

IN NATURE of February 8, 1906 (vol. lxxiii., p. 352), a brief account was given of the proceedings of the meeting of the International Meteorological Committee in Innsbruck in September, 1905. The k.k. Zentralanstalt für Meteorologie und Geodynamik has now published a volume of 154 pages (Vienna: W. Braumüller, 1906) which contains a full report of these proceedings and much other valuable information. Thus, in addition to the reports of several special committees which dealt with cloud classification, earth magnetism, and atmospheric electricity, a valuable series of appendices is given consisting of communications to the commission relating to many different subjects of interest and importance which were considered. The text of this volume is in the German language, but a resolution of the commission was passed at the fourth meeting to the effect that both English and French editions should be subsequently published.

SINCE the discovery and practical application in Germany of processes for producing "synthetical" indigo, the planters of India have made strenuous efforts to improve their methods of dealing with the natural material. In this connection, the report for the year 1906-7 of the work of the Indigo Research Station, Sirsiyah, of the Bihar Planters' Association, which has just been issued, presents interesting reading. The report, written by Mr. Cyril Bergtheil, is divided into three sections, namely, laboratory work, manufacture, and agriculture. Perhaps the principal point that merits notice is that relating to the discrepancies between the results obtained by a number of different analysts who were entrusted with the examination of the same samples of indigo. The same material was analysed at Calcutta, Bradford, Manchester, and Berlin, and results were returned by the different analysts varying from 71 per cent. to 96 per cent. of indigotin. The question of the analysis of indigo has recently been the subject of several papers, but it is by no means yet decided which is the best and most trustworthy method for the purpose, although Mr. Bergtheil confidently recommends the processes he has adopted. The question of analysis is one of great importance, and it is clear that no real progress in indigo research can be made until it is satisfactorily settled. What appears to be a decided improvement in indigo culture is described in the report with reference to the germination of the seed of the Java plant. It would appear that this seed does not usually germinate satisfactorily owing to its possessing a "cuticle" which is impermeable to water. To remedy this, it has been found advantageous to soak the seeds for half an hour in concentrated sulphuric acid, and subsequently to wash with water very thoroughly before sowing. Good seed treated in this way has been found to germinate to the extent of 100 per cent. The report also deals in detail with the work done on the farms established recently to supply seeds of the Java indigo plant.

UNDER the title "A Junior Course of Comparative Geography" Messrs. G. Philip and Son, Ltd., have just issued Course A of the "Progressive Course of Comparative Geography," reviewed in the supplement to NATURE of March 14 (p. v). The price is 2s. 6d. net. The same publishers have sent us a copy of the seventh edition, revised to date, of their "Handy-volume Atlas of the World," by Mr. E. G. Ravenstein. The price of this compact little volume is 3s. 6d.

It is clear from the thirty-seventh annual report of the Natural Science Society at Wellington College that the

society is in a flourishing condition. There is a balance in hand of 113*l.*, for which, it is to be hoped, some useful scientific purpose will be found. The Saturday scientific lectures, which have become a feature of the work of the society, were continued during the Michaelmas and Lent terms. The meteorological report of the society is as complete as usual.

THE most recently published parts of the Transactions of the Royal Society of Edinburgh are vol. xli., part iii., for the session 1904-5, and vol. xlv., part i., for the session 1905-6. The papers included in these publications cover those read before the society during a period of about eighteen months. The contents are very varied, and amongst subjects of special interest in the first-named part may be mentioned the fresh-water plankton of the Scottish lochs, the structure of the series of line- and band-spectra, the hydrodynamical theory of seiches, and the plant remains in the Scottish peat mosses. In the second of the publications are, with others, papers on the varying form of the stomach in man and the anthropoid ape, the normal temperature of the monkey and its diurnal variation, and on the effect of changes in the daily routine on this variation, the elevation of the boiling points of aqueous solutions of electrolytes, and the relationship between concentration and electrolytic conductivity in concentrated aqueous solutions.

THE report for 1906 of the Agricultural Research Association for the north-eastern counties of Scotland is devoted almost entirely to an account, by Mr. T. Jamieson, of work on the utilisation of nitrogen in air by plants, in continuation of the observations described in NATURE a year ago (vol. lxxiii., p. 531). Mr. Jamieson claims that he has obtained further evidence of the absorption of nitrogen from air by plants, but the views of scientific experts upon the doctrine he desires to establish were stated in the notice of the previous volume. We have not the space available to enter into a detailed statement of Mr. Jamieson's position and point out the unsound foundation upon which it rests. We must therefore refer our readers to the volume just published for particulars of experiments which Mr. Jamieson puts forward as material for a new agricultural science. The criticisms of his views expressed at the York meeting of the British Association last year, and also in other places, are dealt with at the end of the present volume.

OUR ASTRONOMICAL COLUMN.

COMET 1907*a* (GIACOBINI).—The following elements and ephemeris have been computed for comet 1907*a* by Herr M. Ebell, from places observed on March 9, 10, and 11:—

Elements.

$$\begin{aligned} T &= 1907 \text{ March } 23^{\text{h}} 52^{\text{m}} 06^{\text{s}} \text{ Berlin.} \\ \omega &= 319^{\circ} 34' 3'' \\ \Omega &= 97^{\circ} 40' 0'' \\ i &= 141^{\circ} 20' 5'' \end{aligned} \quad \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} 1907 \text{ o} \\ \log q &= 0.31176$$

Ephemeris 12*h.* (M.T. Berlin).

1907		<i>a</i>	<i>h.</i>	<i>m.</i>	<i>δ</i>	Brightness
March 19	...	6	40	...	-9 26	... 0.81
23	...	6	33	...	-6 22	... 0.74
27	...	6	27	...	-3 34	... 0.67

Brightness at time of discovery (mag. 11.0)=1.0.

From the above it will be seen that the comet is travelling through the constellation Monoceros towards the northern part of Orion, and that its brightness is decreasing fairly rapidly. At present it crosses our meridian at about 6.30 p.m., and sets at about 11.30 p.m.

In No. 10 (March 11) of the *Comptes rendus M. Giacobini* states that the comet is a round nebulous object of 20" diameter, having an eleventh-magnitude nucleus, and, apparently, a tail in position-angle 180°.

SEARCH-EPHEMERIS FOR COMET 1900 III. (GIACOBINI).—In No. 4159 (March 7) of the *Astronomische Nachrichten* Herren Abold and Scharbe publish a search-ephemeris, extending from March 5 to April 2, for comet 1900 III. As the probable time of perihelion passage is very uncertain, they give three ephemerides, in which T is taken as May 5, June 8, and July 13 respectively, June 8 being considered the most probable. No perturbations have been taken into account, and as on March 13 the calculated brightness was but 0.4 of that observed on February 15, 1901, it is feared that the hopes of re-discovering this object are but small.

SOLAR OBSERVATIONS AT CATANIA.—In No. 2, vol. xxxvi., of the *Memorie della Società degli Spettroscopisti Italiani* Prof. Riccò publishes the summarised results of the solar observations made at the Catania Observatory during the third and fourth quarters of 1906. There was a marked decrease in the daily frequencies of spots, faculae, and prominences during the fourth quarter as compared with the third, which, however, showed an increase in the daily frequency of all three phenomena on comparison with the results of the second quarter.

INTENSIFICATION OF "CONTRAST" BY MEANS OF A POLARISCOPE.—Some interesting suggestions concerning the intensification of contrast in astronomical observations, by the employment of the polariscope, are made by Dr. Felix Biske in No. 2, vol. xxxvi. (February), of the *Memorie della Società degli Spettroscopisti Italiani*.

Dr. Biske points out that under certain conditions of the atmosphere and positions of the body observed it is possible to polarise the light received so that the ratio of the amount of light from the body to that of the sky is increased, thus rendering the details of the observed object more easily visible. It is suggested that by this means the observation of the corona whilst the sun is not eclipsed may be facilitated, and that comets, the light from which often shows a fair amount of polarisation, may be observed more easily. Similarly the planets Mercury and Venus and the moon may, under certain conditions, be observed when by the ordinary method this would be very difficult or impossible.

THE MINOR PLANET (588) [1906 T.G.].—In No. 4155 of the *Astronomische Nachrichten*, Dr. Bidschof gives a new set of elements and an ephemeris for the minor planet (588), which, it will be remembered, is remarkable for its extraordinary aphelion distance, lying an astronomical unit beyond the mean distance of Jupiter. The elements are based upon observations made during 1906, and differ somewhat from those previously published by Dr. Berberich. This interesting object will be unfavourably situated for northern observers for several years, but it is to be hoped that the southern observatories will endeavour to keep it under observation.

The present magnitude of the planet is about 15.0, and it was re-observed by Prof. Wolf, in a position in fair accordance with Dr. Bidschof's ephemeris, on January 22.

RESEARCHES IN STELLAR PHOTOMETRY.—Under the title "Researches in Stellar Photometry during the Years 1894 to 1906," made chiefly at the Yerkes Observatory, the Carnegie Institution of Washington has published a beautifully prepared and illustrated volume containing the results of Mr. J. A. Parkhurst's careful and systematic study of twelve variable stars having long periods and faint minima. The observations were carried out first with a 6-inch reflector, then with a 12-inch refractor, and finally with the 40-inch refractor of the Yerkes Observatory. Argelander's method of comparison was employed, and during the later years the comparison stars were carefully standardised with a Pickering equalising wedge-photometer. In addition to the tabulated results giving the individual observations of the variable and of the comparison stars, Mr. Parkhurst gives the complete light-curve, for the period of observation, of each variable, and a plate reproduction of a

photograph showing the region surrounding each star; the majority of these are on the scale of 1 mm. = 13".5 (approx.). As an example of an attack on an important phase of the sidereal problem, the volume is almost unique in the wealth of detail it contains and the lavish manner in which the results are presented.

MARSUPIALS OR CREODONTS?

THE vexed question as to the real affinities of the marsupial-like carnivores of the Santa Cruz beds of Patagonia has once more been brought prominently to the front by the appearance of a memoir on their osteology and dentition in the fourth volume of the reports of the Princeton Expedition of 1896-9 to Patagonia. In this memoir the author, Mr. W. J. Sinclair, takes up a very decided position, remarking that these so-called sparassodonts (as represented by *Prothylacinus*, *Borhyaena*, *Amphiproviverra*, &c.) possess a number of characters either peculiar to marsupials or common to that group and only a few other orders. These, it is urged, will convince the reader that sparassodonts are true carnivorous marsupials, not worthy of even separate subordinal rank. Mr. Sinclair goes, however, even farther than this, and considers himself justified in including the Patagonian carnivores in the same family group as the existing Tasmanian pouched wolf or thylacine, which he separates from the *Dasyuridae* under the designation of *Thylaciniidae* (or *Thylacynidae*). It is added that, "although there is sufficient similarity in structure to warrant placing the Patagonian and Tasmanian thylacines in the same family, it must not be inferred that the existing genus is the direct descendant of its extinct South American forerunners. The study of the group has failed to show a closer relationship than probable descent from a common Santa Cruz ancestor. While retaining the fundamental family characters, both lines have diverged, and in some respects the Santa Cruz forms are more advanced than the existing genus."

Among the structural features on which the author relies as evidence of the marsupial nature of the Patagonian fossils are the dental formula, the reduction in the number of successional cheek-teeth, the inflection of the angle of the lower jaw, a number of peculiarities in the conformation of the skull, and the perforation of the transverse process of the seventh cervical vertebra by the arterial canal. On the other hand, vacuities in the bony palate and epipubic (marsupial) bones, both of which are characteristic of most existing marsupials, are wanting.

As regards the dental formula of the cheek-teeth, this, in the opinion of Dr. J. L. Wortman (*Amer. Journ. Sci.*, vol. xi., p. 336, 1901) and the present writer, is identical in the sparassodonts, carnivorous marsupials, and creodonts, and is, therefore, of no importance, except to indicate the mutual relationship of all these three groups. By all zoologists of the present day it is, I believe, admitted that the reduction of the replacing teeth in modern marsupials to a single pair of premolars in each jaw is a secondary feature, so that the presence of a larger number of such teeth in the sparassodonts indicates the more primitive nature of those mammals, and one allying them to creodonts. Some of these sparassodonts differ, however, from all the more typical representatives of the latter group in having four, in place of three, pairs of upper incisor teeth, and thus resemble carnivorous marsupials; but since this feature is likewise regarded by Dr. Wortman (*op. cit.*, p. 335) as of secondary origin, it is no bar to the derivation of sparassodonts from creodonts, while it indicates that the latter are not likely to be the descendants of the former. As the author himself regards the presence of vacuities in the palate and the inflection of the lower jaw as being likewise secondary features in marsupials, all these lines of evidence point to the conclusion that creodonts are the most primitive of the three groups under consideration.

It follows from this, on the author's assumption that the Patagonian carnivores are thylacines, that palatal vacuities have been independently developed in several families of existing marsupials, and a similar argument will hold good with regard to the reduction of the