

weeks, or even days, may attract general interest. I refer to accounts of our Arctic expedition. It is possible that while I am now addressing you, the ships *Alert* and *Discovery*, favoured by fine seasons, may have, in their endeavours to reach high northern latitudes, accomplished all that human skill and energy can do, and by fortuitous circumstances secured their return southward through Smith Sound, with the same facilities, as we have reason to hope, they entered what we suppose to be that notable gateway to the Pole. If so, they are now fairly in Davis Strait, homeward bound. We must not regard this estimate of progress as visionary, for, the conditions being favourable, the time at the disposal of the voyagers is ample. It is the varying conditions of Arctic seasons, we must remember, that baffle the forecasts of the most experienced Arctic experts.

Should unfavourable conditions, or the decision of the chief, detain the ships another year in their icy quarters, we have reason to hope that advices will reach us of their whereabouts in the spring of next year. The spirited enterprise of the well-trained Arctic navigator, Allan Young, supported as he has been by the Government, offers a sure guarantee that the leaders, Nares and Stephenson, will be ably seconded in their efforts to keep up communication with their countrymen. Here, again, we must not forget that baffling conditions may defeat the intentions of the commanders to communicate in time with the depôts at the portals of Smith Sound.

This prolonged banishment from intercourse with the outer world was, however, a contingency anticipated and provided for by that able Committee of Arctic Officers who, with a full sense of their responsibility, so fully advised the Government in every phase of this national undertaking. A parliamentary paper, published during this session, gives the fullest particulars relating to the progress of the expedition and the steps which have been taken to communicate with their depôts. There is a long chain of contingencies to be attended to, as will be seen on reference to the interesting details therein given, but I venture to think that not a link is missing, either in the conception, or in the means provided to bring the undertaking to a successful issue.

There is one feature to be kept in view, which from the exceptional conditions of ship navigation in the icy regions of the far north is rarely realized, unless by those who have had actual experience in polar service, and it is this, that between the time of the disruption of the old ice in August and the formation of the new in September, there exists a very short period when ships are free to move. This period of open or partially open water may be shortened by unfavourable circumstances, and *vice versa*; it may be assumed, however, that in a straight fairway channel such as Smith Sound it almost always does occur, and as the return southward, on account of the drift, is always more easily accomplished than the advance north, the great probability is that, if the ships remain out another year, it will be the result of design rather than accident.

By the parliamentary papers relating to the expedition it will be seen that, in the event of the non-arrival of the *Alert* and *Discovery* during the autumn of this year, a relief ship will be despatched to a rendezvous in Smith Sound during the summer of 1877.

With regard to Africa, exploration and discovery have proceeded with accelerated strides during the past few years. Even since the recent date of Cameron's remarkable journey across the continent, important additions have been made to the rapidly filling-up map of the interior. Most of these additions relate to the great lakes, regarding which our knowledge was previously very incomplete and unsatisfactory. Thus, Mr. Young, the experienced Zambesi traveller, who undertook last year to lead the Scotch Missionary party to Lake Nyassa, has succeeded, after establishing the missionary settlement "Livingstonia," at the southern end of the lake, in reaching in a steam-launch the northern end of this great fresh-water sea, finding it to be fully one hundred miles longer than was previously believed. His journey was made in February of the present year, and in the following month the still more imperfectly known lake, Albert Nyanza, was successfully navigated by two boats under Signor Gessi, who was despatched for this purpose by Colonel Gordon, the present Governor of the new Equatorial Province of the Khedive's dominions. The details of Signor Gessi's interesting exploration, communicated by himself to the President of the Royal Geographical Society, have only recently reached England, and it is proposed to read them in the course of the present meeting.

A third, and equally important exploration of the same class is that performed during the same early months of the present

year by that energetic traveller Mr. Stanley. After circumnavigating the much larger neighbouring lake, Victoria, and proving Speke's much disputed estimate of its dimensions to be approximately correct, he pushed his way across the difficult tract of country separating the Victoria and the Albert lakes, reaching the shores of the latter in the middle of January. Less fortunately situated than Signor Gessi, who embarked on the lake two months later, Stanley was unable to launch his boat on the then unexplored southern portions of its waters. A comparison of the accounts of the two travellers shows that we are yet far from knowing the true dimensions of this great sheet of water. Signor Gessi in fact did not reach its southern extremity; and as Mr. Stanley appears to have struck its shores at a point about thirty miles further south than the limits marked by the Italian traveller, the lake must be considerably longer than 140 miles, as estimated by the latter. Stanley subsequently proceeded south and explored the Kitangulé river of Speke; thence striking for Lake Tanganyika, the examination of which he intended to complete.

New Guinea has of late attracted some attention both at home and in the Australian colonies; rather, however, from political than geographical considerations. Our interest is of course in the latter, and I am glad the meeting will have the advantage of the presence of a gentleman, Mr. Octavius Stone, recently arrived in England, who has distinguished himself in the exploration of the south-eastern shores of this distant, little known, and barbarous region; to him we must refer for the latest geographical facts.

OUR ASTRONOMICAL COLUMN

THE CORDOBA "URANOMETRIA."—Dr. Gould has informed us, during his flying visit to this country in the last week, on his return to Cordoba from the United States, that he intends to give his *Uranometria* first and undivided attention, with the view to its early publication. It contains 8,000 stars to seventh magnitude inclusive, the whole estimated by not less than two observers, and often by more, each observer making his determination on not less than two nights, and often more, all cases of discordance between different observers being subsequently examined. The greater number of the stars have been observed with the meridian circle, and always in cases of doubt as to identification. The magnitudes are intended to be given to 0.1m by comparisons with previously established standards, on a most carefully-considered system. The manuscript charts are drawn to the scale of a globe of one metre radius, and the magnitudes of the stars are represented by dots of size proportional to the brilliancy to nearest two-tenths of a magnitude. Though this part of the work appears to have been completed to Dr. Gould's entire satisfaction, he expresses himself much disturbed as to the means of reproducing these manuscript charts with the necessary accuracy and delicacy; his hopes of success from the use of photography having been thus far disappointed. The *Uranometria* will include every star to the seventh magnitude inclusive, from the south pole of the heavens to ten degrees of north declination. Great care has been taken to secure accurate delineation of the course of the Milky Way and of the Magellanic Clouds.

The Zones, another most important work to which attention has been directed at Cordoba, are complete; they are 754 in number, and contain 105,000 stars.

In addition, materials have been obtained for the formation of a numerous catalogue of the brighter stars, each one observed several times with the meridian circle.

Dr. Gould is to be congratulated on the extraordinary energy he has displayed in his management of the new Observatory of the Argentine Republic, and the discriminating skill with which he has selected and worked his subjects of observation, which must undoubtedly result in his leaving a name lastingly associated with the astronomy of the southern hemisphere; and not less is the Government of that comparatively new country to be honoured for the constant and unstinted support they have afforded

to their national Observatory, and its distinguished and indefatigable director.

AN INTRA-MERCURIAL PLANET (?).—At the sitting of the Paris Academy of Sciences on the 28th ultimo, M. Leverrier announced that he had received a letter from Prof. Rudolf Wolf, of Zurich, in which it was stated that three observers situated in three different places had witnessed, on April 4, the passage of a round spot over the sun's disc. The three localities were—in Germany (near Münster), Greece (Athens), and Switzerland (Zurich). The date is subsequent to the observation of Dr. Lescaubault by 6,219 days, which figure is the product of 148 into 42'02 (printed 40'02 in *L'Institut*, whence this notice is taken), and it may be conjectured that, if the object were a planet, it had made this number of revolutions of 42'02 days.

Such a body would have a mean distance from the sun equal to 0'2365 of the earth's mean distance, with a maximum elongation in a nearly circular orbit of about 13½ degrees, the period of revolution being almost precisely half that of Mercury.

We await details of the observations before examining how far the date 1876, April 4, can be made to agree with similar ones already upon record, supposing all to refer to a single body revolving under the conditions named.

NEW MINOR PLANET.—The *Bulletin International* of the Paris Observatory notifies the discovery of No. 167, by Prof. Peters, at Clinton, U.S., on August 28. R.A. 21^h. 57^m, N.P.D., 101° 30', motion south, twelfth magnitude.

NOTES

WE notice, with extreme regret, the announcement of the death of Mr. George Smith, of the British Museum, the accomplished Assyriologist. A telegram received on Monday at the British Museum from Constantinople stated that Mr. Smith died at Aleppo, on the 19th ult., and that further particulars would be ultimately sent. Faint hopes are entertained that the sad announcement will be contradicted. The Turkish Government and officials had thrown so many difficulties in his way that Mr. Smith was on his road home in disgust. It will be remembered that he started in February last on his third archæological expedition to the East. The high value of Mr. Smith's work in a department of research of great importance has been universally acknowledged, and it will be difficult to over-estimate his loss to science and to the British Museum. He has earned an enduring place in the important domain of Eastern archæology.

MR. HOWARD GRUBB, of Dublin, has presented to the Scientific Committee appointed to superintend the work, his Report on the Progress of the Great Equatorial for the Vienna Observatory, the contract for which was concluded in June last year with the Austro-Hungarian Government. The work, we are glad to say, has gone on smoothly and successfully. To enable him to carry on his important undertaking Mr. Grubb has constructed a spacious dodecagon chamber, forty-two feet in internal diameter, the roof of which is so constructed as to allow the great steel dome to be erected over it. Mr. Grubb had contracted with Feil of Paris for the supply of the discs of glass for the great objective, and the flint disc is already in Dublin, where it is now undergoing a rigid examination. The crown disc M. Feil expects to have ready in a few weeks; meanwhile active preparations are being made for the grinding and polishing of the objective. Parts of the general framing have been cast; the polar pillar is completely finished; and the polar axis has had most of its parts adjusted. The cross-head and declination axis are completely finished, and the declination circle and adapter nearly so. The clockwork and many of the other parts of the elaborate apparatus necessary for the working of the telescope are also

complete, and Mr. Grubb is preparing a travelling gantry across the observatory, and proposes commencing shortly to put together the general framework and erect the larger portions of the mounting. A communication from Prof. Newcomb has induced Mr. Grubb to take means to obviate the temporary spherical aberration in the objective produced by the difference of temperature outside and inside the tube. Altogether Mr. Grubb is to be congratulated on the progress he is making in his great undertaking. From the *Deutsche Zeitung* we learn that the new observatory itself is making rapid progress towards completion, and may be ready by the beginning of winter, though it will take two or three years to complete the internal arrangements. The telescope, a refractor with a 26-inch objective and 30 feet focal distance, is expected to be ready by the autumn of 1878.

ALGOLGISTS will be glad to hear that Prof. Agardh of Lund, Sweden, has just published a new volume (vol. iii.) of his work entitled "Species, Genera, et Ordines Algarum." (Epicrisis Systematis Floridearum. Auctore, J. G. Agardh. Lipsiæ: apud T. O. Weigel, 1876.) In it he treats of the Florideæ only; the whole of which, with the exception of the orders *Corallineæ* and *Rhodomeleæ*, are included in it. The Florideæ, it will be remembered, formed the subject of the second volume of "Species Algarum." Since it was published immense numbers of Algæ, in excellent condition, have been submitted to scientific observation; many new species and genera have been added to the list of marine plants; old observations have been verified or corrected; unexpected affinities between plants supposed to be far apart in the system of classification; or discrepancies, equally unexpected, between plants supposed to be closely allied, have been perceived. Improved methods of study have led to the discovery of former errors of classification and description; and the necessity has long been felt by algologists of a work, the arrangement of which should be more in accordance with the present state of knowledge, and in which old errors should be corrected, and new forms described. Such a work Prof. Agardh has now given us, and we are sure it will meet with a welcome reception. The present classification is based on a thorough examination of the internal structure of the frond and of the fruit; and the Professor tells us that no species has been admitted into the text which he had not previously examined. Species, which in the former work had been accurately described, are merely referred to in the present, which must therefore be considered supplementary, and as in no wise superseding the former volume. The present work contains upwards of 700 pages 8vo.

AMONG the questions down for discussion at the Social Science Congress to be held in October, 11th to 18th, at Liverpool, are the following:—In the Education Section—What methods are best adapted to secure the efficient Training of Teachers of all grades, especially in the art of teaching? How can the due connection between Secondary (Grammar) Schools, Elementary Schools, and the Universities, by means of exhibitions, scholarships, or otherwise, be most effectually maintained? How can Professional and Technical Instruction be best incorporated with a sound system of general education? In the Health Section—What is the best mode of making provision for the Supply and Storage of Water—(a) in large towns such as Liverpool and Manchester; (b) in groups of urban communities of lesser size, such as exist in the manufacturing districts of Lancashire and Yorkshire? What amendments are required in the legislation necessary to prevent the evils arising from Noxious Vapours and Smoke?

At Pesth, on Monday, the International Prehistoric Congress was opened in presence of the Archduke Joseph, by Herr Trefort, the Minister of Public Instruction, who welcomed the