

It is usual in cases of thrush to recommend the use of alkaline substances in order to counteract the acidity of the mouth, which is generally supposed to favour the growth of the thrush fungus. Some recent researches of Marantonio ("Contributo alla biologia del fungo del Mughetto" Istituto d'Igiene di Roma, vol. xii. 1893, p. 199) show, however, that this fungus grows abundantly in strongly alkaline as well as in acid media. Experiments were made to ascertain what substances exerted a bactericidal action on this organism, special attention being given to those usually prescribed in the treatment of thrush. It was found that many of these were quite ineffective, on the other hand salicylic acid, amongst others, was highly efficacious; these laboratory experiments were, moreover, confirmed in actual practice, for extremely encouraging results were obtained when this substance was tried in some cases of thrush in children in one of the hospitals in Rome. In some hospitals it appears that thrush is endemic, and Marantonio was able to isolate out the organism of this disease from the dust in the interstices of the flooring of a children's ward; considering that the fungus can successfully resist the effects of desiccation over four and a half months, this fact is not surprising. The behaviour of this organism when exposed to sunshine was also investigated. Portions of vigorous agar-cultures were spread in thin layers on pieces of white cardboard, which were placed in glass boxes, some being preserved in the dark, whilst others were insulated for various lengths of time. It was found that thirteen hours' exposure to direct sunshine retarded the development of the fungus, whilst when prolonged for seventeen hours it was completely destroyed. The great mortality which prevails amongst children suffering from thrush should render these elaborate and carefully-conducted experiments of especial interest and importance.

CARBIDE of boron has been isolated by Dr. Mühlhäuser, of the University of Chicago, and is described by him in the current publication of the *Zeitschrift für Anorganische Chemie*. It proves to be an extremely stable substance, being capable of successfully resisting the action of almost all the usual solvents and reagents. Its composition has been ascertained by taking advantage of the fact that chromate of lead is capable of oxidising it at the usual temperature of a combustion furnace. The analytical data indicate the simple empirical formula BC, but its constitution is assumed to correspond to double that

formula, namely  $B_2C_2$  or  $\begin{array}{c} C \equiv B \\ | \\ C \equiv B \end{array}$ . Boron carbide was prepared

by heating boric anhydride with the hard variety of carbon employed for making the terminals of electric arc lamps. The reaction proceeds in accordance with the equation:  $B_2O_3 + 5C = B_2C_2 + 3CO$ . Five parts of borax were dissolved in twenty parts of water, one part of sulphuric acid was added, and the solution allowed to cool. The crystals of boric acid which were formed during the cooling were separated by filtration, washed with water, dried, fused, and finally heated to low redness, by which they were dehydrated, and boric anhydride produced. The powdered boric anhydride was then mixed with the powdered electrode carbon, in the proportion of five parts of the former to eight parts of the latter, and the mixture disposed upon a suitable carbon support between the terminals of a powerful arc lamp. Upon the generation of the arc by means of a current of 350 ampères action almost immediately commenced, the mixture of boric anhydride and carbon fusing and evolving a considerable amount of gas with effervescence. The operation is concluded when the effervescence ceases, when the current should be switched off and the product allowed to cool. Carbide of boron is thus produced in the form of black graphitoidal spherules, frequently aggregated so as to resemble the shape of a bunch of grapes. The spherules

possess a bright metallic lustre. They may be freed from traces of the ingredients of the mixture used in their preparation by heating for a few hours in a platinum crucible, then powdering, and repeatedly treating the powder with hydrochloric acid, water, a mixture of hydrofluoric and sulphuric acids, and finally once more with distilled water. The powder thus prepared yields numbers on combustion with chromate of lead which agree closely with the formula above given. Carbide of boron closely resembles graphite in outward appearance; it blackens the fingers in a similar manner, and the coating thus transferred possesses the same bright metallic lustre and greasy feel. Examined under the microscope it appears bluish black and transparent, and reflects light with chromatic effects. When heated to a high temperature the powder cakes together, forming a soft mass, which is readily malleable and capable of being rolled. At a very high temperature it completely fuses to a liquid much resembling a molten metal. It burns only with great difficulty in oxygen, but is combustible, as above stated, with chromate of lead. It is insoluble in all the ordinary solvents, but fused caustic or carbonated alkalis attack it with formation of borate of the alkali and liberation of carbon.

NOTES from the Marine Biological Station, Plymouth.—Last week's captures include the Mollusca *Lima Loscombi* and *Phioladidea papyracea*, and the Schizopoda *Leptomyxis gracilis* and a number of *Erythroops elegans*. The floating fauna is unusually rich in Diatoms and Dinoflagellates, and a few Radiolaria are still to be seen. The larvæ of *Polynoe*, *Chaetopteris* and *Terebella* are fairly numerous, and *Cyphonantes* and larval Lamellibranchs are plentiful. On the other hand the larvæ of Decapoda (esp. of *Brachyura*) are scarce, and a few Ophiuria *Plutei* are the only representatives of the Echinoderma. The more oceanic forms (*Muggiaea*, *Podon* and *Evadne*, &c.) have of late become increasingly scarce. The Hydroid *Aglaophenia tubulifera* is now breeding, and a few *Erythroops elegans* contain late embryos in their brood-pouches.

THE additions to the Zoological Society's Gardens during the past week include a Wanderoo Monkey (*Macacus silenus*, ♀) from Cochin, presented by Capt. Morgan; two Macaque Monkeys (*Macacus cynomolgus*, ♂ ♀) from India, presented respectively by Mr. John Cook and Mr. Stanley Sinclair; a Chacma Baboon (*Cynocephalus porcarius*, ♀), two Common Quails (*Coturnix communis*) from South Africa, presented by Capt. F. Baker; two Manatees (*Manatus americana*, ♀ et juv.) from Manatee Bay, Jamaica, presented by Sir Henry A. Blake, K.C.M.G.; a Black-headed Lemur (*Lemur brunneus*, ♀) from Madagascar, presented by Miss Hoare; a Rufous Rat Kangaroo (*Hypsiprymnus rufescens*) from Australia, presented by Kenneth Crawley, Esq., R.N.; a Kite (*Milvus iclinus*) from the Canary Islands, presented by Mr. E. G. Meade-Waldo, F.Z.S.; two Purple Porphyrios (*Porphyrio caruleus*) South-east European, presented by Mr. Joseph S. Whitaker, F.Z.S.; a Turtle Dove (*Turtur communis*) British, presented by Miss Alice L. West; a Kinkajou (*Cercopithecus caudivolvulus*), a King Vulture (*Cypagus papa jew.*), a Common Boa (*Boa constrictor*) from South America, two Ospreys (*Pandion haliaetus*) from Hayti, W.I.; two Rufous-necked Weaver Birds (*Hyphantornis textor*) from South Africa; a Dunlin (*Tringa alpina*) British, purchased; a Burchell's Zebra (*Equus burchelli*, ♀), a Wapiti Deer (*Cervus canadensis*, ♀) born in the Gardens.

#### OUR ASTRONOMICAL COLUMN.

A NEW COMET.—*Edinburgh Circular* (No. 40, dated October 19) informs us of the discovery of a comet by Mr. W. R. Brooks, of Geneva, N.Y., at 15h. 52m. local time, its place then

being R.A. 12h. 21m. N. declination  $12^{\circ} 55'$ . The comet has also been observed at Hamburg, October 17, 17h. 5' 8m. Hamburg mean time. R.A. 12h. 22m.  $42^{\circ} 9'$ s. Declination  $+ 13^{\circ} 25' 24''$ . It has a tail, and is about as bright as a star of the ninth magnitude.

DETERMINATION OF GEOGRAPHICAL LONGITUDE.—In part 15 (August 1) of the *Zeitschrift für Vermessungswesen*, Herr C. Runge, of the Technical Hochschule, Hannover, gives a very interesting account of his results in determining geographical longitude with an ordinary camera. The negative from which the results were obtained, was taken on June 17, the camera being pointed to the new moon. Eight exposures were made one after the other, with intervals of about two minutes. Without moving the camera, and after an interval of about thirty minutes, another series of pictures was taken (on the same plate), the objects this time being some stars in Leo, which were allowed to record their trails on the plate for the period of about an hour and a quarter with regular intermittent breaks of five seconds. The times of exposure were noted with an ordinary watch, and the measuring of the plates made with an accurate micrometer. Dealing here only with the accuracy of the method, we may say that the declination of the moon can be determined to  $20''$ , and in some cases with greater accuracy; in the example given the differences between the measured and calculated values were  $+ 11''$ ,  $- 19''$ ,  $+ 15''$ ,  $- 6''$ . In the measuring of the moon-distance Herr Runge says that although this was the first trial, and the star-images were not all that could be desired, yet the accuracy was surprising, and can perhaps be still increased, even without the help of any "mechanische Hilfsmittel." Since the above example was made he has obtained the geographical latitude and local time by this photographic means, and with excellent results. The instrument employed consisted of a simple camera with a so-called "gruppenantiplanet" objective, by Steinheil in München, with a focal length of 24 cm. The stop used for the above plate had a diameter of 17 mm.

ASTRONOMY AND ASTRO-PHYSICS AT CHICAGO.—A few of the many papers on astronomy which were read at the series of meetings that commenced at Chicago on August 22 appear in this month's *Astronomy and Astro-Physics*, and as they are too long for individual description, we give simply the titles of the papers and their authors: "Great Telescopes of the Future," by Alvan G. Clark. This deals with the subject completely from the object-glass point of view.—"A Field for Woman's Work in Astronomy," by Mrs. M. Fleming; "Engineering Problems in the Construction of Large Refracting Telescopes," by Worcester R. Warner. This is accompanied by a photograph taken by Mr. Burnham of the 40 inch Yerkes instrument, as exhibited at the Columbian Exposition.—"The Two Magnetic Fields surrounding the Sun," by Prof. Frank H. Bigelow; "The Constitution of the Stars," by Prof. Edward C. Pickering. This paper concludes as follows: "With few exceptions all the stars may be arranged in a sequence beginning with the planetary nebulae, passing through the bright line stars to the Orion stars, thence to the first type stars, and by insensible changes to the second and third type stars"; "Concerning the Nature of Nova Aurigae's Spectrum," by Prof. W. W. Campbell; "Preliminary Note on the Corona of April 16, 1893," by Prof. J. M. Schæberle, being a discussion of the facts gathered from the numerous photographs taken; "The Wavelengths of the Two Brightest Lines in the Spectrum of the Nebulae," by Prof. James E. Keeler; and lastly, "Contributions on the Subject of Solar Physics," by Prof. E. R. von Oppolzer.

A NEW ASTRONOMICAL OBSERVATORY AT MANILA.—Manila already possesses a Government meteorological and seismographic observatory, and an important astronomical observatory will soon be established there. The chief instruments will be a novel photographic meridian instrument and a large Merz refractor (19'2 inches), the latter being provided with a photographic correcting lens. Father Aigue seems to be taking the work in hand, and he proposes to institute a series of latitude observations in connection with a similar series to be carried on at the Georgetown Observatory, for the determination of the variation of latitude. The instrument at Manila will consist, according to *Astronomy and Astro-Physics* for October, of two telescopes in the same tube; or at least there will be two object glasses, one at each end of the tube, their foci coinciding. These will be of the same diameter, 6 inches, and focus 3 feet, the

tube being equal to the sum of the focal lengths of the object-glasses. The photographic plate is placed in the focus of the two objectives, *i.e.* in the centre of the tube. The method adopted is that of Talcott, and during the observation of both stars the instrument is not moved. The upper objective throws the image of the first star on the upper side of the sensitive film, while by the help of a basin of mercury below, and the lower objective, the trail of the second star is recorded on the under side of the same film. Besides visual work the Merz refractor will be used for photographic observations of double stars, spectrographic work, photographic parallax, &c.

THE VISIBILITY OF VENUS TO THE NAKED EYE.—Principal A. Cameron, at Yarmouth, Nova Scotia, and M. Bruguere, at Marseilles, have made a series of observations with a view of determining for how long a period the planet Venus can be seen in the day time without optical aid (*Trans. Nova Scotia Institute of Science*, vol. i. part 2. 2nd series). Beginning with the superior conjunction of February 18, 1890, Mr. Cameron saw Venus with his naked eye  $26\frac{1}{2}$  days after that date, and M. Bruguere, in the same latitude, detected the planet  $4\frac{1}{2}$  days before the inferior conjunction of December 4, 1890; so that altogether she was visible to the unaided eye during 259 days. The elongation of the planet when first picked up by Mr. Cameron was  $6\frac{1}{2}^{\circ}$ , and when M. Bruguere saw her last in November, 1890, the elongation was nearly  $9^{\circ}$ , but the brilliancy was only  $6\frac{1}{2}$  per cent. of the mean greatest brilliancy.

MEYER'S CONVERSATIONAL LEXICON.—The popularity of this series of volumes can only be accounted for by the very judicious way in which the publishers have dealt with every branch of science, treating it fully, accurately, and in such language that it can be understood by the most general reader. Under the heading "Astronomy" is given an excellent and concise account of the early history and development of the science. This lexicon has reached its fifth edition.

### GEOGRAPHICAL NOTES.

A CABLE has recently been laid between the seaport of Bundaberg, in Queensland, and New Caledonia. This line of 910 miles, although not very important in itself, is of some interest as possibly the commencement of a great Pacific cable which may ultimately unite Australia and Canada. Should this scheme be carried into effect the probable route of the cable would be from New Caledonia to Fiji, thence to Samoa, and by Honolulu and the Fanning islands to Vancouver.

THE last number of the *Bulletin* of the Paris Geographical Society publishes the list of awards of the society's medals, the bestowal of which was noticed in this column (vol. xlviii. p. 40), together with the reports of the awards, which were too lengthy to be read at the meeting in April. A notable fact connected with these prizes is the custom of recognising the value of original maps and books of geographical research, historical or critical, as well as the work of explorers.

AN amusing instance of the danger of commenting on geographical news without referring to a full report occurs in the last number of the *Revue Française*, a journal which is valued for its full and usually accurate record of recent and projected travels. In mentioning the fact of the discovery of Active Strait, near Erebus and Terror Gulf, by the Dundee sealers this spring, the editor adds parenthetically, "volcanoes of Victoria Land to the south of New Zealand"—a pardonable mistake, as the names of Ross's ships were perhaps too freely scattered over the Antarctic regions. But in this instance it happens, somewhat oddly, Erebus and Terror Gulf is in land named after a French and not a British monarch, being in Terre Louis Philippe, south of the Falkland Islands.

THE full programme of the Royal Geographical Society's Evening Meetings for the Session 1893-94 has been published. In addition to the subjects intimated in this column last week, we note that papers are expected by Prof. Lapworth, F.R.S., on the ups and downs of the earth's surface; by Dr. J. W. Gregory, on his expedition to Mount Kenia; by Mr. R. D. Oldham, of the Indian Geological Survey, on the geographical development of India; by Mr. K. Grossmann, on a journey in Iceland; by Mr. T. J. Aldridge, on journeys in the interior of Sierra Leone; by Dr. H. R. Mill, on the survey of the English lakes; by Mr. H. Warington Smyth, on journeys on the Upper