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EXTRA DIGITS.

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## EXTRA DIGITS.

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A CHILD comes into the world with two thumbs instead of one, or with an extra little finger, or, it may be, with an additional great or little toe.

The parents, if ignorant and superstitious, are dismayed; like the ancient physician, "whose pathology was mythology," they bewail the deformity as an omen of evil, past, present or future, rather than as detrimental to the elegance or usefulness of the afflicted member.

But if they are intelligent and disposed to take the matter calmly, they console themselves by recalling instances of cats and dogs, and even of innocent lambs, which had more than the usual number of digits, yet whose dispositions and those of their parents and offspring gave no sign of demoniacal influence. Some of their friends, too, have seen or heard of other children with the like peculiarity, whose parents, nevertheless, were Christians, who themselves came to no bad end, and whose descendants, even if they inherited the deformity, were in no way remarkable, or, at any rate, not objectionably so.

And so when the physician comes again, and is consulted in the matter, they are quite prepared to receive his more accurate information upon other cases, and to follow his advice with their own. If he be only a practising physician, with no other object in life than to get his patients into good condition as soon as possible, he either advises to leave the



extra digit alone, since it is not greatly in the way and may even be useful, or, if this is not the case, proceeds to remove it after the approved methods: meanwhile recounting to his hearers the like cases which have come within his knowledge; some who had seven, eight, nine and even ten fingers or toes; others, six fingers on each hand and six toes on each foot; while in other cases, these lesser peculiarities of the limbs had been associated with such extraordinary malformations of the body and head, that the astonished parents now congratulate themselves that it was no worse, and that their child was not born a Cyclops or a Hydrocephalus, instead of a simple "Sexdigitist."

But if, on the other hand, our physician is one who while exerting his utmost skill for his patient, yet allows his mind to pass from visible effects toward invisible causes, from isolated facts toward general principles, then will he take careful note of this case, will make perhaps a sketch and a dissection of the specimen, and then, as opportunity occurs, will ponder the whole subject and seek to solve the many questions which now crowd upon his mind.

What are the causes of such malformations, and how are they produced? in which of the two sexes are they more commonly found? on hands or on feet? on the right or the left side? on the ulnar or the radial, the tibial or the fibular border? and what is the occasion of the difference if any exists? All these, and many others which readily suggest themselves, now impart to such anomalies a far deeper interest than before, and if he looks upon succeeding cases with something more than a practical eye as to whether the digit shall be removed or not, and if he now makes inquiries which seem to have no reference to the physical well-being of the child or the mental anxiety of the parents, it is not, as some would have it, because science has dulled his heart to sympathy; his former feelings were merely



human; they have not now degenerated into what is less, but have rather been elevated to what is more than human.

But here, let me insist that our hypothetical Doctor, and every one who takes up this subject, shall get together as large a number of cases, and as full a history of each, as is possible, before attempting to draw from them any general conclusions. For in these days when the scientific world is flooded with theories as to the nature, the causes and the significance of the variation of organized beings; when yet the normal standards have not been determined; when there is with some a willingness to ascribe such variations to mere chance, and with others a disposition to attribute them to physical laws and condition, acting as if of themselves and independently of a Supreme Intelligence; when it is so easy to speculate, and so tedious to investigate; now, of all times, is it necessary that we restrain ourselves, and utter no theory which has not the best foundation in facts, which it is in our power to gain.

Variation is boundless and infinite. Probably no two individual things or beings are exactly alike. The cells of the bee and the webs of the geometrical spider, which have so long been held up to us as examples of mathematical exactness, are now found to differ widely among themselves. No two crystals are identical; nay, even no two symmetrical halves of crystal are identical; more marked, though too often overlooked, are the differences between the two halves of the bodies of animals and of men; males and females correspond, but are not the same; parent and child are alike, yet diverse; even species are by some supposed to vary and to change so as to lose their identity.

Merely expressing in passing my total disbelief in the truth of this last supposition, let me call attention to the individual variations of the Fingers and the Toes, a group of

cases which appeal to the medical man from nearly every stand-point of our most comprehensive profession.

For the surgeon they are a not infrequent occasion for operation. For the anatomist, their own structure and their connections with adjacent parts afford material for dissection; and the physiologist is interested in their various degrees of mobility and usefulness. The embryologist is still in doubt as to the manner of their formation and especially the means of their occasional reproduction; and the teratologist may record and consider their not infrequent association with other and more serious deformities. To the psychologist, the degree of influence which the mother's mental condition may exert upon the production of these and other physical peculiarities should be a subject of serious consideration, before the ancient and still popular opinion upon this matter is set aside as groundless. The statistician may find ample employment for his industry in recording the prevalence of extra digits in certain localities, among certain peoples, and more strikingly in certain families, where they disappear and again appear after several generations in a most remarkable manner. And finally, to each and every one of the above mentioned classes of medical men, these extra digits are too often a source of regret and disappointment; since it is rarely the case that the specimen is preserved or drawings made, or the history recorded to such an extent as to fully answer the inquiries of any two of them.

All the cases of polydactylism, a synopsis of which I shall now present, are from the human species: for though cats and dogs and other animals and birds are known to possess extra digits, their number is too small and the individual histories too incomplete for our present purpose; in addition to which, hardly any two of the common species possess the same normal number of digits.

I have also confined myself on this occasion to what is

called sexdigitism; the presence of a single supernumerary finger or toe; partly on account of the greater number of such cases and the greater ease of recording and tabulating them, but chiefly because there are high authorities who look upon every extra digit as a rudiment of a second individual; so that it is better to confine my statements to these cases, which, whatever may prove to be the correct view as to the higher numbers, are, in my own opinion, simply the result of the undue subdivision of, or an after-growth from, the primitive limb, and not in any way the indication of a double monster.\*

From various sources, specimens, casts, figures, descriptions, letters, and word of mouth,† I have brought together the principal facts which could be obtained concerning one hundred and fifty-two individuals who have or have had six fingers or toes upon one or more of their extremities. The number may seem large, and it is really more than three times as great as any one has had before: but I wish before proceeding farther to express my regret that it is not one thousand, rather than one hundred and fifty-two; but as these are all which are now accessible to me, I am induced to offer them at this time, with three principal objects in view:—

1st. That I may impress upon others the value of each and every fact relating to these cases, since most of them bear directly upon questions now under discussion.

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\* How do the advocates of the view referred to, account for the presence of extra digits upon more than one of the limbs? do they represent portions of as many imperfect monsters? or of one and the same monster, accurately, and as a general thing, evenly, distributed upon the perfect individual? Neither hypothesis is very reasonable.

† Lest others may take the pains to record the same cases again, the writer has recorded all the cases published by Otto, *Monstrorum Sexcentorum Descriptio Anatomica*, 1841; by Simpson, in his *Obstetrical Memoirs and Contributions*, ii. p. 346; by T. Annandale, of Edinburgh, in the *Prize Essay upon Malformations, Diseases and Injuries of the Fingers and Toes*, 1866; by Arthur Mitchell, in a paper upon *Blood Relation in Marriage*, *Mem. Anthropological Society of London*, ii. 402; by Dr. Foltz, *Homologie des Membres Pelviens et Thoracique*; *Journal de*



2d. To suggest a general method of recording such cases.

3d. To indicate, so far as these cases go, the direction which we may expect will be taken by the final results of a much larger number.

The following table indicates the principal results of this record and tabulation of cases :

SEXES.	No. of		Region.		Side.			Borders.					
	Individ- uals.	Affected Limbs.	Ant.	Post. ?	R.	L.	?	U.	R. ?	T.	Fib. ?		
Males	86	168	109	59	81	78	9	66	23	20	12	16	31
Females	39	81	56	25	41	40		20	18	18	3	8	14
Doubtful	27	40	30	10	20	17	3	24	4	2	6	3	1
	152	289	195	94	142	135	12	110	45	40	21	27	46

Ant. Anterior extremity.  
Post. Posterior "  
R. Right.  
L. Left.

U. Ulnar border.  
R. Radial "  
T. Tibial "  
F. Fibular "

No one, so far as I know, has hitherto offered any facts or expressed any opinion as to the comparative frequency of extra digits in the two sexes; and in some cases the sex of

Physiologie, vol. vi. p. 49, 1863; by Reaumur, *L'Art de Faire Eclore Oiseaux Domest.*, 1751, p. 377, quoted incorrectly by Huxley, on the Origin of Species, p. 93; by Darwin, on Animals and Plants in Domestication, 1868, vol. ii.; by Dr. John Struthers, Variation in the number of Fingers and Toes and of the Phalanges, *Edinburgh New Phil. Journal*, July, 1863; by Dr. J. B. S. Jackson, Catalogue of Museum of Boston Society for Medical Improvement; by Vrolik, *Cyclopedia of Anatomy and Physiology*, iv.-ii. p. 948. He has also had access to all the specimens in the Warren Anatomical Museum of the Harvard Medical College, in Prof. Wyman's Museum in Cambridge, and in the Museum of the Boston Society for Medical Improvement; and has likewise found a large number of isolated cases in books, and by inquiring has procured reliable accounts of cases now living. Several important and interesting cases which were sent by Dr. George J. Fisher, of Sing-Sing, New York, the only one who has devoted himself especially to these malformations, and who has published a valuable treatise upon Diplo-teratology (concerning Double Monsters), were unfortunately received too late for tabulation; but these and all others which can be obtained the writer hopes, at some future time, to publish both singly and by tabulated results; the present contribution being intended only as an incentive and help to others. Probably there is scarcely a neighborhood where one or more cases may not be discovered.

the patient is not even mentioned, although it must have been known to the recorder.

It is a generally received opinion that not only is the male the more highly organized, but that he is also more liable to malformations resulting from an *excess* of development, such as double monsters, &c., while the female is thought to be more commonly subject to *arrests* of development. Now whether extra digits are always so many primary subdivisions of the rudimentary hand or foot, or whether they are subsequent outgrowths from the hand or foot already formed, they are in both cases the result of an excessive action in one form or another, and so it is interesting to find that of one hundred and fifty-two individuals affected with extra digits, eighty-six are males and only thirty-nine females: the sex of the remaining twenty-seven is not known.

The one hundred and fifty-two individuals represent six hundred and eight limbs, of which two hundred and eighty-nine or nearly one half were affected. Of these two hundred and eighty-nine affected limbs, one hundred and forty-two were on the right side and one hundred and thirty-five on the left side. The difference between the two sides is therefore very slight; it does not even appear that the two hands differ any more than the two feet, and while the preponderance of cases is upon that which is generally regarded as the dynamic side of the body, perhaps it was not to be expected that parts which vary so slightly in their normal structure and uses should present any striking differences in their malformations.

We come now to a most important and interesting division of the subject: namely, as to the relative frequency of a sixth digit upon the anterior and posterior extremities, the hands and the feet.

Here I must admit having been very decidedly predisposed towards the result which has been reached, for it was this very question which led me first to take up the subject.



While studying the various comparisons of the fore and hind limbs of man and animals which have been instituted by different anatomists, it appeared to me that far too much weight had always been attached to the structure and attitude of the fore limbs, on account of their greater *functional* importance; so that they were generally unable to see how nearly the two limbs may be made to correspond in a symmetrical or antagonistic manner, as do those of the right and left sides.

The greater functional value of the hand was not to be questioned; but it occurred to me that if it could be shown that the hand and the whole arm are more variable than the foot, in attitude, in proportion of parts and in the number of digits, then their morphological value would be diminished to a corresponding degree; and anatomists would be more ready to accept the posterior limbs as the surer guides in their comparison of the two. Now it is known to all that the more various and complicated motions are executed by the hands; also that among the different species of animals, the anterior limbs undergo the greater modification of structure and position to suit the wants of the monkey, the bear, the bird and the fish; also that when, as in the cat, the number of digits is not the same upon the two limbs, the greater number is generally on the hand.

These considerations, anatomical, physiological and zoölogical, as to the variability and consequent less morphological value of the hand, are now strikingly confirmed by the statistics of sexdigitism. For of the two hundred and eighty-nine affected limbs, one hundred and ninety-five, or more than two thirds, are hands, the remainder being feet.

Here there is a possible disturbing element; for it may be said that the extra digit would be more often removed from the feet than from the hand; indeed the additional thumb is sometimes thought by the possessor to be a decided advan-

tage, either in grasping a pen-handle or in taking anything from his vest pocket, by opposing the tips of the two thumbs.\*

But I hardly think the consideration above mentioned will account for the great difference which exists between the hands and the feet in this respect. The result confirms the opinion already expressed by Struthers, which, however, was based upon a much smaller number; while it is directly opposed to the opinion of Darwin, who in his last work, on *Animals and Plants under Domestication*, says that he has tabulated forty-six cases and finds a slight preponderance in favor of the feet, there being seventy-five feet and only seventy-three hands; but this probably includes all varieties of polydactylism.

No less striking than the above is the comparative frequency of the extra digit on the ulnar and radial borders of the hands, the tibial and fibular borders of the feet; and as this, too, bears directly upon a part of the question as to the comparison of the fore and hind limbs, I will dwell upon it for a moment.

A distinguished French anatomist,† who has declared his belief in the existence of a true symmetrical or polar relation of the fore and hind limbs, has coupled with it a theory as to the binary composition of the thumb and great toe; the desire for this arises from his feeling that both these digits are too large for a correspondence with the little toe and little finger, opposite which they come when the hand and foot are symmetrically placed; but his only *facts* in its support

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\* There are also one or two families in Germany whose members pride themselves upon the possession of an extra thumb, and there is an Arab Chieftain whose ancestors have from time immemorial been distinguished by the double thumb upon the right hand. But in view of the great difficulty of eradicating the malformation from a family, one is reminded in all these cases of the fable of the fox who had lost his tail, and ever afterward recommended others to get rid of theirs.

† Dr. Foltz.

are a few cases of extra or double thumbs and great toes, which he thus conceives to represent the normal condition of the parts. But the facts we have to offer indicate that the little finger and little toe are by far the more often double or supernumerary: for of the one hundred and ninety-five hands, one hundred and ten had a supernumerary little finger, and only forty-five an additional thumb; while upon the feet there are twenty-seven extra little toes and only twenty-one great toes.

The greater difference in the relative frequency of an extra digit on the ulnar and radial side of the hand, as compared with that between the tibial and fibular borders of the feet, we may associate with the greater functional distinction between the thumb and the little finger: but the greater variability of the little toe and little finger does not appear to be in accordance with the idea already alluded to, that variation is more frequent in that sex, and in that region of the body, where the greater development and activity exists.

There is one matter which does not come strictly under the head of extra digits; but as it is a variation of a similar nature, and especially as the cases are both rare and extremely valuable, I will say a few words concerning it. There are a few instances (of which one specimen is in the museum of the Boston Society for Medical Improvement) of a thumb possessing an additional phalanx so as to be long and finger-like, yet opposable to the other digits. The chief value of such cases consists in this: that the most serious objection to symmetry, in the minds of those who still insist upon a comparison of the fore and hind limbs as parallel parts, and who consequently consider the thumb and great toe to correspond with each other, is the fact that both these digits normally consist of only two phalanges, while all the others possess three. It is my own opinion that this difficulty is a wholly superficial one, and that the difference in



the number of phalanges is simply a difference of quantity like that in the number of digits themselves, and therefore no basis for a morphological comparison;\* but every such case of a thumb or a great toe having three phalanges is so much toward the means of convincing anatomists that they really correspond, not to each other, but to the little toe and little finger, respectively.

It may be interesting to know which are the more common extra digits among these cases. Of one hundred and eighty-five limbs, being all of which both the sex, side of body, limb, and border are known, the following is the order of frequency. There is a slight difference between the two sexes, but the numbers are too small to prove anything of single digits, and I give only the totals. The order of frequency is as follows:

Right little fingers, . . . . .	53
Left little fingers, . . . . .	52
Right little toes, . . . . .	18
Right thumbs, . . . . .	17
Left thumbs, . . . . .	17
Left little toes, . . . . .	11
Left great toes, . . . . .	10
Right great toes, . . . . .	7
	185

So far we have treated of extra digits according to the *separate limbs* upon which they occur, and, excepting when the sexes were mentioned, have dealt with the *individual sex-digitists* only in *quarters*, giving to each limb a distinct place in our results as well as upon the blanks. Let us now put together the limbs of each individual, and see how they were combined. To do this we must first make a division of the sexdigitists into those which had but one limb affected, those which had two, those which had three, and those which had four; these four groups being called Unisexdigitists, Bisex-

\* Morphological Value and Relations of the Hand; Silliman's Am. Journ. of Science and Art, xlv. July, 1867.

digitists, Trisexdigitists, and Quadrisexdigitists. But a second subdivision, the use of which will presently be seen, may be into Unisexdigitists and Polysexdigitists: of the former there are seventy-three, and of the latter seventy-five; these being divided as follows among the three minor groups—Bisexdigitists thirty-four, Trisexdigitists eleven, Quadrisexdigitists thirty.

## COMBINATION OF EXTRA DIGITS IN INDIVIDUALS.

<i>Unisexdigitists.</i>		No. of Individ.	<i>Bisexdigitists.</i>		No. of Individ.	
Right thumbs	16	41	Both little fingers	24	34	
Left “	11		“ “ toes	2		
∴ “	14		“ great “	2		
Left little finger	8	21	“ thumbs	1		
Right “ “	5		“ “ or little fingers	2		
∴ “ “	8		“ great or little toes	1		
Right little toe	3	62	Right little finger and little toe	1		11
Left “ “	2	7	“ “ “ great or little toe	1		
∴ “ “	2		<i>Trisexdigitists.</i>			
Left great “	2		Both little fingers and right great toe	5		
Right “ “	1	4	“ “ “ “ “ little “	2		
∴ “ “	1		“ thumbs and left great toe	1		
Left great “	2		“ great toes and left thumb	1		
Right “ “	1		“ “ “ “ right “	1		
<i>Recapitulation.</i>		11	“ “ “ “ “ little finger	1	11	
Polysexdigitists.	Unisexdigitists,	73	<i>Quadrisexdigitists.</i>		30	
	{ Bisexdigitists	34	Both little fingers and both little toes	6		
	{ Trisexdigitists	11	“ “ “ “ “ great “	1		
	{ Quadrisexdigitists	30	“ “ “ “ “ ∴ “	6		
Total		148	Both thumbs and both great toes	1	30	
			“ fingers or thumbs and both great or little toes	16		

As will be seen from the foregoing table, the preponderance of hands among the unisexdigitists is very great, being sixty-two to eleven; an exaggeration of the ratio which we found by using all the separate limbs: but in our former results the little fingers have been far more numerous than the thumbs, whereas taking the unisexdigitists alone, we have forty-one thumbs to twenty-one little fingers; from which it appears that if a person has but a single extra digit it is more than five times as likely to be on a hand as on a foot; and if on a hand, twice as likely to be a thumb as a little finger.

But how is it now with the multiple group? In fifty-four of the individuals the hands were affected, and in thirty-two the feet; the trisexdigitists and quadrisexdigitists of course having one or both of the hands or of the feet affected. But what is most remarkable is the complete reversion of the ratio of thumbs and little fingers from what it was with the unisexdigitists; for here there are forty-seven individuals in whom one or both the little fingers was double, while in only five were there extra thumbs; so that if a man has two or three or four extra digits, he is nine times as likely to have a little finger as a thumb. The number of posterior digits is too small for this calculation, but it is evident that little toes are more common than great toes.

There is another point brought out by this table; namely, that when there are two extra digits the repetition is far more likely to be lateral than longitudinal; that is, corresponding digits are doubled on opposite *sides* of the body rather than on opposite *ends*: two little fingers, or two thumbs, rather than a little finger or thumb and a great or little toe. Indeed there are but two cases of this latter kind; one being that of a right little finger and a right little toe, the other being of a right little finger and either a great or little toe. There are not yet enough cases to afford any evidence in either direction upon the question whether the great toe or the little toe corresponds to the thumb.



The number of trisexdigitists is too small for this separate calculation; but the more common combination is of the two little fingers and the right great toe. The quadrisexdigitists also are too few to afford any reliable result, but here as usual the little fingers predominate; in six cases they coexist with both little toes, and in only one case with the great toes; while in six cases they coexist with toes of which it is not known whether they are great or little.

There are many other facts concerning extra digits which must be passed over here with a brief mention. Nearly all of them possessed well-formed nails. A few were pedicellated and not at all under the control of the will: but more often the attachment was firm and the only motion was between their own phalanges which generally agreed in number with those of the adjoining digit. Sometimes there was a sixth metacarpal or metacarpal bone, and there were all possible degrees of completeness from this to a single phalanx attached to the base of the terminal phalanx of the adjoining digit. Some of the extra digits were amputated in infancy, and they seldom re-appeared, though in one case it grew for a second and a third time. This reproduction of digits, however, is more common after amputation *in utero*, when they are sometimes even developed upon the extremity of an arm severed above the wrist.

A large number of cases have been observed in some parts of Scotland where intermarriage is common; but although some infirmities seem to be the direct result of this custom, it may be that extra digits are not *caused* thereby, but only spread abroad. In one case the deformity is connected with the fact of the mother having worked next to a girl with double thumbs, before her marriage.

As may be expected, the previous extent of extra digits in the family constitutes by far the most general predisposing

causes; but there must have been some, or at least *one*, first and autogenous case. The oldest on record is that of a son of Goliath of Gath, who had six fingers on each hand and six toes on each foot; but it is hardly probable that all sex-digitists are descendants of the Philistine.

The whole great subject of hereditary transmission must be passed over with a few words: in all cases I have recorded what was known of the ancestors, the brothers and sisters and the descendants; with cross references when any of these constituted others of my cases.

Dr. Struthers, who has published by far the completest account of original cases of sexdigitism, thinks it necessary to make a primary subdivision of them into the hereditary and the non-hereditary cases; but the second class will also embrace all those of which nothing is known as to ancestry; and moreover, though it is certain that there is a very decided tendency to the perpetuation of the parents' peculiarity in the offspring, sometimes even, as in one remarkable family, gathering force as it descends through successive generations, there being one hand affected in the first generation, two hands in the second, two hands and a foot in the third, and all four limbs in the fourth, yet there are so many cases in which this seems to fail, or in which the malformation appears only after one or more generations or not in the direct line of succession, that I have thought best not to attempt any generalization, and have contented myself with recording the facts so far as they could be ascertained, mentioning not only those relatives who did, but also the number of those who did not present this malformation.

Of the total one hundred and fifty-two individuals, thirteen, or one in eleven or twelve, had some other deformity beside the extra digit: two were giants; Anna Boleyn had a supernumerary mamma and an additional upper tooth. *Hydrocephalus*, or some deformity of the head, existed in four cases;

*hardip* and *cleft-palate* in five; one individual was a part of or *double monster*; *varus* of one or both feet was present in four cases; and in four there was an abnormal condition of the organs of generation.

In addition to the points already mentioned, it is necessary to state the date of record, to affix the name or initials, real or fictitious, of the individual, and his residence or the museum containing the specimen or the title of the works where it is figured or described; all this to avoid the possibility of using the same case a second time.

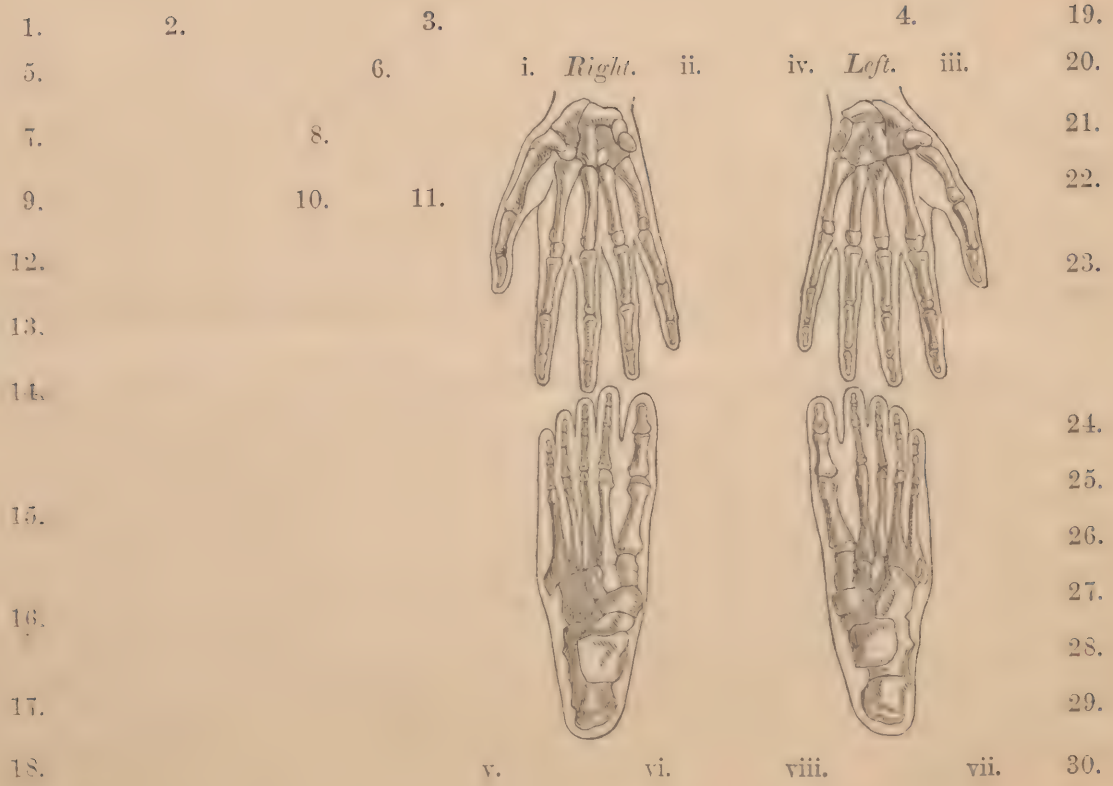
For convenience of recording these facts I have used a half sheet blank, on which are figures corresponding to a list of questions, the answers to which are to be given; additional remarks, and a tracing or drawing of the specimen may be put upon the back. The middle of the front is occupied by a diagram of the palms and soles of the four limbs, upon which it is easy to add the extra digits, so as to show at a glance what the individual possessed.

"It is truly remarkable," writes the gifted German anatomist, Oken, "what it costs to solve any one problem in philosophical anatomy; without knowing the what, the how, and the why, one may stand, not for hours or days, but for weeks, before a fish's skull."

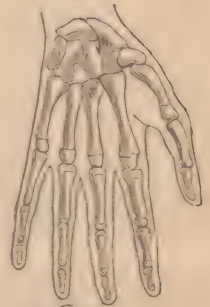
To know the what, the why and the how, is the aim of every seeker after truth, and that truth is only to be reached after long and patient work. The great deficiency in the matter we have considered, is the lack of material; and yet there is enough to be had; for in a single small town of New England there are three distinct families in which one or more members are sexdigitate. If I have succeeded in showing that extra digits may be viewed as something more than curiosities, or as so many pathological specimens, let me hope that no case will hereafter be allowed to go unrecorded in its most minute particular, whether of structure or function, or of history.



For if we believe that nothing happens by chance, and that male and female, right and left, anterior and posterior, internal and external, are not mere artificial distinctions of the regions of our bodies, but are truly and fully the outward embodiments of ideas and principles which have a physical, a spiritual, nay a Divine origin and significance, then the greater frequency of these anomalies in one of the two sexes, upon one or the other side of the body, upon the hand or the foot, will be a never-failing subject for thought and a stimulus to further investigation.



iv. *Left.* iii.



## QUESTIONS TO BE ANSWERED IN RECORDING CASES OF EXTRA DIGITS.

To be filled out and sent to BURT G. WILDER, M.D., *Cornell University, Ithaca, New York,*  
from whom copies of this blank may be procured.

1. How many digits upon the hand or foot in question?
2. The date when this record is made.
3. Name or initials of the person, or the species of the animal; if the real initials are unknown, fictitious ones may be used, taking care, of course, not to use the same ones again on the same day.
4. How many limbs of this individual have extra digits? \*
5. Age of individual, exact or approximate.
6. Sex of individual: ♂ male; ♀ female; ? unknown.
7. Anterior or posterior extremity. Ant. or Post.
8. Right or left side.
9. Ulnar or radial border. The sign + after the answer to either of these questions indicates that there is an extra digit on the foot as well as the hand, on the left as well as the right side, &c.
10. Is there a nail? + or 0.
11. How many joints in addition to the union of the digit with the adjoining digit, or with its metacarpal or metatarsal bone?
12. Degree of mobility and usefulness of the digit.
13. Coexisting malformations in other parts of the body.
14. Presence of extra digits in parents or grandparents, in uncles or aunts, &c.
15. Presence of extra digits in brothers and sisters, and cousins.
16. Presence of extra digits in children; giving in these three answers a reference to the individuals, and also mentioning relations which are *known to be free from these malformations*.
17. Predisposing causes: Heredity, Intermarriage, &c.
18. Exciting causes: Mental Impressions, &c.
19. Operation for removal, when and by whom performed.
20. Result of operation.
21. Name of original observer or recorder.
22. Reference to original work.
23. Reference to other works in which it is mentioned.
24. Race of the sexdigitist.
25. Birth place of sexdigitist.
26. Present residence of sexdigitist.
27. Nature of specimen.
28. Museum or collection containing it.
29. Name of the present recorder.
30. Residence of the present recorder.



\* It is necessary to have this number in order that we may know how many blanks must be filled out in the first place, and got together afterward when we wish to study all the affected limbs of a single individual. Each of the blanks represents a limb, and it takes one, or two, or three, or four of them to give the whole individual. It is not necessary to enter all the statistics of the individual upon each blank, but only upon the first one, which should be that which gives the first of the affected limbs in the order of the Roman numerals upon the diagram; for instance, if a man has an extra little finger on the right hand and an extra little toe on each foot, all the questions from 20 to 30 and those relating to ancestry may be answered *only* upon the little finger blank.

When, as is sometimes the case, two or more individuals are known to have similar malformations, the same blanks may answer for them all, provided a large figure be made over the left hand column, so that in all tabulation the number of individuals so represented may be known.

When it is known which are the extra digits, the Roman numerals corresponding to them are to be surrounded by a circle; but when a description leaves us in doubt, as between two thumbs, or a thumb or a little finger, each doubtful one may be indicated by a semicircle. A drawing or tracing of the specimen or the figure may be made on the back of the blank; and on the diagram itself the extra digits may be added in their proper places, giving simply the outline of the digit, and indicating the bones by straight lines with interruptions for the joints; only one digit may be shown upon each blank, but it is also convenient to show them all upon the first blank.

On the back of the diagram may also be made any more extended statements or explanations regarding some of the circumstances, especially the ancestry and the supposed causes of the malformation: it is better to put all this upon the diagram, for in arranging the cases for study and tabulation only that half of the sheet need be retained.

