at 20° C., and confined in the reaction tube by mercury, gave a continuous absorption which appeared to go on indefinitely. The product contained mercury, but gave no reaction for sulphocyanide. When heated, a quantity of gas was recovered equal to about one half the volume absorbed, and this recovered gas was proved to be argon by condensation with benzene, and production of the remarkable fluorescence previously described. Though this work has been done on such small quantities of material that an exhaustive examination of the product was not possible, M. Berthelot believes that he has satisfactorily demonstrated the significant property of argon, that it can enter into combination and be regenerated from its compound or compounds with its initial properties intact.

As a result of observations carried on by the *Investigator* in the autumns of 1892–3–4, Commander C. F. Oldham, R.N., contributes two papers on the Laccadive Islands to the *Journal of the Asiatic Society of Bengal* (vol. lxiv. pt. ii. No. 1, April 1895). The group consists of four submerged coral-reefs, six reefs with small islets ("sand-cays"), and eight inhabited atolls: three of the reefs and five of the atolls were examined. The islands and sand-cays occur, in all cases but one, on the eastern side of the atolls; they cannot, therefore, have been built up by the action of the ordinary monsoon winds which blow mainly from the west, but must be due to the occasional hurricanes which reach the eastern and north-eastern sides of the atolls. The effect of the tides and currents is seen in the more vigorous growth of the atolls to the south and west. The islands and islets are extending at their extremities, and in some cases are being added to on the south-western sides where they face the lagoon. No evidence of either elevation or subsidence was observed.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mrs. Stevens; two Javan Parrakeets (*Palæornis javanica*) from Java, presented by Lieut.-General Sir H. B. Lumsden; a Green-winged Trumpeter (*Psophia viridis*) from Brazil, presented by Mr. H. A. Astlett; a Diamond Snake (*Morelia spilotes*) from Australia, presented by Mr. M. Mitchener; a Natal Python (*Python natalensis*) from South Africa, presented by Mr. William Norman; a Korin Gazelle (*Gazella rufifrons*, ♀) from Senegambia, a Blue and Yellow Macaw (*Ara ararauna*) from South America, a Naked-necked Iguana (*Iguana delicatissima*) from Tropical America, thirty-four Black Salamanders (*Salamandra atra*), South European, deposited; a Tachiro Goshawk (*Astur tachiro*) from South Africa, nine Red-beaked Weaver-Birds (*Quelea sanguinirostris*) from West Africa, purchased; a White-crested Jay Thrush (*Garrulax leucolophus*), a Striated Jay Thrush (*Grammatoptila striata*) from India, received in exchange; a Burrhel Wild Sheep (*Ovis burrhel*, ♀), a Patagonian Cavy (*Dolichotis patachonica*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE YERKES OBSERVATORY.—From a note in the *Astrophysical Journal* for June, we learn that the construction of the buildings of the Yerkes Observatory is advancing rapidly, and it is hoped the 40-inch refractor will be ready for use in September or October. The Observatory is situated on the shores of Lake Geneva, Wisconsin, at an elevation of 180 feet above the lake, and is about seventy-five miles from Chicago. The dome for the great telescope, which is being built by Warner and Swasey, is 90 feet in diameter, with a shutter opening 12 feet; the rising floor is 75 feet in diameter, and will have a vertical movement of 22 feet. The motive power for turning the dome and elevating the floor of the Observatory will be supplied by electro-motors.

In addition to the large telescope, provision is made for the use of the 12-inch telescope now at the Kenwood Observatory, and another telescope of 16 inches aperture. The meridian room is designed to accommodate a large meridian circle, but, in the first instance, a transit instrument will be employed.

The Observatory buildings appear to be designed on a very liberal scale, and comprise offices, library, lecture theatre, spectroscopic, physical, chemical, photographic, and other laboratories. We understand that Prof. Barnard and Prof. Burnham have accepted positions in the Observatory.

THE GRANULATION OF THE SUN'S SURFACE.—The granular or mottled appearance of the surface of the sun is familiar to all observers, and the great resemblance to terrestrial cirrus clouds has long been recognised. A possible cause of this appearance has been recently suggested by Dr. Scheiner (*Astr. Nach.* 3279), the idea being that Helmholtz's investigations on the formation of waves in our own atmosphere apply also in the case of the sun. According to Helmholtz, air waves are produced when two strata of air of different temperature and density glide over each other; if the lower layer is nearly saturated with aqueous vapour, the wave crests will be centres of condensation, in consequence of diminished pressure, and will appear as clouds, while the depressions will form transparent interspaces. On this theory a "mackerel sky" is produced when two series of waves cross each other. Dr. Scheiner points out that somewhat similar conditions prevail in the sun; there are layers of different temperature, and currents in various directions in these layers, and in the photosphere the condensable gases are in an over-saturated state. He therefore considers that the bright grains of the photosphere are wave-crests of two crossing systems of waves, rendered visible by an increase of condensation. In the case of the sun, the observed lengths of the waves—that is, the distance between the separate grains—is from 1000 to 3000 kilometres, and it is believed that waves of this magnitude might be produced without the assumption of extraordinary velocities.

Assuming this to be a true explanation, the photosphere must be a very thin layer; and since the granules are of about the same size in all parts of the surface, the velocity of the currents must be nearly equal in all heliocentric latitudes.

THE SATELLITES OF JUPITER.—Not contented with his brilliant discovery of a fifth satellite to Jupiter, Prof. Barnard has been employing the great resources of the Lick telescope in further investigations of the satellites which were discovered by Galileo (*Monthly Notices, R.A.S.*, vol. lv. p. 332). One part of his work has consisted of micrometric measurements of the diameters of the satellites, and the results, reduced to a mean distance of the planet from the sun equal to 5·20, are as follows:

	Angular diameter.	Diameter in miles.
	″	
Satellite I.	1·048	2452
,, II.	0·874	2045
,, III.	1·521	3558
,, IV.	1·430	3345

It is pointed out that these values are in good accordance with the mean values derived from nine sets of measures made by as many different observers since 1829. Of the earlier estimations, those made by Schroeter in 1798 agree most closely with modern results.

Special attention appears to have been given by Prof. Barnard to Satellite I., on which he discovered, with the 12-inch equatorial, on September 8, 1890, the existence of a bright equatorial belt and dark polar caps. These appearances have been verified at every favourable opportunity, and "they are, beyond question, permanent features of the satellite, and will always be visible when a favourable transit occurs." These markings on the satellite fully account for all the phenomena which have been reported of the distortion or ellipticity of its disc, as well as for the apparent doubling of the satellite during some transits. When the satellite is transiting over a dark part of the planet, the white belt appears very prominently, while the dark poles are correspondingly difficult to see, so that, without very close attention, the satellite looks like a thin white strip. If, on the other hand, it be transiting across a bright part of the planet, the white belt is lost in the bright background, and the polar regions appear as two separate dark spots, making the satellite appear double. The dark polar caps are darkest at the poles, and become rapidly less intense towards the equator. Prof. Barnard considers that the phenomena observed on this satellite indicate that its physical condition is similar to that of Jupiter.