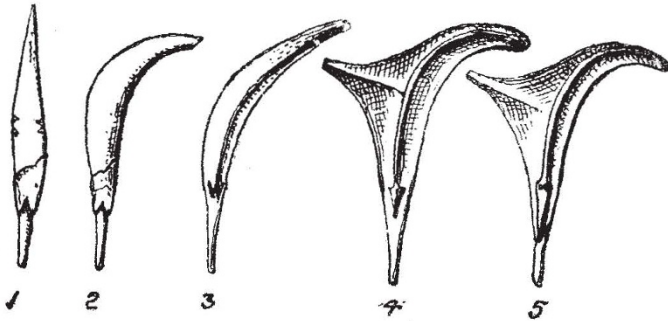


affords a true sequence of ideas that have taken place in the minds of the savages who made these things. And it is in complete analogy with the development of ornamentation in other places, of which several examples are in my museum. The interest which attaches to such specimens of savage art and ornament is purely psychological. Taken as the representatives of ideas, and arranged to show the development of ideas, they serve important purposes in the study of social evolution, ex-



plaining by analogy the law which has operated in producing many otherwise unaccountable conditions of custom, religion, or institutions, of which the successive phases of thought, having never been embodied in tangible forms or committed to writing, cannot be reproduced or arranged in their true order of succession. The sequence therefore is often lost, and wrong causes are assigned to them.

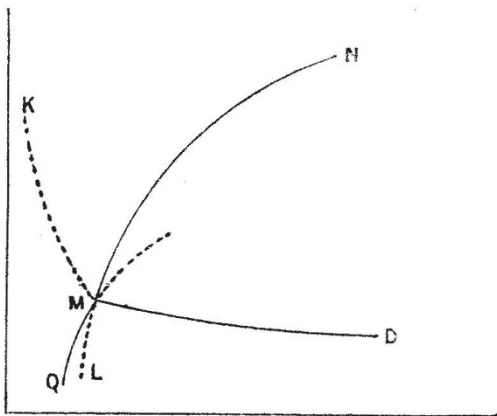
A. PITT RIVERS

Hot Ice

HAVING read a paper before the Owens College Chemical Society on January 21, in explanation of Dr. Carnelley's experiments, in which I treated the subject in a similar way to Dr. Pettersson, perhaps I may be allowed to point out one or two differences in my explanation from that given by Dr. Pettersson in NATURE, vol. xxiv, p. 176.

In the first place Dr. Pettersson speaks several times of the point *m* (the triple point) as being 0°·0078 C. below zero, whereas it must be above, because the melting-point of ice rises as the pressure is diminished.

After describing the line *mk*, which I believed then to exist, and which will probably be found really to exist if ice can be



heated, Dr. Pettersson says that in the case of ordinary ice it has been proved that ice does not get hot, and that the limit of the ice-surface is along *lm*, a continuation of the water-steam line *mn*.

Now Prof. James Thomson describes *m* as the point of intersection of three different lines, *nm*, *dm*, and *qm*, the water-steam, water-ice, and ice-steam lines; *mq* being, not a continuation of *nm*, but a separate line, the difference in position being due of course to the latent heat.

I fail to see also how *mk* can be considered a continuation of *dm*, any than more of *nm*. Lastly, after denying the possibility

of ordinary ice becoming hot, Dr. Pettersson describes Dr. Carnelley's ice as condensed and not frozen. In those experiments of Dr. Carnelley's which I have seen, the water was frozen round the thermometer, and not condensed on it. The matter therefore seems to stand thus:—If the ice does really become hot, the limit of the ice-surface is most probably along *mk*, whereas if Mr. Hannay and others are correct in stating that the temperatures of the ice and condenser are identical, the limit must be along *mq*, and not along *ml*, which latter is the line denoting the maximum tension of the vapour of water cooled below the freezing point without solidifying, and not of ice below the freezing point.

I would just say also that the idea of an allotropic modification of ice did not occur to me.

SYDNEY YOUNG

The Owens College, Manchester

Note on *Piczorhynchus melanocephalus* (Ramsay), and *Ptilopus viridis* (Ramsay), from the Solomon Islands

HAVING lately received several specimens of the *Piczorhynchus*, which I described under the above name, I find that it is the young of Mr. Tristram's *P. vidua* (see *Proc. Linn. Soc. of New South Wales*, vol. iv, p. 468) from the Solomon Islands. The white collar which commences on the nape is much broader in the young than in the adult, and the feathers of the chest are white, all margined conspicuously with black.

Specimens have been obtained on the island of "Ugi," one of the Solomon group.

I believe the fruit pigeon I determined as *Ptilopus viridis*, from the Solomon Islands, will prove to be the female of *Ptilopus argentea*, Gray, of which I have recently seen some fine specimens collected by the Rev. George Brown and Lieut. Richards, R.N., at "Ugi."

ED. P. RAMSAY

Anatomical Museum, Sydney, April

THE BRITISH MUSEUM CATALOGUE OF BIRDS¹

AS has been more than once remarked in our pages, it would require more than one man's lifetime to complete the Catalogue of Birds, if the rate at which the first four volumes were produced had to be continued. Mr. Bowdler Sharpe, who has written these first four volumes, was a young man when he commenced his task, but at the same rate of progress it would have required him to live nearly a hundred years to finish the Catalogue by himself. Dr. Günther has therefore had to seek assistance from outside the walls of the Museum, and has engaged the services of Mr. Seebohm to bring out the fifth volume of the Catalogue, which contains a description of the family *Turdidae*, containing the Thrushes and Warblers. As Mr. Seebohm has devoted several years to a study of this family, he possesses a special knowledge of his subject probably unequalled by any other ornithologist. It must be remembered that, as in the case of Dr. Günther's Catalogue of Fishes, the Catalogue of Birds is not a mere list of specimens in the national collection, but is in reality a monographic *résumé* of the birds of the world. If we look through the first four volumes of this laborious work we shall find that not only are the species in the British Museum thoroughly described, but that species not included in the collection of that institution are also treated of, and the types of rare birds in Continental museums are fully described; showing that Mr. Sharpe was not content to work solely with the collection under his charge, but that he has compared his notes with the specimens in many of the museums of Europe, and has therefore done his utmost to make the Catalogue in every way complete. But if this is true of the first volumes, it is ten times more so in the case of the fifth, which now lies before us. On turning over its pages we see that Mr. Seebohm has not only visited European museums, but has even

¹ Vol. V., Containing the Family *Turdidae*, by Henry Seebohm.

been to America for the purpose of examining types, and the result is that up to the date of publication his work must be as complete as personal labour and an unlimited expenditure of time and money could render it. Again, the author's well-known travels in various parts of Europe and Siberia have made him acquainted with the natural history of a number of the species described in his book, and have given him a practical knowledge which must have stood him in good stead at every turn. It is not in this journal only that he will receive the meed due to his energy and perseverance, but he is sure to receive the gratitude of every ornithologist for a monograph of two such difficult families as the Thrushes and Warblers have always proved themselves to be.

Although adopting Mr. Sharpe's classification of the *Passeres*, he finds that this arrangement is artificial; but we are not sure that the arrangement of our author is altogether free from a similar charge. No one who has not studied the birds above mentioned can have the slightest idea of the extraordinary difficulty which the student would experience who tries to classify the Warblers on structural characters only, and we find no fault with Mr. Seebohm when he makes the style of coloration a generic character in these birds. But that the author himself feels a little uncertain in his key to the genera of the Warblers is shown by his introducing some of the genera three times in the *Clavis* under different sections, and it reads somewhat curiously to learn that one of the characters of the genus *Acrocephalus* is to have "the bill acrocephaline (or phylloscopine)"; the truth being that, as in the case of the species of Warblers, the genera so run one into the other that it is difficult, if not impossible, to define the exact natural limits of each. These remarks, however, almost appear hypercritical when one turns to the actual descriptive work of the author, and examines the complete way in which the synonyms are given and the descriptions elaborated, and this with the utmost conciseness consistent with completeness. One thing is evident from the list of specimens, that the British Museum series of these birds is a very full one, and we note with pleasure the constant generosity of the author himself in supplying specimens from his own collection. In the case of a bird like the common Willow Warbler, for instance, the series of specimens embraces nearly every locality whence the species is known, so that its geographical distribution is absolutely illustrated by the skins in the British Museum.

In his classification of the sub-family *Turdinae*, or True Thrushes, colour again plays an important part in classification, but we cannot complain of his arrangement, which seems to be perfectly natural, although we shall not be surprised if some ornithologists urge that some of the genera included in *Erythacus* and *Mrymecocichla* have at least as good grounds for separation on the style of colour as have some of the genera allowed by Mr. Seebohm. But not only will protests be raised on the score of nomenclature of certain species, but the novel feature of hybridisation and imperfect segregation of species introduced by the author will doubtless be subjected to severe tests. His opinions on the imperfections in the code of zoological nomenclature propounded by the British Association are well known, but the critic who attempts the task of dealing with the author on this point must clear himself of the charge (only too true we fear) that he knows of no writer who attempts to carry them out in their entirety. Mr. Seebohm observes (Introduction, p. 11): "I have accordingly adopted the law of priority with the following modifications:—that names which have been extensively misapplied must be rejected, and names otherwise unobjectionable must be retained, if a majority of ornithological writers have used them, even though they may not be the oldest. The adoption of this conformation of the law to the practice of the good old times would also have another immense

advantage. It would enable us to omit the authority for the specific name, as all the names would henceforth be plurimorum auctorum, and thus the stigma that our names are after all trinomial would be avoided." We must demur to this reasoning, which is heterodox enough to cause the shade of Strickland to arise, and will doubtless bring forward protests from many surviving framers of the British Association code. But we ourselves feel that this practice would very often cause a manifest injustice to the early writers, and we think that this is proved in some instances by Mr. Seebohm himself, as for instance with the name of the Dartford Warbler, which he calls *Sylvia provincialis* (Gmel.), although he admits that Boddaert's name of *Motacilla undata*, published five years before Gmelin's work, and admitted by such authorities as Prof Newton and Mr. Dresser, is referable to the species. Boddaert's name is founded on the *Pittichou de Provence* of Daubenton, and Mr. Seebohm himself admits that "the figure is sufficiently good to leave no reasonable doubt as to the species intended to be designated; and Boddaert's name may therefore be held to be 'clearly defined.' Nevertheless there seems to be no sufficient reason why the name in common use should be changed." Here we consider that the long oblivion which enveloped Boddaert's nomenclature was due, not to any fault of Boddaert himself, but entirely rests with subsequent naturalists, who did not consult his work; and that therefore Boddaert has no right to suffer for the shortcomings or laziness of his successors. We are aware that the scarcity of the book makes Boddaert rather an exceptional case, but the principle applies to many of the writings of the fathers. As however the rules of nomenclature must sooner or later be re-discussed by the British Association, we may leave the defence of his principles to Mr. Seebohm himself, feeling sure that no one can read his opinions on this subject without feeling that he has a good deal to say for his view of the case.

One great feature of the present volume is the courage which the author has shown in applying the doctrine of the evolution of species to the birds as they exist at the present day. This principle was to a small extent admitted by Mr. Sharpe in his previous volumes, when he allowed the existence of sub-species, or, as Mr. Seebohm names them, con-species. The great risk that we see in Mr. Seebohm's method lies in the fact that it affords too easy a solution for otherwise difficult problems, but we must remember that the author was himself witness to the inter-breeding of the Carrion Crow and the Hooded Crow in Siberia, and we know that this also takes place in certain parts of Great Britain. Having seen this with his own eyes, and brought back to this country a large series of the hybrids, it was only reasonable for him to suppose that other birds are also capable of hybridising, and we think that the author proves his case with regard to the two Blue Rock Thrushes (*Monticola cyanus* and *Monticola solitarius*), which in certain parts of China inter-breed; and it is most curious that the vast majority of the birds found in the winter quarters of the Eastern Blue Rock Thrush, from Burmah and Malaisia to the Mollucca Islands appear to be hybrids. According to the author, *Cettia cantans* and *Cettia minuta* also inter-breed, and produce an intermediate form which he calls *Cettia cantans minuta*, a re-introduction of trinomial nomenclature which we do not at all like. The intermediate form, too, appears to be principally found in the Island of Formosa, though also met with at Chefoo, on the mainland opposite Japan, while one of the other forms is an inhabitant of Japan, with the exception of one Formosan skin in the author's collection, and the other is said to breed in South China and Hainan. Of these three forms then we should suppose that the Formosan was the oldest bird from which the other two had developed themselves, but that they had not as yet become entirely separated as distinct species. We must wait for more evidence with regard to

the South African Chats, to some of which Mr. Seebohm has applied his principle of hybridisation, as we are not yet satisfied that the changes of plumage cannot be accounted for by the more natural process due to age or the season of the year. These few remarks will not, however, detract from the sterling merit of Mr. Seebohm's volume, which bears on every page the evidences of the careful and exhaustive work which the author bestows on every subject he handles. The eighteen coloured plates are beautiful examples of Mr. Keuleman's great talents as a natural history artist, and the colouring is much more satisfactory than in the last volume of this Catalogue, issued by the British Museum.

MAGNETIC AND AURORAL OBSERVATIONS IN HIGH LATITUDES¹

LEUTENANT WEYPRECHT, the noted leader of the Austrian Arctic Expedition of 1872-74, whose death is a great loss to science, recently published a little text-book embodying the results of his wide experience in Arctic observation of magnetic and auroral phenomena, which will be invaluable in pointing out to future observers the precautions and requirements which only actual experience of Arctic life can suggest, and the arrangements of apparatus and stores, which, once left behind, must be done without; frequently to the loss of opportunities for observation which do not recur. It would however be wearisome to the general reader to enter into details of Arctic work, and no one to whom the matter is of practical moment will omit reading the book itself. Some however of the precautions suggested give so vivid an idea of the difficulties and even the suffering which Arctic observers have to meet in the cause of science, that we cannot forbear a passing mention of them.

In magnetic observatories, where iron is rigidly tabooed, and uniformity of temperature is of the first importance, stoves are naturally out of the question. In winter, when the huts are thickly covered with snow, the temperature should never fall below -20°C . (-4°F .), which, as Weyprecht says, may be borne for some hours in suitable clothing without severe suffering. Good fur garments are naturally essential. The most difficult part is the sufficient protection of the feet, that found most effectual being very wide felt boots reaching to the knee, into which the feet, clad in thick woollen stockings, are packed with dry hay or straw. The hands are covered with thick woollen gloves, and whenever they are not in actual use are further protected by fur. In absolute determinations however, which have to be carried on in a separate hut, which is also used as an astronomical observatory, and hence more open to the weather, the cold is not only much more intense, but the fingers must be left bare, or at most covered with thin cotton gloves, on account of the delicacy of the instruments. On two occasions during the *Tegetthoff* Expedition such quantities of snow were driven into the observatory through the crevices of the shutters as, by loading one side of the telescope, actually to throw it off its pillar.

For absolute magnetic observations Weyprecht gives preference to Prof. Lamont's portable theodolite, which contains in itself everything necessary for the determination of declination and horizontal and vertical intensity. If however a fixed scale could be attached to the telescope for rapid readings the instrument would be still further improved.

With regard to northern light observations, Weyprecht repeats his important classification of auroral forms given in his *Nordlichtbeobachtungen*. For observations on the altitude of auroræ, with a view to calculation of height, he recommends a simple instrument consisting of a tube with an eye-piece, movable in the magnetic meridian, and

with an altitude circle reading to $\frac{1}{2}^{\circ}$. The tube must be attached to the end of the axis, so as to be capable of sweeping the entire meridian. The observations should be repeated at short and regular intervals, and both the upper and lower edges of the arches should be observed, thus giving at once the mean altitude and the breadth of the bands. If the "dark segment" is visible, its mean height and the azimuth of its summit must be observed, as it probably indicates the direction of the origin of the aurora. If a corona is formed the approximate position of its centre must be observed. Another method of determining the position of the corona is by measuring the direction of the rays of which the arches are formed. This is best done by measuring their inclination from the perpendicular in two azimuths 90° apart. If the tube we have mentioned be provided with an azimuth circle and cross-wires in the eye-piece with a position circle reading to $\frac{1}{2}^{\circ}$ this is readily accomplished, the perpendicular being verified by observation of a plumb-line.

For spectral observations Weyprecht considers direct-vision instruments of good dispersion the most suitable. In low latitudes we have found a single bisulphide prism and simple slit and eye-hole without lenses to answer well, and if such an instrument were attached to the same axis as the measuring tube, which would act as a finder, we believe it would show fainter spectra than any direct vision arrangement. We do not know however how it would be affected by Arctic temperatures. Weyprecht does not mention any means of measuring the position of the lines—the simplest is Piazz's Smyth's comparison with the hydrocarbon spectrum of a spirit-lamp, and another very good scale is the band-spectrum of air yielded by a vacuum-tube fixed across the slit and made to flash as required.

Weyprecht insists on the importance of further comparisons between the movements of the aurora and magnetic disturbances, and points out the high interest that would also attach to observations of the earth-currents.

H. R. PROCTER

NOTTINGHAM UNIVERSITY COLLEGE

THE fine building, auspiciously opened the other day as a college in the heart of Nottingham, represents the last development of that all too tardy interest in higher education which, in the more recent years, has originated the Victoria University in Manchester, the Yorkshire College in Leeds, the Science College in Newcastle (a flourishing offshoot of Durham University), the Mason Science College in Birmingham, and others.

It is gratifying to find in a new provincial centre, with its varied activities and the usual temptations associated with money-getting, an intelligent, if somewhat late, appreciation of the thirst after knowledge for its own sake, as well as for that to which it may be profitably applied, and a disposition to take generous means of satisfying it.

Of the inception and growth of the Institution we need not here speak at any length. The elements of a college were already in existence. For seven or eight years past lecturers from Cambridge have visited Nottingham and drawn large audiences. The Government Science Classes were also highly appreciated. It is thus estimated that no fewer than 1400 students will be ready to take advantage of the instruction soon to be provided. Nottingham, moreover, has possessed a public library since 1868, and this, along with the Natural History Museum, greatly needed larger accommodation. From the union and consolidation of these and other educational agencies under one roof where the conditions of progress are much more favourable, excellent results may be anticipated. A distinctive feature of the Nottingham College is that it has been built by the Municipal

¹ "Praktische Anleitung zur Beobachtung der Polarlichter und der magnetischen Erscheinungen in hohen Breiten," von Carl Weyprecht, Schiffscapitän. (Wien, 1881.)