ADDRESS

DELIVERED AT

THE ANNIVERSARY MEETING

OF THE

ENTOMOLOGICAL SOCIETY

OF LONDON,

ON THE 24TH JANUARY, 1848,

BY WILLIAM SPENCE, ESQ., F.R.S.,

PRESIDENT.

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ADDRESS.

GENTLEMEN,—I am sorry to have to begin my address by adverting to a subject of deep regret in which we all partake—the resignation of our highly-esteemed Secretary Mr. Westwood, who finds that the greatly increased time which the affairs of the Society require since the passing of the new By-Laws precludes his any longer giving us his services. How valuable these services have been, you are all aware. The duties of a Secretary of this Society are by no means of a light description, necessarily occupying a considerable portion of his time; and when we consider that these onerous duties have been zealously fulfilled by Mr. Westwood for fourteen years past, and that he has besides contributed a large proportion of the interesting papers which fill our Transactions during that period, and has constantly at our meetings given us the advantage of his extensive entomological knowledge on the subjects brought before us, it is obvious how heavy a debt of gratitude is due to him from the Society, and how inadequately it will be paid by the vote of thanks to him to be proposed at the close of the meeting. We can only hope, that though no longer one of its officers, he will continue his valuable assistance to the Society in every way in his power, and especially by favouring us with his important communications as formerly.

I congratulate the Society that the Council has unanimously recommended to you to be elected as Mr. Westwood's successor, Mr. Doubleday of the British Museum, who has agreed to accept the office, and whose intimate knowledge of the science, his ardent love of it, and his active business-habits all concur in assuring us that in him we shall find a zealous and efficient Secretary, from whose exertions, conjoined with those of our other excellent Secretary, Mr. Evans (whose re-election is unanimously recommended), its interests will be certain to prosper.

In directing your attention to the present state and prospects of the Society, I regret to say that our finances are not in a very flourishing condition, a small balance being due to our highly-valued Treasurer Mr. Yarrell, to whom the Society has been for so many years indebted for the admirable regularity and accuracy with which our accounts have been kept; nor am I able to give a more favourable

report as to the number of our Members, of whom we have lost eleven by deaths or resignations, while only seven new ones have been elected during the past year. These would be disheartening circumstances had we not strong grounds for believing that they are only temporary, and that the more rapid publication of our Transactions and their increased interest will bring us a considerable accession of new Members. Now that by their quarterly publication, begun last year, the contributors of papers are certain of their being given to the world within a few months after being read before the Society, we may confidently hope for a great increase of communications, and that a large proportion of the British and Irish entomologists who have not yet joined the Society, will do so, when for so small a subscription they can be supplied with a quarterly record of the progress of the science, and at the same time most essentially contribute to its advancement by supporting our exertions on its behalf.

On inquiring how it is that so many entomologists have not joined our Society, the answer has mostly been that this is in consequence of our paying comparatively little attention to British entomology, to which a large proportion of those who cultivate the science in these islands confine their studies, and therefore feel no great interest in descriptions of foreign insects. Now as I am inclined to believe that there is a good deal of truth in this explanation, and as it is indisputable that without neglecting foreign species, a Society like ours ought to make it its main business thoroughly to describe and know the insects of its own country, I would beg to direct your especial attention to the best means of removing this objection, and of thus attracting new Members to our ranks. Owing to the unhappy certainty that in England no merely scientific entomological work will pay the cost of publication, we have, notwithstanding the valuable labours of several of our first entomologists, whole orders of British insects which have never been described; nor does the British entomologist who resides in the country and has not access to a library of foreign works, possess the means of investigating and naming the species of those undescribed orders which may fall in his way. Now might not this *hiatus* be filled up by means of our Society? If, for example, adopting and extending the valuable suggestion of our late liberal President, the Rev. F. W. Hope, to whom the Society is under so many obligations, in his address of January 26, 1846, two or three of our members were to unite their labours to give us a description of the British Diptera (either in a series of unconnected monographs or on a regular systematic and consecutive arrangement), and if twelve or sixteen pages of this were given in each quarterly part of our Transactions, there would obviously be a great inducement for country entomologists, studying only British insects, to join our body; for it would be a libel on their love of the science to suppose that they would grudge the extra ten shillings a year devoted by us to its general interests, which would be the mere difference between becoming Members of the Society and receiving our Transactions without charge, and buying them of their bookseller. And though the accession of new Members might not be large at first, it would rapidly

extend as our plan of devoting a more considerable portion of our publication to the description of British insects became known, especially when, as our pecuniary means increased, other committees of Members were formed to describe other orders yet undescribed, or only partially, as Hymenoptera, Hemiptera, &c., and new species of Coleoptera and Lepidoptera, discovered since the publication of Mr. Stephens's valuable 'Illustrations of British Insects.'

Another plan, for the suggestion of which we are indebted to Mr. Saunders, for extending the influence of the Society, is that of making it a central point for the interchange of specimens, in the same way as the Botanical Society is of plants, and no one can doubt that our adoption of such a system would be highly advantageous to us in every way. The only question is, whether we can find Members with sufficient leisure to be able to devote the necessary time for carrying out the project in the systematic way which alone could make it succeed. If such Members can be found, as I trust they may, the experiment should certainly be made.

One other suggestion I will venture to add on this subject. It seems to me that a main object of the Transactions of a scientific society ought to be to bring its Members early acquainted with what is doing in their science in other countries, and towards this end it would be highly useful to have read at every meeting a report of the titles and scope of such new entomological works, and of such papers on insects in the Transactions of foreign societies, as had come to the knowledge of the reporter since the previous meeting. The Geological Society has so far adopted this plan as occasionally to give a summary of important new geological works; and if we follow and extend its example, we should not only confer a great boon on our actual Members, who have themselves often neither time nor opportunity to read foreign entomological works and journals, but should impart to our Transactions a new and attractive feature.

The Publication Committee in the early part of the year resolved, after mature deliberation, as already hinted, that the Transactions should appear quarterly, with a view to ensure a more rapid publication of the papers read before the Society. This can only be considered as an experiment, as without larger funds it could scarcely be carried out; but considering how advantageous to our interests its success would prove, it was well worth trying, and it is to be hoped will fulfil all our expectations.

During the past year our Library has received an addition of several new and valuable works, and by the labours of the Library and Cabinet Committee, which has devoted much time and attention to this matter, forty-one volumes have been bound, including thirteen of Entomological tracts, classed under appropriate heads—the whole at an expense under 5*l.*; and as a new MS. Catalogue has been prepared, and the books as far as practicable systematically arranged, reference to them, which was formerly so difficult, will in future be greatly facilitated. With regard to the Cabinets, Mr. Douglas and Mr. Weir, assisted by Mr. Smith, have kindly undertaken the re-arrangement of the Lepidoptera, and a book has been provided which

will show the progress made in arranging the insects and the library, and in which the Curator will enter the names of all visitors.

Donations of insects have been made to our collection by Messrs. Hart, Wing, Westwood, Moore and Evans; and in addition to these presents, John Hutt, Esq., late Governor of Western Australia, has requested me to present to the Society, from him, the specimen found there of the rare and singular Neuropterous genus *Nemoptera*, which he recently sent for our inspection, and which I have named after the liberal donor. Mr. Hutt's insect (of which Mr. Westwood has favoured us with a description, read at a late meeting), at the time he sent it to us, was unique, but another specimen has been since received at the British Museum. It is particularly interesting as being the first species of its very remarkable genus found in Australia.

I now proceed to take a rapid review of the progress of Entomology at home and abroad during the past year, and shall begin with the papers which have appeared in the Transactions of our English scientific Societies.

In those of the Linnæan Society we find interesting communications from Mr. Newport on the aqueous vapour expelled from beehives, and on the generation of Aphides, and two highly valuable memoirs on the natural history, anatomy, and development of the Coleopterous genus *Meloë*, which throw much light on the singular and formerly obscure history of this and allied genera: and this eminent physiologist and entomologist has more recently read to the same Society a note on *Cryptophagus cellaris* of Paykull, and a paper on the air-sacs of insects, not yet printed.

In the Proceedings of the Zoological Society for 1847 are several valuable papers on Crustacea by Mr. Adam White, and one on a species of *Fulgora* from Borneo by Mr. Arthur Adams.

Our own Transactions, of which parts 4 and 5 of vol. iv., and parts 1, 2 and 3 of vol. v. have appeared this year, contain papers contributed by the Rev. F. W. Hope, Mr. Westwood, Mr. Saunders, Mr. Benson, Mr. Evans, Mr. Stephenson, Mr. Douglas, Mr. Templeton, the Rev. T. Savage, Capt. Hutton, Mr. Gray, Mr. Walker, and Dr. Schaum; and other papers have been read before the Society, but are not yet printed, by Mr. Westwood, Capt. Parry, Dr. Schaum, Capt. Hutton and Mr. Evans.

As the Transactions containing most of these papers are in the hands of the Members, and the rest have been read so recently, it is needless to specify their titles, or to refer particularly to the many brief but important notices communicated by various Members contained in the 'Proceedings;' suffice it to observe, that both papers and notices will be admitted by all competent judges to do credit to the Society, and to have contributed valuable materials to the science in its various departments of the description of new groups, genera, and species, and the recording of new facts relative to the structure, economy, and habits of insects, and of their injurious or useful properties. It is unnecessary to impress on you, Gentlemen, that though the latter must doubtless claim the first rank, the cultivation

of all these branches of the science is of nearly equal importance, and that the discoverer and describer of even a single new species, provided he carefully points out its precise place in the system, and the known species to which it is most nearly allied, or he who clears away the obscurities from the synonyms of known ones, is contributing to the important work of completing that systematic arrangement or dictionary of the science, indicating the name of every known species, without which our discovery of any insect remarkable either for its structure or economy, or its influence for good or evil on our social condition, is almost nugatory; for well-founded is the axiom of our great master Linnæus—

"Nomina si perierant, perierat et rerum cognitio."

Many ignorant despisers of systematic natural history reproach us with wasting our time on nomenclature, or in watching and describing the metamorphoses and general economy of insects, and contend that it is only from what they call "practical" men, that is to say, farmers and gardeners, that effective means of destroying noxious species—one of the main objects of Entomology taken in its widest scope—can be looked for. Such objectors should be referred to a paper read by M. Guérin-Méneville to the Royal Academy of Sciences at Paris in January last year, from which it appeared, that while the cultivators of the olive in the south of France, who in two years out of three lost oil to the amount of nearly six millions of francs annually by the attacks on their olives of the grub of a little fly (*Dacus Oleæ*), were utterly unable, with all their "practical" skill, to help themselves in any shape, M. Guérin-Méneville, though no cultivator, applying his entomological knowledge of the genus and species of the insect and of its peculiar economy to the case, advised that the olives should be gathered and crushed much earlier than usual, and before the grubs had had time to eat the greater part of the pulp of the fruit; and by their adoption of this simple plan, the proprietors of olives in the years they are attacked by the *Dacus*, can now obtain an increased annual produce of oil equal in value to 240,000*l.*, which was formerly lost in consequence of their allowing the grubs to go on eating the olives till they dropped from the tree and were utterly worthless; while, at the same time, the greater part of the grubs being now destroyed in crushing the olives, are prevented from becoming flies and giving birth as formerly to a new generation the next year*.

Such are the fruits of sound entomological knowledge; and if we would strikingly contrast it with the so-called "practical" knowledge of the mere farmer, we may refer to the report of our learned and esteemed foreign Honorary Member, M. Milne Edwards, read to the Royal Academy of Sciences at Paris May 11, 1846, on a memoir of M. Blaud, relative to the best means of destroying the insects, and especially the moths, that attack the olives, in which memoir this sagacious agriculturist gravely tells us that the moth which lays in the young olive its egg, from which proceeds a larva that pierces the

* Revue Zoologique, tom. x. 1847, p. 27–29.

pulp of the fruit and then its stone in order to feed on the inclosed kernel, is the *third* generation of a species absolutely *one* and the *same*, which undergoes changes exceeding in wonder all that Steenstrup has recorded of his alternations of generations in Medusæ, &c. M. Blaud seriously told the French Academy of Sciences, that the first generation of this moth early in the year lays its eggs in the *leaves* of the olive, which eggs hatch into leaf-mining larvæ, living on the parenchyma of the leaf, from which proceed moths that must be referred to the genus *Elachista*; that these moths, constituting the second generation, lay their eggs in the *flower-buds* of the olives, where their larvæ defend themselves by a silken web, like the *Yponomeutæ*, and give birth to another moth, which at last, as observed above, lays its eggs in the olive itself! Thus, according to M. Blaud, this marvel of moths has three generations in a year, each generation having an organization and habits wholly dissimilar, and yet forming only one and the same species! I need not point out to you how impossible it is that any rational plan of destroying these insects should be founded on statements so absurd and contrary to fact*.

And even where there is no pretence to practical skill, mere ignorance of natural history leads to as serious errors. M. Bory de St. Vincent stated, at the Académie Royale des Sciences, July 27, 1846, that a military surgeon "bien protégé" was charged during the stay of the Scientific Commission in Algeria to introduce there the cochineal insect, but being neither botanist nor entomologist, and ignorant of the distinction between the Algerian Cactus and the true *Cactus cochenillifer*, and equally ignorant of the habits of the cochineal insects, he tried to rear them on the former, and as they all died, he reported that they can *never* be cultivated in Algeria; though when subsequently placed on their proper food by M. Hardy, they left a profit of upwards of 100*l.* per English acre! For this precious discovery the surgeon actually received a considerable sum, and the cross of the Legion of Honour †!

But we need not go from home for similar instances of ignorance. In a work of which the second edition of a thousand copies has been lately published, entitled 'The Pests of the Farm,' the author, who is an ingenious man, and gives some curious facts as to the habits of a badger and an otter which he tamed,—when he comes under the head "Insects" to speak of the turnip-fly, begins thus:—"The turnip-fly is a term applied indiscriminately to several species of larvæ"!—though in fact no *larva* is ever called the turnip-fly, which is a name appropriated to the different minute skipping beetles of the genus *Haltica* which ordinarily attack turnips; and though the *Tenthredo* (now an *Athalia*) whose larvæ occasionally do much mischief to them may have been called in its winged state the turnip-fly by some naturalists, its larvæ, in which state alone they are known to most agriculturists, are always called by them the "Black Jack" or "Nigger," or some similar name, referring to the caterpillar and its black colour. After filling three or four pages with modes of de-

* Revue Zoologique, tom. ix. 1846, p. 185. † Ib. p. 265.

stroying the "turnip-fly," which all refer to the *Halticæ*, though this name is never mentioned, the author proceeds to quote an account which informs us that rabbits that feed on turnips affected by the turnip-fly contract a vermicular disorder, the worm generated by the fly which is a "*Tanthredo,*" (sic) being deposited in the shape of ova in the plant, and in that form taken into the animal's stomach, and then goes on to say that of these worms, which are short, flat, and white, nine are sometimes found in the hepatic lobes of one rabbit*! A brilliant specimen, this, of the entomological knowledge of our own "practical" men!

This has been a long digression from our immediate object, but the facts to which I have begged to call your attention bear so closely on the value of entomological science and the importance of our own labours in cultivating it, that I know you will excuse my connecting them with the notice of our Transactions; and I now proceed to mention the entomological papers that have appeared last year in the two British journals devoted principally to zoology, namely the 'Annals of Natural History' and 'the Zoologist.'

The 'Annals of Natural History' for 1847 contain entomological papers by Mr. Wollaston describing three new Coleoptera; Mr. Doubleday on various foreign Lepidoptera; Mr. Newport on the reproduction of lost parts in the Articulata and on the crustacean genus *Atya* of Leach; Mr. Walton on various species of Curculionidæ; Mr. Walker on minute parasitical Hymenoptera, and a note on the hop-fly; Mr. Hardy describing three new species of British Coleoptera; Mr. Thompson on *Limnoria terebrans* and *Chelura terebrans*, and on several new species of Crustacea new to the fauna of Ireland; Mr. Westwood in reply to Mr. Newport's paper on the reproduction of lost parts in the Articulata, and an account of the economy of the Rose Caddice Saw-fly (*Lyda inanita*), from the Gardener's Chronicle; Mr. Smith on a new Hymenopterous insect of the family of *Sphegidæ*; Mr. Tatum on two new species of *Carabus* from Asia; Mr. Hewitson describing twelve new species of Butterflies; Mr. White on two new species of *Cetoniadæ* and a note on an Australian Grasshopper; and by Mr. Adams on the habits of certain exotic Spiders.

In the 'Zoologist' for the past year we find, besides numerous notices of the capture of rare insects, the following entomological communications:—A series of notes by Mr. Wollaston on the Coleoptera of the south of Ireland and of the south of Dorsetshire, on the insects of Lundy Island and of the Salterns, Lymington, and on the habits of *Dyschirii*; a note by Mr. Bracy Clark on the bots infesting the throats of deer in the New Forest, which he conceives to be the larvæ of *Œstrus pictus* of Curtis; a paper by the Rev. W. Turner on the feeling of insects; two by Mr. H. N. Turner, jun. on the same subject, and on classification; remarks on the habits of a minute Acarus by Mr. W. Thomson, jun.; description of a supposed new species of *Lasiocampa* by Dr. Shirley Palmer; the commencement of a paper on the affinities of *Stylops* by Mr. Newman; two papers

* Pests of the Farm, pp. 86–90.

by Mr. J. F. Stephens on the occasional abundance and rarity of certain British insects, and on a plan for an Entomological Journal; remarks by Mr. Henry Doubleday on the introduction of exotic insects into collections professedly British, and a description by the same entomologist of four new British Lepidoptera; a revision by Dr. Schaum of the British *Hydrocantharidæ*, and a note on the British species of *Pselophidæ*; and lastly, a series of articles by Mr. Frederic Smith on the British species of *Andræna* of Fabricius, of which he describes seventy species.

To this enumeration of valuable entomological papers appearing in our periodicals in the past year must be added those contributed by Mr. Westwood to the 'Gardener's Chronicle' on insects injurious to gardens; and by Mr. Curtis to the 'Journal of the Royal Agricultural Society of England,' in which this distinguished entomologist has given a full and most instructive history of the insects which attack peas and beans, and of those which are injurious to mangel-wurzel and beet, amongst which last, strange to say, are the larvæ of a *Silpha* (*S. opaca*).

Here, too, should be mentioned the valuable reports by the learned German entomologist Erichson on the books and papers relative to Insects, Crustacea, and Arachnida, published in every part of the world during the years 1843 and 1844, which are given in the volumes of Zoological Reports issued last year by the Ray Society, and for the translation of which we have to thank Mr. Tulk and Mr. Haliday, who have thus rendered an important service to the science: and also the continuation of the "Lists" of the Insects and Crustacea in the British Museum, for which we are indebted to the arduous labours of Mr. Gray, the chief officer of the Zoological department, and his able coadjutors Mr. Doubleday and Mr. White. These lists comprise in the past year the *Cetoniadæ* and *Hydrocanthari* of the order Coleoptera (this last compiled with the aid of the extensive acquaintance with this tribe of the learned entomologist Dr. Schaum, Secretary of the Entomological Society of Stettin); Part 2. of the order Lepidoptera, including the families *Erycinidæ*, *Eumæidæ* and *Lycænidæ*; and the whole class Crustacea, which, though long since separated from the class Insecta, we still regard as coming under our domain.

Though small in bulk, these lists are of inestimable value to the entomologist, enabling him in all difficult cases to determine the identity of his species, and thus forming a solid basis of that correct nomenclature without which the whole superstructure of natural history is comparatively valueless. Under this head must also be noticed the List of British Lepidoptera partly published by Mr. Henry Doubleday, which his extensive knowledge of the subject has enabled him to render so full and accurate as to nomenclature and synonyms, and thus so highly useful and indispensable to British entomologists.

No separate and entire new entomological works have appeared in England during the past year, if (taking in Crustacea) we except the translation of Burmeister's great work on the fossil *Trilobites* pub

lished by the Ray Society under the direction of Professors Bell and Forbes; but the continuations, in monthly parts, of Mr. Doubleday's 'Genera of Diurnal Lepidoptera,' and of Mr. Westwood's 'Cabinet of Oriental Entomology,' both commenced at the close of last year, and of both which, from their splendid illustrative figures and their profound science, we may well be proud, have regularly proceeded in their course of publication; and a few notices of insects appear in Mr. Couch's interesting 'Illustrations of Instinct,' on which, as referring to the migration of insects, of which we have had some remarkable instances last year, I shall beg to make a few observations.

Many of Mr. Couch's speculations on the instincts of animals are very ingenious, but I think he often pushes too far his attempt to explain them by the impulse of natural agents, as temperature, the greater or less abundance of food, &c., and that it would be better to confess that the nature of the wonderful faculties which impel migrating animals to combined movements, and in many cases enable not only them, but domestic animals, as dogs and cats, at once and unerringly to find their former abodes from vast distances, is utterly unknown to us. In fact Mr. Couch himself in one place (p. 145) admits, that the influences which lead to the migrations of insects not commonly migratory, as butterflies, dragon-flies, &c., "are so obscure as to preclude any attempt at explanation;" though he subsequently (p. 152) makes one. These migrations, it seems to me, can only be referred—without being at all explained—to that extraordinary development of a new instinct, to which I have contended, in the letter on Instinct in our 'Introduction to Entomology,' (which, as stated in the Advertisement to our third volume, it fell to my lot to write,) many of the actions of animals which most surprise us must be attributed, such as the instinct which leads hive-bees to set about rearing a new queen, when their former sovereign is by accident destroyed, which is an instinct that may not have occasion to be called into action during a long series of generations in a hive, and yet the moment the extraordinary occasion demands it, is ready to be developed. And it is to a similar extraordinary development of a new and occasional instinct, that it appears to me, as just observed, we must refer the migrations of insects not ordinarily migratory, such as those last year of the Bean-Aphis and of the *Coccinellæ*, which visited us in such hosts at Ramsgate, Margate, &c., arriving, according to some accounts, from the continent. Locusts (of which those seen here last year and the year before in so many places seem to have been merely accidental stragglers from some great swarms proceeding from southern to northern Europe) have a constant migratory instinct; but this is not the case with *Coccinellæ*, *Aphides*, butterflies and dragon-flies, among which numerous generations may exist for years in which no such propensity occurs, and which yet at particular periods is developed, and impels them all at once, with one accord, to leave their ordinary abode and depart in vast swarms to some distant quarter. None of the explanations given of these migrations can be considered satisfactory. It is true that the want of

food might lead a Bean-Aphis to change its quarters, but this want must occur to different individuals at different times, according to the earlier or later exhaustion of the sap in any particular plant or leaf, depending on its age or succulency, and the greater or less number of *Aphides* feeding on it. To what then are we to attribute the *simultaneous* quitting of the bean-field by the whole host that infested it, and all in the same direction even in the calmest weather, but to the extraordinary development of a new instinct not usually called into action, and of the nature of which we know nothing, though the object of these marvellous new propensities seems clearly the spreading into remote regions the minute but important agents in the economy of vegetation, which, from accidental causes, have too greatly multiplied in one locality? On what other principle but the extraordinary development of a new instinct with this object in view, can we account for the vast flight of butterflies (*Vanessa Cardui*) mentioned by Mr. Couch which flew over a district of Switzerland in a column of from ten to fifteen feet broad for two hours without any interruption? Mere want of food would have led the butterflies to disperse in all directions in search of it, not to keep constantly together in a mass which could not possibly find flowers to supply the nectar they must have required: and precisely the same observations are applicable to the great flight of the cabbage butterfly (*Pontia Brassicæ*) which crossed the British Channel from France in the summer of 1846. Mr. Couch's attempt to refer this last migration, which he admits was not caused by boisterous winds, to the congenial calmness and temperature of our climate, seems to me wholly unsatisfactory, for this among other reasons—that the butterflies when in France could not feel nor know that our climate was more agreeable to their habits than that which they were about to quit, and which at the time of their movement could alone act on their sensations.

After this digression on the occasional migratory instinct of insects not usually migratory, of which we had such remarkable instances last year, and on which, as requiring some notice, I have thought it better to offer a few observations in connexion with the work of Mr. Couch, who himself refers to it, than to make it the subject of more extended consideration, the list of last year's works containing only a portion of entomological matter is appropriately concluded by Mr. Patterson's excellent 'Introduction to Zoology for the use of Schools,' which contains an admirable summary of the rudiments of Entomology, with accurate figures, and though of small size is of great value, and is likely to do more for the cultivation of zoology amongst us than any work of recent appearance. Mr. Patterson has also lately issued a second edition of his tract 'On the Study of Natural History as a branch of general Education in Schools and Colleges,' which fully deserves the high commendation bestowed upon it by the Archbishop of Dublin in his excellent lecture on Zoology delivered the 8th of this month to the Royal Irish Zoological Society.

It now only remains, in order to complete our review of the progress of Entomology among us, to state, that in the past year the additions of Insects, Crustacea and Arachnida to the unrivalled and admirably-

arranged collection of the British Museum amount to 6337 specimens, a smaller number than in some previous years; but as in the seven preceding years upwards of 70,000 specimens had been added, it must necessarily follow that in each succeeding year the additions will become less numerous, though the species will mostly be of greater rarity and value.

Having thus adverted to what has been done in Entomology in the past year at home, I now proceed to glance at its progress during the same period abroad; and being unwilling to rely on my own very imperfect acquaintance with the recent entomological literature of the continent, I have requested our learned friend Mr. Haliday, whose knowledge of German entomological works is so intimate, to furnish me with a notice of those published last year in Germany and the north of Europe, and Mr. Westwood to do me the same service as to French works, with which request both those gentlemen have obligingly complied; and I now beg to lay their communications before you, beginning with that of Mr. Haliday, which, in justice to him it should be stated, was hastily drawn up from memory, in a single evening, without any attempt at arrangement.

One of the most important entomological works of 1847 is Stein's 'Vergleichende Anatomie und Physiologie der Insekten,' a work of the same class as those of L. Dufour, Siebold and Loew, executed with great labour and in full detail, the present volume, a quarto, with nine highly-finished copperplates, being devoted to a single system of organs in one sex of the Coleoptera alone. The remainder of the subject is proposed to be treated, in like manner, in a series of monographs.

It may interest some few entomologists to know that a new edition of Wagner's Anatomical Manipulation ('Lehrbuch der Zootomie') is just completed, the Invertebrate portion by Frey and Leuckart.

Oswald Heer of Zurich (the author of the 'Fauna Coleopterorum Helvetiæ,' and of some esteemed botanical works) has recently published a volume on the fossil insect remains in the Tertiary formation of Œningen and Radoboj in Croatia. The part published comprehends the Coleoptera, 122 species, distributed under their families and genera. The predominance of southern forms appears in the high proportion which the families *Lamellicornia* and *Buprestidæ* bear to the rest, viz. fifteen species of each, while only nine of the *Carabici* and two *Brachelytra* have been recognized. At the same time there are no purely tropical forms present. As the elytra are the organs generally best preserved, the author has been led to submit the various types of striation and puncturing, observable on them, to a specially minute study, and has recognized in these, important relations to the characters of natural groups, which may be of moment also in the study of the existing Coleoptera.

In the course of the past year Louis Redtenbacher has brought out three parts of his 'Analytical Arrangement of the Coleoptera of Austria;' a fourth part will complete the order. The plan of the work is in continuation of his 'Genera of German Coleoptera' published in 1845, and embodied with amendments in the present work;

and it may afford, at a moderate price (less than £1), a useful manual even to British entomologists. Bach also has published the first volume of an 'Introduction to the Study of Coleoptera,' and Siebold a 'Catalogue of the Coleoptera of Prussia.'

Various important periodical works on the different orders of Insects have been regularly continued in Germany during the past year:—in Coleoptera, Erichson's 'Käfer Deutschlands,' Sturm's 'Deutschlands Fauna,' Küster's 'Käfer Europa's,' and Burmeister's 'Handbuch,' vol. v., and 'Genera Insectorum';—in Lepidoptera, Herrich Schäffer's 'Systematische Bearbeitung,' and Freyer's 'Neue Beiträge';—Herrich Schäffer's 'Hemiptera,' and Koch's 'Arachniden,' have also been continued. The latter has completed his useful 'Uebersicht des Arachniden Systems,' with four new parts, in which the *Ixodidæ* are treated in more detail, and various species of the different genera illustrated with figures, the execution of which seems superior to that of his larger work.

Two new genera of European Coleoptera have been characterized by Rosenhauer in a little essay, '*Brocosoma* and *Laricobius*.' Loew has added a new part to his Dipterological Essays. Dahlbohm has not yet commenced the second portion of his classical work 'Hymenoptera Europæa,' which is to comprise the Linnæan *Vespæ*; but he has treated some portion of the *Cynipidæ* in a detached sheet. A sixth volume of Zetterstedt's 'Diptera Scandinaviæ' has appeared, and judging from the contents, three more volumes will be required to complete this elaborate work.

The Stettin Entomological Society has continued in full activity, and the number of entomologists, in other countries as well as Germany (six of them members of this Society), who have been admitted as ordinary members during the past year, shows that their proceedings have roused a greater zeal for scientific inquiry and mutual communication. Some of the fruits of the late visit to England of their Secretary, Dr. Schaum, have appeared in their volume of proceedings; as the articles on the determination of questionable Linnæan species of *Coleoptera*, for which the collection of Linnæus, in the possession of the Linnæan Society of London, has afforded the materials. Besides the various interesting communications contained in this volume, (among which may be particularized Suffrian's criticisms on Schönherr's generic arrangement of the *Curculionidæ*, and an elaborate investigation, by the veteran Gravenhorst, of the affinities of the Brachelytrous genus *Quedius*,) the Society have published a second volume of their yearly journal (the *Linnæa*), containing, besides the usual proportion of matter concerning Coleoptera, Lepidoptera and Diptera, from the pens of Suffrian, Zeller and Loew, a desirable contribution to the knowledge of the almost microscopical and obscure Hymenopterous family *Mymaridæ* by Prof. Förster; as a supplement to which may be mentioned Loew's discovery of the hitherto unknown economy and prior states of these insects, communicated in the 'Entomologische Zeitung.'

Entomology continues to flourish in Russia, as evinced by the continued researches of Chaudoir and others. The *Curculionidæ* of the

Caucasian provinces have been registered by Hochhuth. The fauna of these regions, hitherto investigated, solely, or chiefly, in Coleoptera and Lepidoptera, has received an addition as regards other orders from the Enumeration by Kolenati, in his 'Meletemata Entomologica.' The insect-fauna also of the provinces of Livonia and Courland, hitherto little explored, has received some new illustrations from Gimmerthal, Lienig and others, particularly in the 'Correspondenzblatt' and 'Arbeiten der Naturforschender Gesellschaft' of Riga.

An increasing number of detached entomological articles have appeared in various periodicals devoted to zoology, or general science, in continental countries. Among these, Elditt's 'Treatise on the Insects that associate with Ants in their Nests' deserves notice. Among the entomological contributions from Switzerland, perhaps the most interesting are a series of articles by Bremi (known for his unrivalled collection of galls and vegetable excrescences of the like nature); and these have been accompanied by an essay towards a Monograph of the Gall-gnats (*Cecidomyia*). In the caves of Carinthia further discoveries have been made, by Schiödte and Kiesenwetter, of new insect-forms, adapted by their organization, especially in many cases by the entire absence of eyes, to their subterranean home; of which a particular account is expected soon from the former of these naturalists.

Lastly, the twelfth and concluding part of Agassiz's 'Nomenclator Zoologicus,' published last year, forms an alphabetical index to the whole, the names which have received more than one irrelative application being exhibited here in one view with the date of each, thus determining the right of priority. Names faulty in construction and orthography are also distinguished and mostly amended according to the views of the author. The total number of generic names registered may be computed at about 25,000, besides more than a fourth as many names of families and higher groups; every different application and emendation being counted. The names of Botany identical with or too nearly akin to those in use in Zoology are also registered in the notes, the generic names of this sort amounting to not far short of 2500. After these deductions nearly one-half of the total number may remain as names of single use. As the author throughout has chosen to lean to the side of strictness rather than laxity in respect both to similarity of form and philological correctness, some abatement may probably be made on this account. With this inestimable repertory to consult, no zoologist henceforth can be free from censure who produces as new any of the names comprised in it; and the yearly Reports on Zoology in Wiegmann's 'Archives' will fulfil to a great extent the office of a supplement for the subsequent years.

To the preceding valuable report from Mr. Haliday, for which I am persuaded you, like myself, feel highly indebted to him, I may add the titles of a few northern entomological publications which had escaped his recollection, given me by Mr. Westwood: namely, Erichson's 'Jahrbericht für 1845,' and his 'Conspectus of the Coleoptera of Peru;' Corder's 'Prodromus of a Monograph of the Trilobites;' the first number of Schmidt-Göbel's 'Faunula Coleopterorum Burmaniæ, adjectis nonnullis Bengaliæ indigenis;' Burmeister's 'Memoir

on *Athlophorus Klugii*;' and Schönherr's 'Mantissa Secunda Curculionidum.' This Mantissa, completing (at least for the present) his stupendous labours in classing and describing upwards of 300 genera and 6000 species of the Curculionidæ, my old and highly-esteemed friend has kindly sent me along with his portrait, both calling into vivid remembrance our active correspondence forty years ago; and I may here mention, in proof of the high intellectual pleasures which Entomology has in store for her votaries, that I scarcely recollect having ever received greater delight than I did when about the year 1808 I first set eyes on a box of insects which Schönherr, ten or twelve months before, had announced that he had sent me, but which the great difficulties of communication, in consequence of the then war, had made me give up all hopes of ever receiving.

The following is the list obligingly furnished me by Mr. Westwood of the principal works that have appeared during the past year in France, where, in addition to numerous papers in various periodical journals, have been published the continuation of the description of the Insects in the great work on Algeria by Lucas, with figures of every species; the completion of the Entomological part of the Voyage of D'Orbigny in South America by Milne-Edwards, Blanchard, &c.; the 'Histoire Naturelle des Insectes Hymenoptères' by Brullé, vol. iv., which completes the work; and the 'Histoire Naturelle des Insectes Aptères,' vol. iv. by Walckenaer and Gervais, both of which works form part of the 'Suites à Buffon'; Macquart's Supplement to his 'Diptères exotiques;' Mulsant's 'Histoire Naturelle des Coléoptères de France,' including the Sulcicolles and Securipalpes; and the continuation of the description of Insects and Crustacea in the Crochard edition of the 'Règne Animal' by Milne-Edwards and Blanchard.

I am not aware that the past year has given birth to any important entomological work in Italy, and I am not certain whether my friend Signor Passerini's tract on *Lithosia Carniola*, which by some mischance I have not yet received, was published in 1846 or 1847; but however this may be, I will just refer to the curious fact which it records, and which I had often the opportunity of verifying when last at Florence in 1842 and 1843,—that of the larvæ of this moth (of which most of the tribe live on lichens) feeding on the green vegetation on the damp parts of houses near the foundations in the streets and lanes of that city—one of upwards of 80,000 inhabitants—and in such numbers, that in some years, and especially in 1842, the moths swarmed so as to be a great nuisance in all the houses, into which they flew through the open windows in the evenings by hundreds.

I conclude this retrospect by adverting to the only separate entomological work that, as far as I know, has issued from the press last year in the United States; and though in fact extracted from the Transactions of the New York State Agricultural Society, vol. vi., it is, both from its extent—filling sixty closely-printed 8vo pages—and the importance of its subject, well deserving attention. The work in question is entitled 'The Hessian Fly, its history, character, transformations and habits' (by Asa Fitch, M.D.), and contains a very

full and accurate account of this insect, to the ravages of which, from 1779 to the present day, almost every part of the Union has been at different times more or less exposed, causing a pecuniary loss of many millions of dollars. The Hessian-fly (the *Cecidomyia destructor* of Say), which Dr. Fitch brings forward a considerable body of evidence to prove was really, as its name implies, introduced into the United States from Germany during the American war along with the straw used in packing the baggage of the Hessian troops, though a *Cecidomyia*, is a species perfectly distinct from the *Cecidomyia Tritici* of Kirby, attacking in the larva state the lower part of the stems of wheat (and occasionally barley and rye), and thus causing them to break and the plant to perish, whereas the larvæ of *C. Tritici* feed on the pollen of the expanding florets of the ears of wheat, and cause them to be abortive. Were we in want of an incontrovertible proof of the importance, in every country, of studying Entomology as a science, it would be amply supplied by this little insect. Though from 1779 onwards doing vast mischief—"more," says Dr. Barton, "than would an army of 20,000 Hessians,"—and thus constantly forcing itself on the attention of farmers and landowners, and though a few general facts of its history were observed, and endless letters written about it in newspapers and magazines, it was not till 1803—twenty-four years after its first appearance—that an attempt at a scientific and intelligible description of it was made by Dr. Mitchell; nor till 1817, fourteen years later, that Mr. Say, the eminent American entomologist, by publishing a full description of it and one of its parasites, with figures, and giving it a single scientific name instead of the edifying aliases of "Hessian-bug," "wheat-fly," "grain-worm," "yellow-worm," "wheat-worm," "the maggot," &c. &c., by which it had previously been distinguished, enabled experimenters and observers to know what they were talking or writing about, and that they were not confounding the fly their enemy with their friends the little Hymenopterous parasites which feed on it and destroy probably nine-tenths of the race—a distinction so vitally important, but so entirely unknown to non-scientific "practical" men, that, as Dr. Fitch has shown, the most plausible remedy, that of burning the stubble, recommended in ignorance of it, would have been worse than the disease (p. 58). In fact there can be little doubt that if Entomology had been early cultivated in the United States, and the true history and economy of the Hessian-fly had been attended to on its first showing itself, its ravages might have been prevented from extending, or greatly lessened, and a vast amount of needless anxiety and loss through a long course of years avoided.

Having thus taken a rapid survey of the progress of Entomology during the past year at home and abroad, let us glance for a moment at its future prospects amongst us, independently of its connexion with this Society. These, I am happy to say, are very cheering, inasmuch as the science of Natural History, in which ours is included, is at length beginning to make its way as a branch of general educa-

tion, and as a subject of instruction to the working-classes, as is proved by the attention now given to it in some of our Normal Schools, the adoption of Mr. Patterson's excellent 'Introduction to Zoology,' before referred to, by the National Irish Schools, and by many in England and Scotland, and the establishment of a Museum of Natural History at Ipswich chiefly through the exertions of George Ransome, Esq., at the head of which is our venerable and revered Honorary President, and of which the express object (as announced in the eloquent speeches of the Bishop of Norwich, the Dean of Westminster, Professor Henslow, Sir J. P. Boileau, Bart., Mr. Yarrell and other scientific men at its opening, the 15th of last month) is to extend a knowledge of Natural History among all ranks, by means of popular lectures on its various objects brought together in the museum, which it is not intended should serve, like most similar institutions, as a mere attraction for wondering and unimproved curiosity, but as the basis of a taste for this science, and the means of understanding and prosecuting it.

To what has been owing the deplorable ignorance of Natural History which prevails in this country among all classes, not excepting the highest? Obviously (to quote what I have observed on this subject on a former occasion*) to the circumstance that it forms no part of our regular system of education, most of our youth leaving school scarcely aware of the existence of such a science, and so utterly unacquainted with its merest rudiments, that to be told that whales and bats give suck to their young would excite in them a smile of contemptuous incredulity. It is clear that to dispel this ignorance we must make Natural History part of our general system of instruction. If, in spite of its neglect, the love of nature which its Great Author has implanted in the human breast has raised up amongst us a few hundred naturalists, by how many thousands shall we not enumerate them when every schoolboy is told by his teacher that there is such a science as Natural History, that its delights are exquisite and inexhaustible, and shall be put into the way of studying it and enjoying them! And if without any such instruction (the want of which was so feelingly deplored by Sir John Barrow in the preface to his 'Travels in Africa,' and by Lord Dudley and Ward in one of his letters to the Bishop of Llandaff) we see our countrymen in India, Colonels Sykes and Hearsey, Major F. Jenkins, Captains Boys, Hutton and Edwardes, Messrs. Robinson, Downes, Benson, Templeton, Bacon and M'Gregor; the Rev. T. Savage in Africa; Mr. Stephenson in New Zealand; Messrs. Fortnum and Wilson in South Australia; and Dr. Cantor in Prince of Wales's Island; pursue Entomology with such ardour and success as to lay this Society under high obligations to them for their valuable communications,—how rich would be the harvest that each department of Natural History would reap from every quarter, if all our youths, by early initiation into its rudiments, had imparted to them the power as well as the inclination of becoming its zealous cultivators!

* Annals of Natural History, Jan. 1847, vol. xix. p. 56.

"Why," exclaimed a noble lord while admiring through the microscope Mr. Goadby's beautiful preparations of marine zoophytes, "why did I not know what a fund of delight these objects, brought up by the trawl, when I had a yacht, would have afforded me, but which were swept from the deck as rubbish!" And how often in like manner would not our naval officers, as they listlessly pace the deck in a calm, and our Indian officers, as they wearily count the hours when confined to the house all day by the heat, lament the ignorance of Natural History in which their defective education has left them, if they were aware by what endless subjects of admiration and resources against ennui they are surrounded, did they know how to avail themselves of them! At sea, for instance, a single haul with a dredging-apparatus would provide active employment for the leisure hours of a week in securing, observing, investigating, and drawing the marvels of the great deep; and the same happy result would follow in India or our Colonial possessions from a short botanical, geological, or zoological excursion in the neighbourhood, by the officers stationed in any country district. How far greater too would be the interest of a sportsman everywhere, if, instead of killing birds merely for eating, he had in view the acquisition and extension of ornithological knowledge, so that at every time of the year he might pursue his sport, and derive greater pleasure from shooting a single rare bird, however small, to add to his collection, or those of his friends, in summer, than a score of partridges or pheasants in autumn and winter! And to look particularly at our own science, what a treasure must the insects collected by the celebrated entomologist and French general, the Baron Dejean, in his Spanish campaigns, have been to him, when on being told, during a hot pursuit, that some of his baggage-mules must be left to their fate, and asked which he would have saved, he replied at once *that* carrying his collection of insects, though some of those to be sacrificed conveyed his costly service of plate!

If Natural History as a branch of education would thus promote the after-life enjoyment of the upper classes of society, it would equally benefit our working-classes if taught to them. Compare Crowther, the Manchester naturalist, and his thirty or forty comrades in humble life, thinking nothing of a fifteen miles' walk after a hard day's work to reap the intense delight of finding a rare plant or insect, and the calmer enjoyment of then assembling in the rooms of their Naturalists' Society to examine and name and talk about their acquisitions,—to them more precious than gold,—with a similar number of artisans, not naturalists, listlessly sauntering in the fields on a holiday or summer's evening, without eyes to see or heart to enjoy the natural wonders on which they tread, and which everywhere surround them, and glad to take refuge from the insipidity of their walk in an alehouse; and there surely cannot remain a doubt how highly desirable it is that all working men, by having some knowledge of Natural History infused into them at school, should be placed in a position to enjoy the same pleasures from a country excursion as their fellow-workmen the Manchester naturalists, and thus

to double the value of their existence. If there were wanting any proof how important it is to open to the lower ranks of society a source of pleasurable mental occupation such as Natural History supplies, it would be sufficient to refer to a remarkable leading-article in the *Times* a few weeks ago, in which the Editor (and his inference has been since fully confirmed in a letter by an Indian officer) expressly attributes the late general and lamentable instances of insubordination among the British troops in India *solely* to the wearisomeness of an existence without an object to fill up the long day which the heat requires to be passed cooped up in the barracks. Now, I ask, would Crowther and his associates, if soldiers in India, have been thus devoured by ennui? Certainly not. The early morning before drill and the cool evening would have found them eagerly making excursions to collect plants and insects and minerals, for investigating which by their botanical, entomological and geological books, and describing, drawing, and talking about them with each other, the day would have proved too short. So keenly are these pursuits relished by soldiers, that Dr. Andrew Smith informs me, when collecting objects of natural history in South Africa, numbers of them were always ready to accompany him in his excursions.

No genuine naturalist would wish any preference to be given to his own favourite branch of Natural History in teaching it to schools. The great point is to imbue the youth with a love of the whole science, and it may be safely left to his own particular bias, or the future circumstances in which he is placed, what particular department of it he will cultivate; and as entomologists we may hail the exhilarating prospect now at last opening on us of instruction being given in Natural History generally,—quite certain, from what we know of the attractions of our own section of it, that a large proportion of the new generation of naturalists to which we look forward, will swell our ranks in future years, and that where we now count ten members we shall then have a hundred.

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