third appendages already referred to. The whole course of the development of the young has not yet been worked out; but from Milne-Edwards' observations it would appear that in the very young state the telson is undeveloped, and the appendages are fewer in number than when fully grown.

To be continued.

ORIGINAL COMMUNICATIONS.

A CASE OF OPERATION FOR CLEFT AND RETRACTED EYELID.

[COLLECTED BY WILLIAM B. COOPER, M.D.]

By T. WHARTON JONES, F.R.S.

Professor of Ophthalmic Medicine and Surgery in University College, and Ophthalmic Surgeon to the Hospital.

FIGURE 1 represents the eye before the operation. The patient, a gentleman about 25 years of age, was introduced to me by my friend, Dr. HILLIAR, of Upper Grosvenor-street. The dimensions of the eyelids and the distortion of the eyelid were the result of injury, suffered in childhood, from the bursting of a cold-water bottle.

FIG. 1.



FIGURE 2 represents the appearance after the operation, and what an artificial eye had been fitted in.

(A) By French, Mr. Charles Smith, formerly a distinguished student of the Government School of Mines, had the great kindness to present, during his recent visit to America, and to bring over for me some beautiful specimens of *Limulus polyphemus*. It has my best thanks for the loan of them; but the abundance in the last one found; and I hope soon to give elsewhere a full account of my investigations.

FIG. 2.



Operation on the Upper Eyelid.

1. The lines *a* and *b*, in Figure 2, indicate the course of the incisions, which were made with a pair of scissors through the whole thickness of the eyelid. The angular flap *c*, marked out by these incisions, together with a firmness of conjunctiva between it and the eyelid, retracted somewhat; while the

FIG. 3.



segments of the eyelid, on either side, admitted of being brought down, and united by two sutures, in the manner represented in Figure 3. Preparing to cut the wound, the apex of the flap *c* was pared, to make it pointed and firm.

FIG. 4.



Operation on the Lower Eyelid.

About ten days after the operation on the upper eyelid, that on the lower was performed in the same principle as indicated by the lines in Figures 2 and 3.

The operation which I have thus briefly described is, I believe, quite new in principle. No plan I am aware of, hitherto practiced, could have effected the purpose as naturally, simply and completely.

ON THE MORTALITY OF THE METROPOLIS DURING THE PAST WINTER.

By J. FOX, Esq.

I. Mortality from all Causes.

Two deaths registered in London during the thirteen weeks ending March 22, 1857, were 14,000. Assuming the usual hypothesis, that the increase of population since 1851 has been in the same geometrical ratio as between 1847 and 51, this number is equal to 608 out of every 100,000 inhabitants living in the middle of the quarter. But the average mortality of the previous 17 winters has been 616 per 100,000; the past winter has therefore been about 7½ per cent. below the average of the season. Some other winters have presented a lower mortality; thus, that of 1850 was 591; that of 1855, 595; and that of 1848, 588. The winter of 1849 corresponds almost exactly to the amount of mortality with that of 1857, being also 608 per 100,000. With these four exceptions, every winter since 1801, inclusive, has been above the present in mortality.

II. Distribution of the mortality among various diseases.

If the salubrity of the season equally prevailed every disease, or class of diseases, we should find each of them less than its average mortality by 14 per cent., the same as the total mortality. The case is, however, very different. Some show a mortality very much less than the average, others slightly so; and others, again, in spite of the general salubrity, show a mortality very much higher than usual. It is in these points that the special mortal character of a season resides; and two seasons may be the same in their total mortality, and yet, from its different distribution among the several diseases, have a mortal character entirely different. Such is the case with the winters of 1850 and the present; their total mortality is almost the same, and yet that total mortality is made up of different elements, which would require to be estimated before the two seasons could fairly be put into comparison.

If we average the chief diseases and classes of diseases, which together make up the total mortality of this winter, according to their relation to the average mortality from the same cause or class of causes, they will appear as follows; the numbers following each representing, not the mortality, but its relation to the average mortality from the same cause in former winters.

A. Causes of death above the average of former winters:—

	Per cent.		Per cent.
Scarlatina	134	Disease of heart	64
Tetanus	8	Measles	1
Hanging-sore	8	Disease of respiratory organs	64
Disease of kidneys	7		

B. Causes of death below the average of former winters, but not so much below as the total mortality:—

	Per cent.		Per cent.
Consumption	1	Paralysis	54
Rheumatic disease	5	Croup	16
Disease of digestive organs	6	Apoplexy	7

C. Causes of death below the average of former winters, and differing from the average by a greater per centage than the total mortality:—

	Per cent.		Per cent.
Tetanus	8	Disease of nervous system	16
Fremature birth and debility	26	Erysipelas	19
Disease of morbid matter	104	Scarlatina	14
Hydrocephalus, ophthalmia, and convulsions	21	Typhus	55
Erysipelas	14	Diphtheria	31
		Small-pox	78

It appears from these numbers that the peculiar character of last winter has resided in the following points:

First.—A very low amount of mortality from the erysipelous class generally; and, among them, from small-pox, diphtheria, typhus, and scarlatina in particular (2).

(2) The mortality from small-pox has specially diminished from the average of 1847 to the past winter, being, in the two years, 1848, 48, and 71, out of 100,000, below the average of the corresponding seasons. See a paper by the author.

Especially.—Of the epidemic cases of disease the only ones that have been prevalent are leprosy, syphilis and measles.

Tubercle.—Tuberculosis has been largely in excess of its usual prevalence; and consumption, though not more fatal than usual, at the same time not confined in proportion to the general salubrity.

III. Meteorology of the Season.

To distinguish the separate action of the various elements that make up "the weather," on the morbid character of the season, is too difficult a problem to be hastily attempted. For the past winter, with its large amount of death from bronchitis, and its low mortality from most of the epidemic diseases, presents some features in its meteorology that may be worth noting. To a cold November succeeded a December with great fluctuations of temperature, although averaging about the same height of thermometer as usual. The first four weeks of January were rather warmer than the average, but they were succeeded by a very cold period at the end of January and beginning of February, at the commencement of which cold period the thermometer attained a minimum, whence it rose through the whole of February to a maximum at the beginning of March. There had been rather an excess of rain in January, and the degree of humidity was above the average; but in February the amount of rain was small, almost without precedent, while the thermometer showed very much less wind than usual. March was mainly corresponding in great degree with the average; its weeks were alternately warm and cold, the range of the barometer wider than usual, but there was rather less wind shown by Whewell's anemometer. It is probable that the influence of the weather in March is not slightly felt in the mortality of those three winter months, and that it is the character of December, January, and February that chiefly influence the greater or less fatality of disease during the first quarter of the year.

IV. Comparative Mortality of the Five Divisions of the Metropolis.

Although the total mortality of the metropolis during the winter was at the rate of 585 deaths in every 100,000, yet its rate differed considerably in the different divisions. Supposing the same law of increase of population to continue for each division that subsisted between 1841 and 1861, there are still two adjustments requisite in order to obtain the comparative mortality with some approach to correctness. The deaths occurring in the nursing workhouses must be removed from the division in which they occurred, and added to those of the division to which they rightly belonged; and secondly, the deaths in the prisons, hospitals, and asylums must be subtracted from the divisions in which they occurred, and re-distributed over the metropolis in the proportion of the remaining deaths.

Conducted by these methods, the following are the mortality of the five divisions, or groups of districts:—

Western	550
Northern	581
South-eastern	578
Eastern	645
Central	580

It would appear from these numbers that the west, north, and south districts were more healthy than the average of London, while the east and central were less so. Moreover, out of a population of 100,000 in each division, 114 more persons died in the central than died in the western division, so great seems the influence of local causes.

Stoke Newington.

ON THE HEREDITARY TRANSMISSION

OF TUMOURS TO

CANCEROUS AND OTHER TUMOURS.

By JAMES PAGEIN, F.R.S.

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Among the cases which I have recorded of patients with cancerous and other tumours, I find 111 in which I have noted whether the patients or their friends did, or did not, know of tumours of any kind having occurred among their blood-relatives of the same or former generations. With a view to the settlement

of some questions concerning the hereditary transmission of cancerous and other diseases, I have tabulated the chief points of an examination of these cases in the appended tables; and the following statements are a summary of them:

The first table shows that of the 511 patients, 254 had cancerous, other malignant, tumours; 147 had non-cancerous, more innocent, tumours; and 110 had non-cancerous, but recurring, tumours.

Among the 254 with cancers, 66, or 25.9 per cent, had relatives of the same or former generations with cancerous or other tumours.

Among the 147 with tumours neither cancerous nor recurring, 17, or 11.5 per cent, had such relatives with cancerous or other tumours.

Among the 110 with recurring tumours, 4, or 3.6 per cent, had relatives with cancers.

According to these numbers, the respective hereditary tendencies in cancerous and to non-cancerous tumours would seem not very different. But on examination of the first and third tables there occurs a great contrast between them.

For (as Table III. shows), among the 58 cancerous patients whose relatives had tumours, and less than 27 had cancerous relatives; but (as in Table III., among the 11 patients with tumours neither cancerous nor recurring, there were only 11 who had relatives with tumours like their own. The comparison of the respective probabilities of hereditary transmission would, therefore, be as 27:4 for the cancerous to 11:11 for the non-cancerous.

The contrast appears the stronger in sight of the fact (also shown in Table II.), that the greater part of the instances in which similar innocent tumours occurred in more than one member of the same family were limited to one kind of tumour. Of the 11 patients who had relatives with tumours tumours like their own, 7 had some form of cutaneous spot of the scalp, leaving only 4, or 3.6 per cent, as marking the probability of hereditary transmission in all the other forms of innocent tumours reckoned together.

It is hence certain that cancerous disease, as a tendency to it, is passed to posterity by inheritance from parent to offspring, and is more (probably by inheritance of common properties) in many members of the same family and generation. It may seem unnecessary to bring evidence of a fact so generally believed; but there are some who doubt it, and many who are not aware of the large proportion of cases in which cancer may be referred to an hereditary origin. Moreover, a comparison of the two Tables (II. and III.) shows, by the contrast of the two groups of cases, the cancerous and the non-cancerous, how many instances of apparently hereditary origin of disease may be referred to accidental coincidences, or to the transmission, not of a diathesis, but of some peculiarity of the structure or composition of a part. When, for example, the child of a cancerous parent has a cancerous spot in the scalp, we can only count it as an accidental resemblance; but, as Table II. shows, the cases of this kind are not very uncommon; and it might be right to endeavour to estimate from them a deduction to be made in the reckoning of the proportion of actually inherited cancers. For if, then, diathetic tumours may accidentally occur in members of the same family, or, in a certain number of cases, the occurrence of similar tumours in the same family may be referred to accident. Moreover, as the deduction to be made on this ground can scarcely be calculated, and would certainly be less than the addition that we should have to make if we could reckon the cases of inheritance from patients with tumours cancerous, I omit it, and thus run up the general conclusions to be drawn from the tables.

Of patients with non-cancerous tumours (Table II.)	For cases
the proportion that has, or has had, relatives with tumours like their own is	0.1
Do. with tumours non-cancerous, but neither their own	0
Do. with cancerous tumours	0.2

[1] The general ground of the doubt is, that cancer is so common that, owing to its possibility of passing, whether cancerous or not, a large probability would be found with cancerous relatives. The answer is this:—that there are not so many cases of cancerous relatives as are common. Compare Tables II. and III. But, it is not so, because the cases listed in the last are the important instances. The answer is, in the above proportion of odds of inheritance of the cancerous cases, a proportion considerably higher than that of inherited cancers.

For each.	
Of patients with cancerous tumours (Table III.) the proportion that has, or has had, relatives with cancer, 4(3)	22.4
Do. With non-cancerous tumours	7
Of patients with recurring non-cancerous tumours (Table IV.) the proportion that has, or has had, relatives with cancer is	4.0

A few words may be added concerning the last-named cases. The number of instances of these recurring tumours, which occur in the members of cancerous families, justifies an opinion which I have long entertained, but which it is very difficult to establish, namely, that such tumours often represent what may be called a general tending of the cancerous diathesis. The cases which I have tabulated are only those which I have seen; but I have heard and read of others like them, and believe that time will prove that, among the offspring of cancerous parents, and among the members of families in which cancer has occurred, there is a peculiar liability to the production of tumours, which will now and then repeated and resemble carcinoma, though they are neither carcinoma in structure, nor attended with similar disease in the lymphatics or other organs, nor with any metastasis, but such as may be ascribed to their general influence on the constitution.

If this can be proved, we may justly hold that this character of recurrence indicates the existence of the cancerous diathesis, either with less abundance or with less concentration of material than is required for the production of a cancerous tumour with all the typical properties.

The inheritance of the diathesis may in some cases indicate its progressive, but as yet inconspicuous, development; but the probability that, in other cases, the diathesis is descending in hereditary transmission, is supported by facts in the history of other diseases. Thus, we know many of the liabilities of the offspring of grey, and of glaucoma, and of insane persons, and that these diseases, though they may be neither great, nor chronic, nor hereditary, are yet of the same kind,—especially the same disease, but less manifested; or of the same type, but less strongly marked; and we know that success in the management of these diseases depends, in great measure, on a due recognition of their parentage. Now, the recurring tumours, I believe, illustrate the same principle in the pathology of cancer; and if so, they deserve the closest study, as being palpable examples that, in the hereditary transmission of morbid conditions, there is a tendency towards their becoming less, a tendency towards health. (2) This may be due either to dilution, or to changes comparable with those which occur in individuals from disease to health; and very probably it is an example of that general law, according to which the deviations from the true specific form and composition, which constitute varieties in species, become in successive generations, probably less, till the perfect specific character are regained.

In practice, the recognition of recurring tumours suggests caution in speaking of what may follow the removal of any tumour from persons of cancerous family. And this caution should be the greater, the more the removed tumours deviate from the ordinary characters of innocent growths or of the fully developed natural structure. I think that the non-cancerous tumours most likely to recur are those which, at whatever date of growth, have structures similar to those of the natural parts in their very early embryonic state. Such are the recurring fibroid, composed almost wholly of elongated fibro-cells, and the recurring fibro-collous, cartilaginous, and mammary glandular, in all of which we find abundant soft or liquid transparent elements, in which the proper structures, when they are to be found at all, are loose and disorderly in their most immature form. Indeed, whether there be any recognition of cancerous substances or not, all such soft tumours with imperfect embryo structures may be regarded with less of their recurrence after excision.

(2) This is a larger proportion than is stated in my lectures. The difference is probably due to my having here related merely any one possible case of patients whom I have seen, while in the Lectures I referred to cases selected from various sources. I have, probably, included with more than ordinary care into the family histories of patients, but I have not mentioned in my lectures, any cases of more generally known kind, such as I have here tabulated, which I have generally there not related as patients bearing no resemblance with tumours those in whose case I have related nothing concerning their families.

(3) I think, too, that the literature of natural history, and of types, should be consulted with a similar suspicion of their applicability to cancer.

TABLE I.

Kind of Tumour.	Total number of cases.	Proportion of which were cancerous in their parents or have relatives with cancer.	Proportion of the non-cancerous cases which were cancerous in their parents or have relatives with cancer.
Sarcoma and other cancerous cysts	10	0	20
Glandular carcinoma cysts	10	0	10
Carcinoma epidermoidal and adenoma cysts	10	4	10
Soft fibrous tumours	10	4	10
Mixed cellular tumours and embryonal cell-growth	10	0	0
Polypoid adenomatous tumours	10	0	0
Fibrous tumours, non-vascular	10	0	10
Cartilaginous tumours	10	0	0
Cartilaginous and glandular tumours	10	0	0
Mammary tumours	10	0	0
Mammary glandular tumours	10	0	10
Embryonal and other glandular tumours	10	0	0
Tumours and other tumours (as defined)	10	0	0
	107	17	100
Recurring glandular carcinoma cysts	1	1	1
Recurring fibroid and other cellular tumours	1	1	1
Recurring cartilaginous tumours	1	1	1
Recurring mammary glandular tumours	1	1	1
	4	4	4
Subcutaneous tumours	10	2	10
Mammary tumours	10	0	10
Polypoid tumours	10	0	10
Mixed, sarcomatous, and other tumours	10	0	10
	44	2	100

TABLE II.—Cases of Patients with Recurring Tumours, who did not inherit with Tumours.

No. of case.	Recurring disease.	Relation that had to tumours.	Kind of the tumours in the relatives.
1	Optic dilatation of secondary choroid	None.	Cancer of the breast.
2	Cyst of the breast	None.	Enlarged fibrous.
3	Adenoma body cyst.	Fibroid; fibrous.	Similar cysts in same part.
4	Epidermoid body cyst.	None.	Similar cyst in same part.
5	Epidermoid body cyst and epithelioid tumour on the skin.	None; glandular.	Wart on the hand.
6	Fibroid body cyst in the neck.	Fibroid; fibrous.	Tumour in same part, first with a tumour.
7	Cancerous body cyst.	None.	Similar cyst in the same part.
8	Epidermoid body cyst.	Cyst or wart on skin.	Similar cysts.
9	Cancerous body cyst.	Fibroid and cyst of the breast in Father's family.	Cancer of the breast.
10	Cancerous cyst and tumour in the leg.	Father's family.	Cancer.
11	Cancerous body cyst.	None; two cysts.	Similar cysts in same part.
12	Fully formed on the breast of the mother.	None.	Similar tumour in the same part.
13	Fully formed on the breast of the mother.	None.	Cancer of the breast.
14	Fully formed over the scapula.	None.	Cyst, probably breast, on shoulder.
15	Fully formed on the neck.	None.	Similar growth.
16	Cartilaginous tumour in the jaw.	Fibroid.	Cartilaginous cartilaginous tumour in the jaw.
17	Soft cartilaginous tumour on the neck and shoulder.	None.	Cancer of the breast.
18	Cartilaginous and glandular tumour over the parotid.	Cartilaginous.	Cancer of the breast.
19	Mammary body tumour on breast.	None.	Similar tumours.
20	Soft tumour in the orbit.	Cartilaginous.	Wart on the neck and a tumour on the hand.
21	Soft tumour on the nose.	None.	Wart on the hand, a tumour on the hand, a tumour on the thigh.
22	Mammary glandular tumour.	Cystic.	Small polypus.
23	Mammary glandular tumour.	None.	Probably a similar to the above.
24	Mammary glandular tumour.	None.	A tumour removed from the shoulder, non-cancerous.
25	Mammary glandular tumour in breast.	None.	Cancer of the breast.
26	Mammary glandular tumour.	None.	Cancer of the breast.
27	Similar tumour over the parotid.	Fibroid, two cysts.	Tumour in the chest. Cancer of the breast.

Of patients with cancerous tumours (Table III.) the proportion that has, or has had, relatives with cancer, is 22.4
Do. With non-cancerous tumours is 7
Of patients with recurring non-cancerous tumours (Table IV.) the proportion that has, or has had, relatives with cancer is 4.0

A few words may be added concerning the last-named cases. The number of instances of these recurring tumours, which occur in the members of cancerous families, justifies an opinion which I have long entertained, but which it is very difficult to establish, namely, that such tumours often represent what may be called a general tending of the cancerous diathesis. The cases which I have tabulated are only those which I have seen; but I have heard and read of others like them, and believe that time will prove that, among the offspring of cancerous patients, and among the members of families in which cancer has occurred, there is a peculiar liability to the production of tumours, which will now and then repeated and resemble cancers, though they are neither cancerous in structure, nor attended with similar disease in the lymphatics or other organs, nor with any metastasis, but such as may be ascribed to their general influence on the constitution.

If this can be proved, we may justly hold that this character of recurrence indicates the existence of the cancerous diathesis, either with less abundance or with less concentration of material than is required for the production of a cancerous tumour with all the typical properties.

The inheritance of the diathesis may in some cases indicate its progressive, but as yet inconspicuous, development; but the probability that, in other cases, the diathesis is descending in hereditary transmission, is supported by facts in the history of other diseases. Thus, we know many of the liabilities of the offspring of grey, and of glandular, and of haemic persons, and that these diseases, though they may be neither great, nor chronic, nor hereditary, are yet of the same kind,—especially the same disease, but less manifested; or of the same type, but less strongly marked; and we know that success in the management of these diseases depends, in great measure, on a due recognition of their parentage. Now, the recurring tumours, I believe, illustrate the same principle in the pathology of cancer; and if so, they deserve the closest study, as being palpable examples that, in the hereditary transmission of morbid conditions, there is a tendency towards their becoming less, a tendency towards health. (2) This may be due either to dilution, or to changes comparable with those which occur in individuals from disease to health; and very probably it is an example of that general law, according to which the deviations from the true specific form and composition, which constitute varieties in species, become in successive generations, probably less, till the perfect specific character are regained.

In practice, the recognition of recurring tumours suggests caution in speaking of what may follow the removal of any tumour from persons of cancerous family. And this caution should be the greater, the more the removed tumours deviate from the ordinary characters of innocent growths or of the fully developed natural structures. I think that the non-cancerous tumours most likely to recur are those which, at whatever date of growth, have structures similar to those of the natural parts in their very early embryonic state. Such are the recurring fibroid, composed almost wholly of elongated fibro-cells, and the recurring fibro-collous, cartilaginous, and mammary glandular, in all of which we find abundant soft or liquid transparent elements, in which the proper structures, when they are to be found at all, are loose and disorderly in their most immature form. Indeed, whether there be any recognition of cancerous substances or not, all such soft tumours with imperfect embryo structures may be regarded with less of their recurrence after excision.

(2) This is a larger proportion than is stated in my lectures. The difference is probably due to my having here included merely any one brother or sister of patients whom I have seen, while in the Lectures I referred to cases selected from various sources. I have, probably, included with more than ordinary care into the family histories of patients, but I have not mentioned in my lectures, patients who, though in some respects like the ones just mentioned, have been chiefly or more generally free from relatives as patients having no relatives with tumours than in those cases I have related nothing concerning their families.

(3) I think, too, that the inheritance of cancer, and of types, should be regarded with a similar suspicion of their possibility to recur.

TABLE I.

Kind of Tumour.	Total number of cases.	Proportion of which were cancerous in their parents or their relatives.	Proportion of the non-cancerous cases which were cancerous in their relatives.
Sarcoma and other cancerous cysts	120	4	20
Glandular carcinoma cysts	110	4	10
Cancerous epidermoid and adenoma cysts	100	4	10
Soft fibrous tumours	100	1	10
Cartilaginous tumours and fibrous tumours (not sarcoma)	100	1	10
Cartilaginous tumours	100	1	10
Cartilaginous and glandular tumours	100	1	10
Mammary tumours	100	1	10
Cancerous tumours	100	1	10
Mammary glandular tumours	100	1	10
Epidermoid and other glandular tumours	100	1	10
Fibrous and other tumours (as defined)	100	1	10
Recurring glandular carcinoma cysts	1	1	1
Recurring fibroid and other cellular tumours	1	1	1
Recurring cartilaginous tumours	1	1	1
Recurring mammary glandular tumours	1	1	1
Subcutaneous tumours	100	4	10
Mammary tumours	40	1	10
Fibroid tumours	30	1	10
Mixed, sarcoma, and other cancer	10	1	10
	100	10	100

TABLE II.—Cases of Patients with Recurring Tumours, who had Relatives with Tumours.

No. of case.	Patient's disease.	Relative that had tumour.	Kind of the tumour in the relative.
1	Optic dilatation of secondary form	Mother.	Cancer of the breast.
2	Cyst of the breast.	Mother.	Enlarged fibrous.
3	Cancerous body cyst.	Father & sister.	Similar cysts in same part.
4	Epidermoid body cyst.	Mother.	Similar cyst in same part.
5	Epidermoid body cyst and epithelioid tumour on the arm.	Mother & grandchild.	Wart on the hand.
6	Fibroid body cyst in the neck.	Father & brother.	Tumour in same part, first with a tumour.
7	Cancerous body cyst.	Brother.	Similar cyst in the same part.
8	Epidermoid body cyst.	One or more relatives.	Similar cysts.
9	Cancerous body cyst.	Father and one of the brothers of Father's brother.	Cancer of the breast.
10	Cancerous cyst and tumour in the leg.	Father's brother.	Cancer.
11	Cancerous body cyst.	Mother; two sisters.	Similar cysts in same part.
12	Fully formed on the breast of the same part.	Mother.	Similar tumour in the same part.
13	Fully formed on the breast of the same part.	Grandmother.	Cancer of the breast.
14	Fully formed over the scapula.	Mother.	Cyst, probably breast, on shoulder.
15	Fully formed on the neck.	Sister.	Similar growth.
16	Cartilaginous tumour in the jaw.	Father.	Cartilaginous cartilaginous tumour in the jaw.
17	Soft cartilaginous tumour on the neck and shoulder.	Mother.	Cancer of the breast.
18	Cartilaginous and glandular tumour over parotid.	Grandmother.	Cancer of the breast.
19	Mammary body tumour on breast.	Mother.	Similar tumours.
20	Soft tumour in the neck.	Grandmother.	Wart on the neck and a tumour on the hand.
21	Soft tumour on the neck and jaw.	Mother.	Wart on the hand, a tumour on the hand, a tumour on the thigh.
22	Mammary glandular tumour.	Grandmother.	Small polypus.
23	Mammary glandular tumour.	Mother.	Probably a similar tumour.
24	Mammary glandular tumour.	Mother.	A tumour removed from the shoulder, non-cancerous.
25	Mammary glandular tumour in the breast.	Brother.	Cancer of the breast.
26	Mammary glandular tumour.	Grandmother.	Cancer of the breast.
27	Mammary glandular tumour.	Brother.	Cancer of the breast.
28	Mammary glandular tumour.	Brother.	Cancer of the breast.
29	Mammary glandular tumour.	Brother.	Cancer of the breast.
30	Mammary glandular tumour.	Brother.	Cancer of the breast.
31	Mammary glandular tumour.	Brother.	Cancer of the breast.
32	Mammary glandular tumour.	Brother.	Cancer of the breast.
33	Mammary glandular tumour.	Brother.	Cancer of the breast.
34	Mammary glandular tumour.	Brother.	Cancer of the breast.
35	Mammary glandular tumour.	Brother.	Cancer of the breast.
36	Mammary glandular tumour.	Brother.	Cancer of the breast.
37	Mammary glandular tumour.	Brother.	Cancer of the breast.
38	Mammary glandular tumour.	Brother.	Cancer of the breast.
39	Mammary glandular tumour.	Brother.	Cancer of the breast.
40	Mammary glandular tumour.	Brother.	Cancer of the breast.
41	Mammary glandular tumour.	Brother.	Cancer of the breast.
42	Mammary glandular tumour.	Brother.	Cancer of the breast.
43	Mammary glandular tumour.	Brother.	Cancer of the breast.
44	Mammary glandular tumour.	Brother.	Cancer of the breast.
45	Mammary glandular tumour.	Brother.	Cancer of the breast.
46	Mammary glandular tumour.	Brother.	Cancer of the breast.
47	Mammary glandular tumour.	Brother.	Cancer of the breast.
48	Mammary glandular tumour.	Brother.	Cancer of the breast.
49	Mammary glandular tumour.	Brother.	Cancer of the breast.
50	Mammary glandular tumour.	Brother.	Cancer of the breast.
51	Mammary glandular tumour.	Brother.	Cancer of the breast.
52	Mammary glandular tumour.	Brother.	Cancer of the breast.
53	Mammary glandular tumour.	Brother.	Cancer of the breast.
54	Mammary glandular tumour.	Brother.	Cancer of the breast.
55	Mammary glandular tumour.	Brother.	Cancer of the breast.
56	Mammary glandular tumour.	Brother.	Cancer of the breast.
57	Mammary glandular tumour.	Brother.	Cancer of the breast.
58	Mammary glandular tumour.	Brother.	Cancer of the breast.
59	Mammary glandular tumour.	Brother.	Cancer of the breast.
60	Mammary glandular tumour.	Brother.	Cancer of the breast.
61	Mammary glandular tumour.	Brother.	Cancer of the breast.
62	Mammary glandular tumour.	Brother.	Cancer of the breast.
63	Mammary glandular tumour.	Brother.	Cancer of the breast.
64	Mammary glandular tumour.	Brother.	Cancer of the breast.
65	Mammary glandular tumour.	Brother.	Cancer of the breast.
66	Mammary glandular tumour.	Brother.	Cancer of the breast.
67	Mammary glandular tumour.	Brother.	Cancer of the breast.
68	Mammary glandular tumour.	Brother.	Cancer of the breast.
69	Mammary glandular tumour.	Brother.	Cancer of the breast.
70	Mammary glandular tumour.	Brother.	Cancer of the breast.
71	Mammary glandular tumour.	Brother.	Cancer of the breast.
72	Mammary glandular tumour.	Brother.	Cancer of the breast.
73	Mammary glandular tumour.	Brother.	Cancer of the breast.
74	Mammary glandular tumour.	Brother.	Cancer of the breast.
75	Mammary glandular tumour.	Brother.	Cancer of the breast.
76	Mammary glandular tumour.	Brother.	Cancer of the breast.
77	Mammary glandular tumour.	Brother.	Cancer of the breast.
78	Mammary glandular tumour.	Brother.	Cancer of the breast.
79	Mammary glandular tumour.	Brother.	Cancer of the breast.
80	Mammary glandular tumour.	Brother.	Cancer of the breast.
81	Mammary glandular tumour.	Brother.	Cancer of the breast.
82	Mammary glandular tumour.	Brother.	Cancer of the breast.
83	Mammary glandular tumour.	Brother.	Cancer of the breast.
84	Mammary glandular tumour.	Brother.	Cancer of the breast.
85	Mammary glandular tumour.	Brother.	Cancer of the breast.
86	Mammary glandular tumour.	Brother.	Cancer of the breast.
87	Mammary glandular tumour.	Brother.	Cancer of the breast.
88	Mammary glandular tumour.	Brother.	Cancer of the breast.
89	Mammary glandular tumour.	Brother.	Cancer of the breast.
90	Mammary glandular tumour.	Brother.	Cancer of the breast.
91	Mammary glandular tumour.	Brother.	Cancer of the breast.
92	Mammary glandular tumour.	Brother.	Cancer of the breast.
93	Mammary glandular tumour.	Brother.	Cancer of the breast.
94	Mammary glandular tumour.	Brother.	Cancer of the breast.
95	Mammary glandular tumour.	Brother.	Cancer of the breast.
96	Mammary glandular tumour.	Brother.	Cancer of the breast.
97	Mammary glandular tumour.	Brother.	Cancer of the breast.
98	Mammary glandular tumour.	Brother.	Cancer of the breast.
99	Mammary glandular tumour.	Brother.	Cancer of the breast.
100	Mammary glandular tumour.	Brother.	Cancer of the breast.

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Medical Times & Gazette.

SATURDAY, AUGUST 28.

SANITARY SELF-GOVERNMENT.

THE House of Commons has been led to the consideration of the subject of Local Government in sanitary questions by a circumstance of a striking, and, as it may be termed, personal character. It has been said that if reform were required in the management of railways or steam-roads, it was only necessary that a peer or a bishop should be sacrificed by an accident, in order to awaken the doubting scepticism of the Legislature, and to cause the introduction of salutary provisions in the management of locomotives. So, in order to convince honourable members of either House of Parliament that a nuisance existed in any quarter, it would be absolutely necessary that it should be perceptible to the olfactory nerves, or should be positively injurious to the health of the members, before the fact could be admitted or the remedy devised.

Now, it has happened luckily enough for the sake of Sanitary Reform, that the members of the House of Commons have themselves been made sensible of the existence of a nuisance lying directly under their very noses, and physically perceptible by those organs. A few nights since, Mr. Ashurst asked the First Commissioner of Works "whether he had any plan for the prevention of the pestiferous stench which came every evening into every window on the river front of the House of Parliament; and whether there was any power to enforce better trapping of the drains, or a removal of the deposits of human and other refuse on the opposite bank; or whether legislation for the purpose was necessary; or, if there was no reform, whether any plan had been suggested by which the stench might be shut out of the House by closing up all the windows on the river side, and admitting air from another direction."

The answer by Mr. Benjamin Hall to these inquiries showed that the cause of the alleged evil was manifest in their nature, being partly the breaking of the great Victoria sewer, and the consequent diversion of the sewage into a smaller sewer, the trapping of which having been "blown up," a pestiferous vapour had been thereby diffused through the atmosphere. But another great source of annoyance related to the offensive trades which were carried on upon the Lambeth bank of the river, and which, we may observe, have been pointed out again and again, as not only being productive of unpleasant sensations, but as being the fruitful source of disease and death, which was proved during one of the visitations of cholera to this country.

It was also shown that the House of Commons possessed no power to remove any of these nuisances, but Mr. Benjamin Hall had recommended the facts relating to the great and vile sewers to the Metropolitan Board of Works, and he had

reason to believe that they would take steps to abate the nuisance. With respect to the offensive trades carried on upon the Lambeth bank of the Thames, it would be necessary to call the attention of the local authorities to the existence of the nuisance, and to the necessity of abating it. The Right Hon. Member then explained the law upon the subject of nuisances, which we shall quote in extenso, because it involves the expiation of a number of technicalities, and because it throws light upon the subsequent proceedings which we are about to relate in reference to the well-known Lambeth nuisances. He "wished to call the attention of the House to what took place in 1866, when a Bill was introduced with the object of suppressing nuisances in large towns. Under the provisions of the Bill for the Removal of Nuisances, which was referred to a Select Committee, and which was reported to that House on the 24th of May, 1866, ample power was given to local authorities to suppress nuisances arising from trades causing offensive effluvia or injurious to the health of the inhabitants of the neighbourhood. By section 18, local authorities might proceed against parties on complaint of any Medical officer or two legally qualified Medical practitioners; and by section 19, in case the parties proceeded against should object to the jurisdiction of justices in petty sessions, they might enter into recognisances and go to quarter sessions. There was also another clause, section 21, imposing a penalty on the local authorities if they did not proceed within fourteen days to abate the nuisance. The towns-bodies and others opposed; and in committee of the whole House the clause relating to offensive trades was altered. The clause with reference to quarter sessions was struck out, and parties were compelled to take proceedings in the superior courts; the course of proceeding was rendered much more difficult, and the clause imposing a penalty on local authorities was rejected. The consequence was that the public were now completely in the hands of the local authorities." Mr. Benjamin concluded by sarcastically observing that Mr. Ashurst himself, who had put the question upon the subject of the pestiferous odour, had been one of the most instrumental persons in throwing the control of sanitary matters into the hands where it now rested.

The sequel of the story will be found in the columns of our parliamentary intelligence. It appears that Mr. Benjamin Hall caused a letter to be addressed to the local authorities of Lambeth, pointing out the existence of the nuisances affecting the atmosphere of the Houses of Parliament, and urging the Vestry to consent to be taken for their abatement or removal. After a lapse of eleven days, the Vestry clerk sends a letter to the Chief Commissioner, informing him that the Vestry are not prepared to take any legal proceedings in connection with the communication they had received; thus directly setting the Government of the country and the two Houses of Parliament at defiance.

After expressing his regret that, in 1866, a compulsory clause was not introduced into the Act then passed, imposing penalties on local authorities for neglect of duty, Mr. Benjamin Hall added that he hoped, early in the next session, that the House of Commons would pass a short bill to remedy the nuisance, and to compel the local boards to perform the functions devolving upon them.

We have very little doubt that the House of Commons will really legislate upon this subject now that the nuisance has been brought to their very doors; and that subsequent measures, which no amount of argument, of reasoning, or of evidence would formerly have induced them to adopt, will now find favour when their own noses have been smelted in the manner described.

The little parliamentary episode to which we have thus directed the attention of our readers, naturally leads us to

make a few observations upon the very unsatisfactory condition of sanitary legislation at the present moment, and the urgent necessity which exists for its improvement. The principles of local self-government are, it is true, deeply impressed on the British mind, and within due and proper limits they afford an admirable safeguard in securing the liberties of the subject, and protecting them from encroachment or other arbitrary encroachment. But surely it is absurd to carry the system so far as to entrust the sanitary condition of the population of this country to persons who may be wholly ignorant of all sanitary science, and who, moreover, may have a personal interest in the maintenance of the very conditions which it is their duty to remove. We are quite aware that there are many honorable and high-minded, and even highly educated and scientific gentlemen among the local boards which exercise jurisdiction over the interests of the community; but it cannot be denied that among these some local boards there exists a vast amount of ignorance and prejudice, and what is still worse, there exist also, by the very constitution of human nature, by many persons whose interests are opposed to the honest execution of their duty, and who prefer the former at the expense of the latter. Now we do not argue against the delegation of power to such miscellaneous assemblies of British subjects, but we most strongly protest against giving them the absolute power of legislating upon matters which they either do not understand, or upon which their interests and those they are in a state of conflict.

The conduct of the Lambeth Vestry is an instance in point; for, to deny the existence of the pestiferous odours on the banks of the river, or their injurious influence upon the population, would be an indication of the grossest ignorance or the most wilful blindness; while the probable fact that some of the Vestry are interested in the lime-burning operations may furnish no very intelligible reason for the unwillingness displayed to abate the nuisance. In making these observations, we should remark that we know nothing whatever of the composition of the Lambeth Vestry, and we merely argue from the general nature of the materials of which such bodies are constituted.

It is perfectly monstrous that there should be no appeal from the decisions of the local authorities, who in many similar cases neglect their duty, but whose negligence cannot be brought before the notice of the Legislature until they create or tolerate a physical stench under the windows of the House of Commons.

As we have not heard that any Honourable Member has been made seriously ill by the nuisances in Lambeth, and as we appear to have escaped, for the present season, from the visitation of the awful diseases which occasionally, perhaps periodically, diminish our population, we rather rejoice that the Legislature has now learned from actual experience what a nuisance really is. The Parliament of Great Britain, now that their noses have smelt the insupportable gases produced by putrid animal and vegetable matters, may perhaps at last learn that there some establishments are the messengers and the carriers of disease and death; and that, although the rich and the robust may ward off the pestilence by good living and change of air, yet that the poor miserable wretches whose lot places them in the midst of the noxious vapours are the true victims marked out for destruction.

The interference of the Legislature in checking, by all known means, the spread of disease by the removal of nuisances, is most urgently demanded; and if it be argued that no steps are necessary at the present moment, because epidemic disease is not generally prevalent, we reply that a season of public health is the very best period for devising and carrying out measures of sanitary protection. It is better to lay the door against the midnight robber than to struggle with

him in mortal conflict after he has entered the house; and it is better to destroy the germs of disease, which are always too thickly sown among our crowded population, than to attack the hybrid-headed monster of Cholera or Typhus when it has stalked over the length and breadth of the land, and is sweeping away many more thousands of the population than are sacrificed even in the ravages of the battle-field.

THE WILLS.

A case of some importance, on involving the question of testamentary capacity, was tried at Gloucester last week. The testatrix was a lady, of the advanced age of eighty, whose husband died on the 26th of March, 1855, and who herself died on the 19th of May following. The will was dated the 14th April, 1884, and several witnesses were called to prove its due execution. One peculiarity in the case was, that the will was made by a solicitor, to whose mother half the property was left, while the half-at-law was entirely left out of the testamentary instructions. The other half of the property was left to a distant relative of the deceased. The questions which arose, and which required the interposition of a jury, were, whether the testatrix at her advanced age, and suffering from illness, of which she soon after died, was possessed of sufficient capacity to make a will; whether, supposing she were of sufficient capacity, the will was made according to her wishes; and whether the will produced was in fact her will at all. The evidence was by no means satisfactory as to the perfect validity of the will, although no attempt was made to prove consciousness of mind on the part of the testatrix; and her competence was made to rest rather upon negative than positive testimony. The ordinary Medical attendant of the deceased was not brought forward at all, so doubt for good and sufficient reason on one side or the other; and the only Medical witness examined upon the trial was Dr. Evans, of Gloucester, who distinctly expressed his opinion as to her testamentary capacity, but who does not appear to have seen her more than once during the period of her last illness, when she made her will, and who was called in only as a consulting Physician for her illness, and not for the purpose of inquiring into the state of her mind. The manner in which the will was executed, although strictly legal, presented some features worthy of attention. The old lady was seriously ill from the effects of old age and bronchitis, was propped up in the bed, and signed her name in the will with very great difficulty; indeed with so much difficulty as to give rise to the suspicion in some quarters that she had not signed it at all. Under these circumstances, it cannot be a matter of astonishment that the half-at-law disputed the validity of a document, which gave some £2000 in money, and upwards of £100 a-year, to the solicitor's mother-in-law, a lady aged sixty-six, and whom, so we alleged or intimated by one of the counsel, the testatrix had seen only once in her life. The case presents very little difficulty in a Medical-legal point of view, and, judging by the strict rules of evidence, we apprehend that the will must have been pronounced valid; but the jury, after very much deliberation, appear to have regarded the matter in an equitable light, and decided against the validity of the will, by upholding the matter to the half-at-law, thus reversing the bequest to the solicitor's mother-in-law. We do not blame the jury for coming to such a decision; and we cannot but join in the comment generally expressed at the trial against the conduct of those who make wills for the old and infirm ladies in their own houses. At least, if it had been the direct wish of the old lady to leave her money in the manner she was alleged to have left it, there should have been more evidence adduced to prove the fact, and to convince the solicitor from the exceptions to which he was not successfully opposed.

