

Black Sea plankton. Astronomers will be interested in the calculations of Mr. G. A. Tikhoff with regard to the position of stars. Of wide general interest is the article by Mr. K. N. Davidoff on the islands of the Indo-Australian archipelago. The fusion of Europeans and Malays in Amboina has produced a curious type, and the Malay tongue is mingled with Dutch and Portuguese words. According to a horrid custom, a would-be bridegroom cannot be accepted until he makes the maiden an offering of the head of an enemy. Mr. A. Birula writes on the Solifugæ of Persia, with frequent references to Mr. R. Pocock's notes on this order. In vol. xxiii., the eminent naturalist Mr. V. Bianchi describes Passeriformes and Palæartic larks (Alaudidæ), basing his observations on collections in the museums of London, Tring, and Paris. He expresses indebtedness to Dr. Bowdler Sharpe, the Hon. W. Rothschild, and other naturalists for help.

Mr. N. Donitch contributes reports of observations of the annular solar eclipse of March, 1904, made at Cambodia, and of the total solar eclipse of August, 1905. In the latter case, observations were made at Alcalá and Assouan, and Mr. Donitch acknowledges indebtedness for assistance from members of the British Survey Department in Egypt. Notes of inundations at St. Petersburg are furnished by Mr. S. Griboyedoff, and lengthy studies of rainfall in the capital, with diagrams and tables, are given by Mr. E. Rosenthal. Mr. A. Belopolsky's investigations of the radial velocity of the variable star Algol appear in vol. xxiv., and there is another astronomical paper by Mme. Zhilov, on the proximate absolute orbit of the minor planet Doris. Mr. V. Bianchi describes a new species of pheasant from the mountain regions of western China. Balloon experiments at Kutshino are described by Mr. V. Kuznetsoff. From fossils collected by the polar expedition of Baron Toll, 1900-3, Mme. M. Pavloff is able to draw deductions as to the changes of climate of east Siberia from the Tertiary period. Several papers on aerial mechanics are by Mr. D. P. Riabushinsky, and Mr. M. Golenkin writes on a botanical visit to Java. The report of the geological museum of Peter the Great (Academy of Sciences) concludes the volume.

THE CORALS OF HAWAII.¹

THE madreporarian corals present some of the most difficult problems in the matter of the determination of species that are to be found in the whole range of the animal kingdom. So difficult are these problems that Mr. Bernard in his indefatigable labour on the catalogue of the Madreporaria of the British Museum frankly gave them up, and, abandoning the time-honoured binomial system, adopted a new numerico-geographical system of nomenclature.

The difficulty arises from our want of knowledge of the influence played by environmental conditions in the formation of the characters that are presented by a colony of coral polyps and the skeletal structures to which they give rise. In the absence of any direct experimental evidence, upon which alone the problems can be solved, it has been the custom to give specific names to groups of specimens which seem to be separated from other and similar groups of specimens by appreciable differences in the sum total of their characters. The species that are thus constituted inevitably break down if new specimens are found that are intermediate in character between the specific groups already determined, but when they are based on the examination of a very large number of specimens collected from a restricted area, they have at least the advantage of serving a useful purpose for the systematist for a considerable period of time.

It is this system which Mr. Vaughan has adopted in the very handsome memoir of 415 pages, and illustrated by ninety-six plates, which appears under the modest title of "Bulletin 59 of the Publications of the United States National Museum." The author has given himself the task of examining a very large number of specimens from the Hawaiian Islands and the island of Laysan, of forming a conclusion as to the most convenient limits for the

¹ "Recent Madreporaria of the Hawaiian Islands and Laysan." By T. Wayland Vaughan. Pp. ix+427; illustrated. (Washington: Government Printing Office, 1907.)

specific groups, and of giving an opinion on the species problem based on his extensive knowledge and experience of these corals. The result is a work which cannot fail to be of essential importance to all those who are interested in the Madreporaria, and a most noteworthy addition to human knowledge.

But in spite of its undoubted value, and in spite of the great skill and labour that have been spent in its compilation, there are some points in this memoir on which it is necessary to offer a few words of criticism, not in any unfriendly spirit, but in the hope that they may influence in some way those who follow in the author's footsteps and attempt to write a memoir of a similar kind.

Our knowledge of the anatomy of the coral polyps themselves, as distinct from the skeletal structures they form, is admittedly imperfect, but the researches of Moseley, Bourne, Fowler, Duerden and others have at least thrown some light on the relations of the genera and on those characters of the species that are comparatively free from environmental variation. Such evidence as these researches afford must be taken into consideration in any satisfactory scheme of classification, and must be used, so far as it is possible to use it, in conjunction with the evidence derived from the structure of the skeletal characters.

In the light of this evidence, for example, the division of the order into the old suborders Imperforata and Perforata breaks down. The perforate Eupsammiidæ are not related to the Madreporidæ and Poritidæ so closely as to justify their inclusion in the same suborder, whereas the imperforate Pocilloporidæ are not related to the Oculinidæ and Stylophoridæ with which they were formerly associated, but exhibit much closer affinities with some of the Imperforata. It may be true, as Mr. Vaughan remarks, that there is at present no satisfactory classification of the Madreporaria. It may be that for many years to come no classification will be suggested that will be satisfactory to all students of the group. But there is no reason whatever for ignoring the valuable researches of Duerden, and for retaining a classification that is altogether antiquated and misleading, such as the one that is used in this memoir.

It is clear that until we have obtained far more information than we have at present concerning the structure of the soft parts of the coral anatomy, the skeletal characters must play the most important part in the determination of species, but in such a determination every character that the hard parts exhibit must receive its due recognition. For example, it is well known that some genera, and perhaps some species, are more liable than others to be influenced by the presence of epizoic crustacea, worms, and other animals, and no description of a series of specimens is satisfactory if this influence is altogether ignored. The genus Pocillopora is one of those that is particularly liable to the attacks of the crab Hapalocarcinus, and in a note by Prof. Verrill that is quoted by the author (p. 88), the statement is made that the species of this genus in the Hawaiian Islands are usually subject to the malformations caused by this epizoite. But in the descriptions of the species of this genus the author makes no reference to the crab galls, nor are they clearly shown in any of the photographs that are given to illustrate the text. This is a serious oversight, for when the memoir is used for the purpose of the identification of the species of Pocillopora, the galls will at once present a difficulty which the museum curator will not be able to solve by its help. He will ask how far he is able to neglect the presence of these galls, or in what respect they are the determining cause of the general form of growth upon which the species and varieties are founded.

An interesting form described in the volume is *Leptosera tubulifera*, which differs from the other species of the genus in showing a number of hollow, tubular cavities around which the corallum is folded. Similar tubes are found in the alcyonarian genus *Solenocaulon*, in the stylasterine genus *Errina*, and in the madreporarian genera *Neohelia*, *Amphihelia*, &c., and in all these cases there seems to be little doubt that they are due to the influence on growth of epizoic crustacea or worms. It is difficult to believe that this is not also the case in *Leptosera tubulifera*, and if it is the specific distinction from *L. hawaiiensis* is not very clear.

Finally, objection must be taken to the proposal to substitute the generic name *Acropora* for the well-known and widely distributed coral that is usually called *Madrepora*, a proposal originally due to Verrill, but one which cannot be accepted. The name *Madrepora* has been used for this genus since the time of Lamarck (1801), and has become definitely established by use in all the principal memoirs on the subject and in the museums of the world. To change it now can lead to no useful purpose, and can but produce a perfectly unnecessary confusion; and the confusion will be all the worse confounded if, as is proposed, the generic name be transferred to the equally well-known imperforate coral *Oculina*.

It may be true that if we are entirely to conform to the so-called rules of nomenclature the change is justified, but these rules were drawn up, not for the confusion of science, but for its convenience and for the sake of simplicity; and when it is found, as in this case, that they are likely to produce just the opposite effect from that for which they were intended they must either be amended or broken. This is by no means an isolated case, for it has been proposed on the same plea that we should use the name *Polypus* for the common octopus, *Astacus* for the lobster, *Potamobius* for the fresh-water crayfish, and that many other changes of a similar kind should be introduced. It has been found in practice, not only inconvenient, but practically impossible, to make these changes, and the customary names are still used. So it will be with the name *Madrepora*. We may argue and plead as we like for the change, but custom is too strong for us, and the proposal will not be accepted. The time has come when the committee of the International Congress of Zoology should reconsider seriously the question of the maintenance of the names of well-known or widely distributed genera, and endeavour thereby to prevent the confusion with which the strict adherence to Linnean nomenclature threatens us.

S. J. HICKSON.

COMMEMORATIVE DINNER TO SIR WILLIAM RAMSAY, K.C.B., F.R.S.

IN commemoration of the twenty-first anniversary of Sir William Ramsay's election to the chair of chemistry in University College, London, the professors of the college entertained him to dinner on March 18. The Provost, Dr. T. Gregory Foster, was in the chair, and covers were laid for eighty persons. The guests included Lord Rayleigh, Lord Reay, Sir Norman Lockyer, Sir Alexander Kennedy, the Master of the Temple, the Masters of the Worshipful Companies of Drapers, Mercers, and Carpenters, the president of the Society of Chemical Industry, the Clerk of the Fishmongers' Company, Prof. H. B. Dixon, Prof. A. Smithells, Prof. J. M. Thomson, Prof. Meldola, Mr. T. Harrison Townsend, Mr. Henry Higgs, Mr. M. Carteghe, Dr. E. M. Borrigo, Dr. F. Clowes, and Colonel Woseley Cox.

After the toast to the King had been drunk with due honour, the chairman explained that the dinner was, in the first place, the means of expressing the personal affection and admiration of his colleagues for Sir William Ramsay. Leaving it to others to tell what Sir William's contributions to science had been, the chairman referred to the services he had rendered to the college and to London by establishing a great school of chemistry, and also to his perseverance and tact in questions relating to the re-organisation of the University of London. He had never been weary of expressing the great principles of the true relation of examinations to teaching in the University, and of emphasising the view so strongly held by him that in all university examinations the candidates' teachers should of necessity have a share.

Lord Rayleigh then proposed the health of Sir William Ramsay. He told how, twenty-one years ago, when he was secretary of the Royal Society, papers from Ramsay passed in rapid succession through his hands. Many of the older members, perhaps because they were old, hardly approved of his new methods; but, fortunately, these papers were accepted. Proceeding, he reminded the company of the work which Sir William had done in investigating the gases of the atmosphere, of the never failing energy which led him to new discoveries.

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Prof. Dixon seconded the toast, and in doing so attempted to take the view of a later generation in looking back on Sir William Ramsay's work. Having briefly summarised that work as a contribution to the developments of chemistry, he concluded by comparing his activity to that of radium itself.

The toast having been enthusiastically drunk, Sir William Ramsay replied. After thanking his colleagues for their invariable kindness and helpfulness, and his assistants and students for their loyalty and devotion to their work, he emphasised the debt that he owed to them in whatever he had accomplished, and went on to explain how he had received the first suggestion which led to the discovery of argon, and how generously Lord Rayleigh had allowed him to follow out that suggestion. He dwelt, further, on the questions raised by the chairman in connection with university organisation, and expressed the hope that the University of London would even more fully than it had at present develop the principles to which reference had been made.

At a later stage in the evening, in reply to an inquiry from one of the guests as to when a new laboratory would be built for Sir William, the chairman stated that, though they have the ground and the plans, they have not yet obtained the money for buildings.

Prof. Ker then proposed the health of the other guests, and Lord Reay replied. In view of his close connection with the college as president and chairman, his lordship said that he could hardly consider himself a guest within the college walls, but he thanked the professors for having done him the honour to invite him to commemorate with them Sir William Ramsay's twenty-first anniversary. He proceeded to tell of the great work which Sir William had done in advising Mr. Tata about the organisation of the new institute that he had founded in India, and how Sir William's influence was likely to be extended through the fact that one of his pupils, Dr. Morris Travers, was holding the position of head of that institution. Referring to the need of new laboratories for the chemical department, and the inconvenient accommodation now provided for Sir William Ramsay, Lord Reay hoped that just as at Essen the little cottage had been preserved from which the great Krupp gun factory was developed, so that when the new laboratories were built, which his lordship hoped would be soon, the room in which Sir William Ramsay's discoveries had been made should be also preserved.

Expressions of regret for absence were received from the Chancellor of the University (Lord Rosebery), from the Principal (Sir Arthur Rücker), from Profs. Tilden, Crum Brown, and many others.

NEW SLIDE-RULES.

MESSRS. J. J. GRIFFIN AND SONS, LTD., of Kingsway, London, have sent examples of two slide-rules which they are introducing at a very low price—the longer one, which is 25 cm. in length, at 2s., and the shorter, which is 12.5 cm. in length, at 1s. These rules with their slides are made of card, and the divisions are printed. In point of clearness and accuracy they are nearly equal to the best rules divided on celluloid, and they are vastly superior to the old-fashioned box-wood rules of thirty or forty years ago. In each case the upper lines of the slide and of the rule go from 1 to 10 twice over or from 1 to 100, being what are called "A" and "B" lines, while the lower lines of the slide and of the rule are on twice the scale, being "D" lines. Each is provided with a cursor with chisel pointers both to right and left. The back of the slide and all the remaining spaces on the rule are left plain. The accuracy of the surfaces of juxtaposition is specially noteworthy, and is greatly in excess of what is generally associated with card structures. Each is provided with a paper imitation-leather case. With rules such as these, the real utility of the slide-rule may, it is hoped, be brought home to thousands to whom the expense of the now nearly universal celluloid rule is prohibitive; it may even be hoped that some daring mathematical master in a public school may see fit to inculcate the wholesome practice of making calculations not vastly more accurate than any possible knowledge of the data can be, and use rules such as these both to