

IN the August number of the *American Chemical Journal* is an interesting paper by Messrs. Franklin and Stafford on reactions between acid and basic amides in liquid ammonia. Solutions of these amides in liquid ammonia are conductors of electricity, a fact presumably due to electrolytic dissociation of the dissolved substances. It would appear that these amides indeed bear a relation to liquid ammonia which in many respects is very similar to that borne by ordinary acids and bases to water. Complete or partial neutralisation of the dissolved amides takes place with the formation of one or more molecules of the solvent ammonia in which the reaction takes place. By bringing together liquid ammonia solutions of different acid and basic amides, the authors have prepared a large number of metallo-substituted acid amides; for example, monopotassium acetamide, mono- and di-potassium benzamide, mono- and di-potassium sulphamide, mono- and di-potassium urea, magnesium acetamide, &c.

IN a *Bulletin* of the Bussey Institution, vol. iii. No. 2, Prof. F. H. Storer describes the results of tests for mannose carried out on a large number of vegetable species. From these it would appear that mannan is fairly widely distributed in plant life. The amount of mannan in the trunk-wood of sugar-maple trees felled during the period of hibernation is considerably greater than that in maple trees felled at the beginning or end of May, that is, during or just after the formation of new leaves upon the trees. The author comes to the conclusion that mannan as well as starch is stored as reserve food in the wood of the sugar maple.

THE sixteenth number of the *Revue générale des Sciences*, issued on August 30, contains a short article, by Mr. P. Lemoult, on the new synthesis of indigo patented by Sandmeyer. The author points out that the Sandmeyer synthesis possesses several advantages, from a chemical point of view, over the two processes which are now used on the large scale for the artificial production of indigo. An estimate of the cost of production by the new process indicates that the indigo obtained should compete successfully on the market with the natural product and that of the older synthetic methods.

IN vol. xvii. of the *Journal* of the College of Science, Imperial University, Tokyo, Messrs. Divers and Ogawa show that it is possible to prepare sulphamide from ammonium amidodisulphite with a 10 per cent. yield, whereas the older method of obtaining it from sulphuryl chloride and ammonia only gives 1 to 2 per cent. of the theoretical amount.

To the September number of the *Zoologist*, Mr. R. C. J. Swinhoe contributes some important notes on prehistoric man in Burma. It will be remembered that in 1894 Dr. F. Noetling announced in the *Records* of the Geological Survey of India the discovery in a bed of ferruginous conglomerate at the oil-fields of Yenangyoung of worked flints in association with the remains of *Hipparion antilopinus* and *Rhinoceros berimensis*, thus carrying back the existence of man in that country to the older Pliocene or upper Miocene. A year later, Mr. R. D. Oldham expressed the opinion that, in the first place, the flints are not confined to the ferruginous conglomerate and, secondly, that they are not chipped by man. As the result of a recent visit to the locality, Mr. Swinhoe confirms Dr. Noetling's view that the chipped flints, and likewise certain faceted bones, are the works of men's hands; but, on the other hand, he regards them as of Palæolithic age, the place where they were found being apparently a workshop of that period.

THE September issue of the *Quarterly Journal of Microscopical Science* contains four articles of a highly technical nature, for the most part interesting only to specialists. In the first of the four, Dr. T. H. Bryce treats of the maturation of the

egg in the common sea-urchin; he is followed by Mr. R. I. Pocock, who discusses the "entosternite" of spiders and scorpions. The third article, by Dr. S. F. Harmer, is devoted to the morphology of polyps allied to the common sea-mat, while in the fourth, Mr. L. Doncaster describes the development and anatomy of the annelid sagitta.

NOs. 1275 and 1276 of the *Proceedings* of the U.S. Museum are respectively devoted to a list of the beetles of the Columbia district, by Mr. H. Ulke, and to the description of some new South American birds, by Mr. H. C. Oberholser.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mrs. O'Connor; a Rhesus Monkey (*Macacus rhesus*) from India, presented by Miss Faulkner; a Lesser White-nosed Monkey (*Cercopithecus pelaurista*) from West Africa, presented by Mr. C. W. Woodhouse; a Black-headed Lemur (*Lemur brunneus*) from Madagascar, presented by Dr. H. C. Hilliard; a Grey Parrot (*Psittacus erithacus*) from West Africa, presented by Captain Paget J. Bourke; a Carrion Crow (*Corvus corone*) British, presented by Miss N. Simmons; a Great Barbet (*Megaloea virens*) from the Himalayas, presented by Mr. R. Phillips; eighteen Green Tree Frogs (*Hyla arborea*) European, presented by Dr. E. L. Gough; a Common Marmoset (*Hapale jacchus*), an All-green Tanager (*Chlorophonia viridis*), a Blue Sugar-bird (*Dacnis cayana*) from Brazil, a Suricate (*Suricata tetradactyla*) from South Africa, a Prairie Marmot (*Cynomys ludovicianus*) from North America, a Crab-eating Opossum (*Didelphys cancrivorus*) from Tropical America, a Levaillant's Amazon (*Chrysotis levaillantii*) from Mexico, three Asiatic Quails (*Perdica asiatica*) from India, deposited; an Axis Deer (*Cervus axis*) born in the Gardens.

#### OUR ASTRONOMICAL COLUMN.

- ASTRONOMICAL OCCURRENCES IN OCTOBER:—
- Oct. 10. 0h. 41m. to 5h. 34m. Transit of Jupiter's Sat. IV.
  - 12. 2h. 7m. to 5h. 49m. Transit of Jupiter's Sat. III.
  - 13. 11h. 24m. Minimum of Algol ( $\beta$  Persei).
  - 15. Venus. Illuminated portion of disc = 0.981, of Mars = 0.930.
  - 16. 8h. 13m. Minimum of Algol ( $\beta$  Persei).
  - 16. 10h. 17m. to 11h. 18m. Moon occults  $\zeta^1$  Piscium (mag. 4.2).
  - 16. 16h. 17m. to 19h. 50m. Total eclipse of the moon partly visible at Greenwich. The moon sets at 18h. 32m. when totally eclipsed.
  - 19. 5h. 58m. to 9h. 40m. Transit of Jupiter's Sat. III.
  - 19. 17h. 8m. to 18h. 13m. Moon occults  $\delta^1$  Tauri (mag. 4.0).
  - 19. 17h. 43m. to 18h. 43m. Moon occults  $\delta^2$  Tauri (mag. 4.7).
  - 19-21. Epoch of Orionid meteoric shower. Radiant  $91^\circ + 15'$ .
  - 22. 12h. 53m. to 13h. 44m. Moon occults  $\lambda$  Geminorum (mag. 3.6).
  - 23. 9h. Mercury in conjunction with Venus. Mercury,  $1^\circ 20' S$ .
  - 26. 9h. 54m. to 13h. 36m. Transit of Jupiter's Sat. III.
  - 30. 6h. Venus in conjunction with moon. Venus,  $0^\circ 54' N$ .
  - 30. Partial eclipse of the sun slightly visible at Greenwich. The eclipse ends at 19h. 1m., or 8 minutes after sunrise at Greenwich on the morning of Oct. 31.

REPORT OF THE MELBOURNE OBSERVATORY FOR 1901.—New buildings are being added at a cost of 1500*l.*, and, with the repairs that have already been done, this will add considerably to the efficiency of the Observatory.

The third Melbourne catalogue for the epoch 1890 has been in the printer's hands since last December. 336 plates have been exposed in connection with the astrographic chart, and of these, 320 have been passed as satisfactory.

6327 stars have been selected from the catalogue plates, and roughly reduced for observation with the Melbourne transit circle, to serve as standard stars for the reduction of the Melbourne regions, and of these 3944 have already been completely observed with the meridian circle three times or more.

There are now 760 meteorological stations in communication with the Observatory, and all the records for the last forty years are, at present, being completely rearranged and classified in convenient forms for easy reference. The terrestrial-magnetism work has been carried on as hitherto, and the special observations in connection with the Antarctic expeditions are being made at the required intervals. In the reduction of the magnetograph curves for the past thirty years, 21,877 curves had been measured up to March 31.

NEW MINOR PLANETS.—The following five minor planets, with their positions, are recorded by Prof. Max Wolf in No. 3815 of the *Astronomische Nachrichten*:—

1902. Sept. 3d. 12h. 55m. '8 (Heid).	Sept. 7d. 10h. 38m. '9 (Heid).		
$\alpha$	$\delta$	$\alpha$	$\delta$
1902 J.O. 23h. 54m. '7	-0° 13'	23h. 51m. '7	-0° 44'
1902 J.P. 23h. 56m. '7	+1° 14'	23h. 54m. '5	+0° 47'
1902 J.Q. oh. 13m. '4	+1° 20'	oh. 11m. '3	+0° 44'
1902 J.R. oh. 9m. '2	-1° 21'	oh. 6m. '6	-1° 36'
1902 J.S.		oh. 10m. '3	-0° 13'
			Mag.
			13
			12
			12.5
			13
			12

### THE RETURN OF THE ARCTIC EXPEDITIONS.

SINCE we went to press with our last issue, the Arctic expeditions of Lieut. Peary and Captain Sverdrup have returned, and accounts of their work, as well as of that of the Baldwin-Ziegler expedition, have appeared in the daily papers. The following brief account of the scientific results obtained by the three expeditions is obtained from telegrams received through Reuter's Agency, and from the personal narrative of Captain Sverdrup which is to be found in the *Times* of Monday last.

Lieut. Peary reached Payer Harbour on September 16, 1901, and within a week the Eskimos with the expedition began to sicken, and not one escaped illness. Of the number, six adults and a child died. Further sickness among the Eskimos occurred in the following January.

An advance party, in charge of Hensen, started for Conger on March 3. On March 6, the main party started, leaving Peary in charge at Payer Harbour. Conger was reached in twelve marches, shortly after the advance party had arrived there. The Eskimos supporting the expedition went back on reaching Conger. Eight marches more took the expedition to Cape Hecla, at the north end of Robinson Channel, which was all open across to Greenland, while there were lakes of water extending northward as far as could be seen, from Black Cape to Cape Ransome. On April 1, Lieut. Peary started northward over the Polar Sea with Hensen, four Eskimos and six sledges. The old floes were covered deeply with snow and intersected by rubble ridges, and lanes of young ice were encountered.

The travelling, except for the lanes of young ice, was similar in character to that experienced by the English expedition of 1876. After a number of difficult marches, which became more and more perilous, the pack, in latitude 84° 17', to the north-west of Cape Hecla, became impracticable, and further efforts to advance had to be abandoned. New leads and the pressure ridges, with fogs, made the return in some respects more trying than the advance. Cape Hecla was regained on April 29 and Cape Sabine on May 15. The ice broke up earlier than in 1901, and Payer Harbour was blockaded almost continuously. The *Windward* bored through, entered the harbour on August 8, and left the same afternoon.

The leader of the expedition states that he has a deep-rooted conviction that it is possible to reach the North Pole. In all his attempts during the last four years, he points out, he has not had a suitable starting-point, but he believed that the Pole can be reached on sledges by any adequately equipped expedition which makes latitude 83 its winter quarters. If he had means of his own to continue the work, he would certainly not give it up, but he must now bow to circumstances. It has been demonstrated to his satisfaction, he declares, that there is no open ocean in the voyage to the Far North. On the other hand, there is no foundation for the idea that there is an eternally frozen sea, though the waters are practically always

covered with ice. He has shown, he thinks, that Greenland's shore is the most northerly land of the earth's surface, and that all beyond it on the other side is ocean.

Lieut. Peary made a close study of the Eskimos living on Whale Sound, the most northerly people in the world. Their complete isolation has differentiated them from every other race. They are a small tribe, not exceeding 200 in number, and are being rapidly destroyed by an unknown disease, apparently a malignant slow fever. He collected specimens of everything pertaining to their habits, knew every man, woman and child personally, learned their characters and capacities, and taught them to work.

The first intimation of the return of Capt. Sverdrup in the *Fram* came in the shape of the following telegram (dated Stavanger, September 19) from Captain Sverdrup to the secretary of the Royal Geographical Society:—

"Arrived here to-day with the *Fram*. Our exploring work consists in the southern and the western shores of Ellesmere Land and other unknown fields to the westward. Braskerud died autumn 1899, otherwise all well."

The *Fram*, it will be remembered, left Christiania in June, 1898, its principal geographical object being to ascertain the extension of Greenland towards the north, to determine the yet unknown configuration of the mainland, and, if possible, to discover whether this great Arctic land finally breaks up into groups of islands in the north. It was also understood that, if circumstances were favourable, Captain Sverdrup, like Lieut. Peary, would make an attempt to reach the North Pole.

The personal narrative of the leader of the expedition, already referred to, gives an interesting account of the work accomplished and the way in which the great difficulties which presented themselves were overcome. As so much care and attention had been paid to the scientific equipment of the expedition, valuable scientific results may be expected to accrue from it, particulars of which will be eagerly awaited. The narrative, however, gives information as to some of the work done in the interests of science. Hayes Sound was completely mapped. The unknown west coast of Ellesmere Land was explored. Between Ellesmere and North Kent, a large bay was seen to extend eastward and to be about 100 miles broad. On the northern side of the same, some large, complicated fjords were found. The land extended about fifty miles westward from these, after which it ran in a north and north-westerly direction. Part of the land which was traversed was very hilly and intersected by large fjords, several of which were from fifteen to twenty miles broad at the mouth.

Much other new land was explored and the numerous fjords investigated. All the members of the expedition appear to have worked heartily and harmoniously together, and returned safely to Stavanger on Friday last, with the exception of the surgeon, who was to have taken charge of the meteorological observations and who died in the course of the expedition.

Mr. Baldwin, in the course of an interview, claimed to have accomplished, in the course of nearly a year and a half's incessant work, more than the unfavourable conditions which surrounded his expedition really warranted, and to have brought back data which ought materially to assist subsequent explorers. For the first time in the history of North Polar exploration, a photographic record had been secured of the ice and snow conditions of the Arctic and of the animal life of those regions. The kinematograph had been for the first time successfully employed in the far North, and as a result there were more than 1000 perfect photographic representations of their work, and in addition more than 200 drawings and paintings had been made.

The main object of the expedition was to plant the American flag at the North Pole, and the result being what it was, the explorer is naturally somewhat disappointed. He maintains, however, his belief that his objective can be reached in accordance with his original plan. He attributes his non-success to the condition of the ice in the Franz Josef Land Archipelago in the autumn of 1901, which prevented the navigation of the *America* far enough north to be of practical advantage in establishing headquarters so as to facilitate sledge-work in the winter and spring of the present year, and to the sickening and death of many of the dogs from internal parasites, which ultimately proved fatal to more than half the pack.

A hut was found by the party, and in it a small brass cylinder