matter. If Dr. Bastian wishes to use a solution of impure potash, I freely authorise him to take any in the English or any other Pharmacopœia, being diluted or concentrated, on the sole condition that that solution shall be raised beforehand to 110° for twenty minutes, or to 130° for five minutes.

This is clear enough, it seems to me, and Dr. Bastian will understand me this time.

The following reply to the above was read at the Academy on February 12:[1]—

At the *séance* of January 29, M. Pasteur, in reply to a communication which I had made at the previous *séance*, challenges me to cause sterile urine to ferment by the addition of a suitable quantity of *liquor potassæ*, "on the sole condition that this solution shall be raised beforehand to 110° for twenty minutes, or to 130° for five minutes."

In order that M. Pasteur may not attribute to me the least desire "to elude the main point of the debate," and also with the view of testifying the respect which I consider due to the opinions of so distinguished an investigator, I hastened at once to accept his challenge. During the last week I have repeated my experiments several times, and with a degree of precaution going much beyond the severity of the conditions prescribed by M. Pasteur.

I repeated them at first with liquor potassæ which had been previously raised to *110° C. for sixty minutes*, and afterwards with liquor potassæ which had been raised, in the same manner, to *110° C. for twenty hours*. The results have been altogether similar to those produced upon sterile urine by liquor potassæ, which has been raised only to 100°, when added in suitable quantity; that is to say, *in twenty-four to forty-eight hours the urine was in full fermentation and swarmed with bacteria*. The specimens of urine employed had a specific gravity ranging from 1,020–1,022, and they required about 3 per cent. of liquor potassæ for neutralisation.

If M. Pasteur has found himself unable to renounce his interpretation of my experiments on account of "la preuve manifeste," which I have cited in my last communication (p. 189 of the *Compt. Rend.*), I hope he will frankly accept the disproof of his views furnished by the experiments which I have now the honour of communicating to the Academy, and which have been made in acceptance of his own challenge. These experiments I hope in a short time to repeat before competent judges.

Verbal Reply of M. Pasteur.

I thank Dr. Bastian for having accepted the proposition which I made to him at the *séance* of the 29th of January. In consequence, I have the honour to beg the Academy to appoint a commission to report upon the fact which is under discussion between Dr. Bastian and myself.

I hope that Dr. Bastian will seek to induce the Royal Society of London, of which he is a member, to nominate a commission for the same purpose.

At the *séance* of February 19, it was announced that MM. Dumas, Milne-Edwards, and Boussingault have been appointed to constitute a commission charged to express an opinion on the fact which is under discussion between Dr. Bastian and M. Pasteur.

[1] "On the Fermentation of Urine; reply to M. Pasteur." By M. H. Charlton Bastian.

OUR ASTRONOMICAL COLUMN

THE NEW COMET.—Elements of the new comet calculated by Dr. Hartwig of Strasburg from observations to February 15 are almost identical with those given in this column last week. Observations have been made at Berlin, Copenhagen, Leipsic, Lund, Paris, and Strasburg. On the 16th the comet appeared to the unaided vision a little brighter than the well-known cluster in Hercules, and in the telescope presented itself as a round nebulosity, ten minutes in diameter, with a small central nucleus: this apparent measure corresponds to a real diameter of 77,000 miles.

The following ephemeris for every second midnight, Greenwich time, may facilitate observations. The intensity of light is assumed, as usual, to be represented by the reciprocal of the product of the squares of the distances from the earth and sun: it will be remarked that on the last date, the degree of brightness is only one-sixth of that on the first date of the ephemeris:—

		Right Ascension.	North Polar Distance.	Distance from the Earth.	Intensity of Light.
		h. m.	° ′		
March	3	3 39·5	27 12	0·613	2·06
	5	3 51·1	29 56	0·683	1·59
	7	3 59·5	32 11	0·754	1·25
	9	4 5·8	34 4	0·826	1·00
	11	4 11·0	35 38	0·898	0·81
	13	4 15·2	36 59	0·970	0·67
	15	4 18·9	38 8	1·042	0·56
	17	4 22·2	39 9	1·114	0·47
	19	4 25·1	40 1	1·185	0·39
	21	4 27·8	40 47	1·256	0·34

THE VARIABLE-STAR T CORONÆ BOREALIS.—In No. 2,118 of the *Astronomische Nachrichten*, Prof. Schmidt, of Athens, publishes numerous comparisons of the brightness of this star, the so-called *Nova* of 1866, with a neighbouring star which he satisfied himself is not variable, and finds that during the period 1866-1876 there have been fluctuations of brightness exhibiting a certain regularity, from which he deduces the most probable period 93·7 days. Prof. Schönfeld, at Bonn, has also noted these changes, and has determined the times of maxima at which the star varied from 7·8 m. to 9·0 m. T Coronæ therefore exhibits a similar phenomenon to that already remarked about η Argus, "Nova Ophiuchi, 1848," and the star which is almost precisely in the position of Tycho Brahe's famous object of 1572.

THE RADCLIFFE OBSERVATIONS, 1874.—With the marked regularity which distinguishes the publication of the Oxford observations, the Radcliffe observer has just circulated the thirty-fourth volume of the series, containing the observations made in 1874. The usual contents of the handsome octavo so punctually presented to us by the Rev. R. Main are too well known to require any detailed account here. The heliometer has been chiefly employed, as before, in the measurement of a selected list of double-stars, a number of which were also observed for position with the meridian circle. Observations of shooting-stars in the year 1876 are included in this volume, with the view of placing them early in the hands of those who are interested in the study of meteoric astronomy.

We believe we are correct in stating that the next volume will contain observations of the solar spots, commenced at the Radcliffe Observatory in 1875, and which will therefore be a new feature in the publication.

DUN ECHT OBSERVATORY PUBLICATIONS, VOL. I.—The difficulty of procuring Struve's great work, the "Mensuræ Micrometricæ," has suggested to Lord Lindsay the formation of a summary of the measures of double-stars contained in it in a convenient and portable form, which has been presented to the astronomical world, as the first volume of publications of the Dun Echt Observatory. The positions of the stars are brought up to 1875; in the text Struve's first epoch is given, the subsequent ones being added in foot-notes, or in the case of binaries and other stars frequently observed, in an appendix. The highest and lowest powers used in the measures, the magnitudes and colours of the components, and the page of the original work, where the measures are to be found, are included in the summary.

There can be no doubt that Lord Lindsay's volume will be welcomed by a large number of amateurs, who are interested in double-star astronomy, but to whom Struve's great work is difficult of access, to say nothing of its awkward size for frequent use, when obtained. The transcript and reduction of places from 1826 to 1875, appears to have been made with great care, as we are able to testify from a number of cases examined—including instances where the variation of precession has required to be taken into account. That equal care has been exercised in the correction of the press, is also apparent, and as an admirable specimen of astronomical typography, Lord Lindsay's summary of the "Mensuræ Micrometricæ" is probably unsurpassed.

From the absence of a publisher's name on the title-page, it is to be inferred that it has been Lord Lindsay's intention to circulate his volume privately amongst astronomers; and we know that this has been done to a most liberal extent: still there must be many persons, unknown to the author, who would gladly provide themselves with so unexpected and useful an addition to astronomical literature, and we would suggest whether it might not be desirable to place this volume, which appears to be intended as the precursor of a series, on sale to the astronomical public.

NOTES

THE Italian Scientific Association, or Society of the Forty, has conferred on Sir William Thomson the prize instituted by Carlo Matteucci, for the Italian or foreigner, who, by his writings or discoveries, has contributed most to the advancement of science.

AT the annual meeting of the Geological Society, the Wollaston Gold Medal was presented to Mr. Robert Mallet, F.R.S., and the proceeds of the Wollaston Donation Fund, to Mr. R. Etheridge, jun., F.G.S.; the Murchison Medal to Rev. W. B. Clarke, F.R.S., Sydney, and the proceeds of the Murchison Geological Fund to the Rev. J. F. Blake, F.G.S.; the Lyell Medal and part of the Lyell Fund, to Dr. James Hector, F.R.S., New Zealand, and the balance of the Lyell Fund to Mr. W. Pengelly, F.R.S.; the Bigsby Medal to Prof. O. C. Marsh, F.G.S., Yale College, U.S.

THE total expenditure on the new building at South Kensington for the reception of the Natural History Collections now in the British Museum is stated in the new Civil Service Estimates to have been 206,472*l.* up to September 30 last. A further sum of 36,650*l.* is required to carry on the works up to the end of the present financial year. This amount has been already voted. The proposed vote for the present financial year 1877–78 is 70,000*l.*, leaving the amount of 81,878*l.* necessary to complete the building, the total estimate having been 395,000*l.* We may remark that it is not only in this country that a new Museum of Natural History is in progress. Both at Paris and at Berlin the present buildings for the National Museum are found to be too small, and large sums are to be appropriated to their reconstruction.

THE new Civil Service Estimates also contain an account of the proposed expenditure on the working out of the collections brought home by H.M.S. *Challenger*, which amounts altogether to 4,000*l.* Of this 1,560*l.* is to be devoted to "salaries," 800*l.* to "piece-work," 1,200*l.* to "plates," 240*l.* to "travelling expenses," and 200*l.* to "stores." The salary of the director is to be 500*l.* per annum, that of his chief assistant 400*l.*

IN the Civil Service Estimates for the present year under the head of "British Museum," it will be found that 800*l.* are asked for for acquisitions in the Department of Mineralogy, 800*l.* for Fossils, 1,200*l.* for Zoological, and 400*l.* for Botanical specimens. At the same time it may be noted that the sum of 10,000*l.* is to be devoted to the purchase of printed books, although copies of all books published in the United Kingdom are furnished gratis to the Museum.

PROF. ALFRED NEWTON, F.R.S., has been elected to a Fellowship at Magdalene College, Cambridge.

THE death is announced, at the age of seventy-six years, of Admiral Wilkes, of the U.S. Navy. Probably our readers will better recognise him under the name of Commodore Wilkes, the commander of the well-known U.S. exploring expedition of 1838-42, the results of which were of great scientific importance. Wilkes was the author of a work on the Theory of Winds. He was the same Wilkes who, by his conduct in the Mason and Slidell incident of the American civil war, nearly caused war between this country and the United States.

POGGENDORFF'S *Annalen* will be continued under the editorship of Prof. G. Wiedemann, in Leipsic, who is already the editor of the supplement (*Beiblätter*), and Prof. Helmholtz will join him in his new task. The old staff of contributors have declared their willingness to continue the publication of their researches in the *Annalen*.

AT the Royal Geographical Society on Monday, papers were read "On his recent journey to Lake Nyassa," by Mr. E. D. Young, R.N., and an "Examination of a route for wheeled vehicles between the east coast of Africa and Ugogo," by the Rev. Roger Price.

MR. L. HEILIGBRODT, of Bastrop, Texas, has been engaged since 1867 in making collections of the reptiles and insects of that district.

PROF. KUNDT has been chosen Rector of Strassburg University for this year.

PROF. SCHWENDENER, of Basel, has been called to the chair of the late Prof. Hofmeister, of Tübingen.

WE learn from Helsingfors that M. Henez has returned from his travels in Russian Lapland. He has been studying the little-known language of the Lapps on the Murmansk peninsula. Besides a collection of interesting ethnological data, he has brought with him a complete translation of the Gospel of St. Matthew, which, we believe, will be published by the English Bible Society in Russian type.

WE notice an interesting Russian monograph by M. Malieff—"Anthropological Sketch of the Bashkirs,"—which has appeared in Kazan. The author, who was sent to the Orenburg Government by the Kazan University, to collect skulls of Bashkirs, and spent some time among this people, gives a number of anthropological measurements of men, statistics as to births, and various interesting information on the present state of the Bashkirs, their rapid increase, their customs, religion, &c., and discusses their future prospects.

THE *Golos* announces that the Moscow Society for Promoting the Development of Russian Marine Trade will continue next year the exploration to the Gulf of the Obi, and also build some vessels for exporting, in 1878, various merchandises from the Obi into Europe, especially of ship-building wood to England. M. Dahl, a teacher at the Gainag Marine School in Livonia, with some of his pupils, will be intrusted with this task.

SOME difficulties have been met with in the advance of Potanin's expedition in Western Mongolia. When passing by the convent of Shara Sumson the members of the expedition were assailed by the monks, and student Posdnéeff and the interpreter received severe injuries. Nevertheless, Potanin continues to advance into the interior of the country.

THE occurrence of gold disseminated in small quantities through the older geological formations of Australia has been known for many years. But Mr. C. S. Wilkinson, of the Geological Survey of New South Wales, has observed what seems to be a new fact, that gold in sufficient quantity to be worth mining, occurs in a conglomerate belonging to the Coal-measures, and that the alluvial gold of the Old Tallawang diggings has been derived from the waste of these conglomerates. He justly points out that, apart from the scientific interest belonging to so venerable an auriferous alluvium, considerable commercial importance attaches to its discovery, seeing that the conglomerates may now become a new source of supply for the precious metal. At Clough's Gully the actual conglomerate is now being worked, and yields from 1 dwt. to 15 dwts. of gold per ton, and nuggets sometimes weighing 5 ounces.