as many distinct families, were obtained in this haul. They are the following: Cyclothone lusca Goode and Bean, Scopelus Mülleri Gmel., ? Aleposomus Copei Gill, an undescribed alepocephalid with scaleless body and head, Mancalias uranoscopus Murray, and Plectropomus crassiceps Goode and Bean MS.

The species obtained at the greatest depth by the Challenger was Gonostoma microdon Günther, which was obtained by the trawl from 2,900 fathoms (5,304 metres), in north latitude 35° 22′, and east longitude 169° 53′.

There may be reason to doubt, with Dr. Günther, the pertinence of Gonostoma microdon to this extreme depth; and the same may be said of our very closely related Cyclothone lusca (a species which is at least congeneric with G. microdon), especially as we have it from depths varying between 552 and 5,394 metres; and it is abundant and widely distributed in the lesser depths. Scopelus Mülleri, also, has been obtained in 556 metres. As for ? Aleposomus and Mancalias (and perhaps, also, Plectropomus), there can be no doubt that they are true deep-sea fishes; and we may expect to find them frequently at the great depth of 5,400 metres. Mancalias uranoscopus Murray was taken at a depth of 4,390 metres by the Challenger, in the Atlantic, between Canary and Cape Verde Islands. The Albatross specimen of this species is the type of Dr. Gill's supposed new blind ceratiid genus, Typhlopsaras.

JOURNEY OF LESSAR TO SERAKS.

THE military railway from Michel Bay, on the Caspian, to Kisil Arvat, was finished in September, 1882. It was afterward decided to make a preliminary survey, having in view the extension of this road to Seraks. The expedition comprised twenty Cossacks, ten sappers, two surveyors, two interpreters, and a guide, who set out from Askabad, a newly established station. In October they reached Annan, after crossing a flat country broken here and there by sandy hills some two thousand feet in height. Annan contains an immense mosque in a half-ruined condition, but with its principal façade intact, and of remarkable elegance. It is the finest of the few monuments of art in the Tekke country. The people live mostly in khibitkas: the site of the town is surrounded with ruined fortifications. Thence the route passed between the dunes twenty versts, to Gwiwars, which has three series of dilapidated fortifications inhabited by a few Kirgis and Tekkes. Several caravans of Tekkes were met with on their way from Merv to Akhala. Having taken refuge in the Merv oasis during the war, they were now expelled by the Mervli, who feared famine from the presence of too many people. The distance from Gwiwars to Baba Durmaz was found to be thirty-six versts, over an undulating country. Water is conveyed to Durmaz by a canal, and, though a little salt, is used by men and beasts without inconvenience. The chiefs of Khorassan, enraged by the conquest of Akhala, and discontented at the reign of order established by Russia on the steppes, are in general unfriendly. The population, however, are well satisfied, and enjoy a peace which they have never known. They are no longer raided by the Mervli, and many men formerly enslaved at Khiva or Akhala have returned to their villages in freedom due to the Russian conquest. From Durmaz to Liutfabad the forests have been cut away, and the soil is riddled so by the burrows of porcupines, that men and horses stumble at every step. Here and there are hillocks surmounted by ruins of towers or ramparts. Very lately each village or farm of this country possessed a round tower, with a single entrance closed by an enormous stone, to which the inhabitants retired at a moment's notice of the approach of one of the robber-bands who infested the region. The robbers did not attack the tower, but stole or destroyed every thing outside of it. At present a watch is rarely kept, and the towers are falling into decay. Liutfabad has a bazaar, reputed the best in all that country, where, however, the only goods were sugar, dry raisins, rice, nuts, bad tea, and henna. The inhabitants held the kindest relations with the Russian explorers. Thence to Kaakha the country for thirty versts is fertile, well watered, with a numerous population; but the streams are destitute of bridges. Woods were observed toward the mountains north of the route.

Near Kaakha the uniformity of the plain is broken by villages, fortifications, and numerous tumuli generally on the banks of streams. These last were said by Vambéry to be erected by the Tekkes over the graves of their chiefs; but the people deny this, and there is little doubt that they are prehistoric. They are circular or elliptical, and reach fifteen or twenty metres in height. Along the route the people worked in the fields with horses or camels, and did not avoid the Russians, but met them on friendly terms. The approach of the party constantly started up pheasants, partridges, and other game from the fields. The Tekke *cuisine*, observed by the explorers, did not comprise the revolting dishes reported by Vambéry, but included pilau, game, camel's milk, melons, and pastry. The people eat with their fingers, but have wooden spoons. On all the steppes many termite-hills were visible, hemispherical, a foot and a half high, and two feet in diameter. These insects are amber-colored, and half an inch long: they form a covered way to any object which they desire to consume, especially wood or cloth. Though destructive to wooden buildings along the line, they have not injured the sleepers of the railway, which is ascribed to the jarring motion produced by the passage of trains, which is supposed to destroy their mud-tunnels, outside of which they will not work.

Seraks is a rather large fortress occupied by a battalion of Persian infantry. The outer line of works is extended to include farms and vineyards. The environs are habitually pillaged by Tekke robbers, who inspire such fear that the garrison never ventures on a *sortie*, and dares not attempt to succor a caravan attacked within a mile or two of the ramparts; and at night the patrol always carry torches. The fortress is armed with six old useless cannon. The River

Tejent passes near Seraks, but is generally dry: its bed is about half a mile wide. The water from the melting snows and heavy rains is retained in large reservoirs closed by sluices, and distributed by canals for irrigation. Wells reach water at a depth of twenty feet.

The levelling carried on by the party has demonstrated, that, in leaving the Caspian Sea, there is not a general rise of the surface. At the wells of Aydine, several points are notably lower than the surface of the Caspian; and the whole region between the latter and the wells is a dried up arm of the sea. The aspect of the observations leads one to believe that they will show, when worked up, that there are many points in the sandy deserts between the Tekke oasis and Khiva which are lower than the Caspian; and it is already certain that the alleged former junction of the Tejent and Murial Rivers with the Oxus was an impossibility, and that, though nearer to each other, they emptied directly into the Caspian. Further work will be necessary to show the exact origin of the depressions met with in different parts of the steppes, and which have been taken for beds of ancient water-courses.

The expedition terminated its work at Seraks, and returned to Askabad by a different route.

PALMS.

SOME interesting details respecting these princes of the vegetable kingdom, as Linnaeus called them, are to be found in Sir Joseph Hooker's last report on the progress and condition of the Royal gardens at Kew. The extent to which they have recently been brought into cultivation is noteworthy.

Miller, in his Gardener's dictionary, edition of 1731, knew of seven species; but only two were generally known in conservatories, — the dwarf fan-palm of the south of Europe, and the date. Aiton's Hortus Kewensis, in the second edition (1813), enumerates only 24 species. The Loddiges, great cultivators of palms, who possessed in their day much the largest collection known, enumerate 210 species in their nursery catalogue of the year 1825. In the Herrenhausen conservatories, Hannover, Wendland had assembled 287 species in 1835, and 445 in 1882. This is the largest collection in the world; but the noblest must be that of the Botanical gardens of Buitenzorg, Java, which, in 1860, boasted of 273 species, 'all standing naked in the open air.'

It is only when the literature of the order is brought together systematically, that we appreciate the extent and the variety of palms. In the new Genera plantarum, Sir Joseph Hooker characterizes 132 genera of true palms, and indicates about 1,100 species.

Our readers may like to know what palms are indigenous to the United States, and what names they now bear. Without counting one or two tropical species which grow in southern Florida, and which are outlying Cuban and Bahaman species, we have two true palmettos, Sabal palmetto, and S. Adansoni; the blue palmetto, Rhapidophyllum hystrix of Wendland; the saw palmetto, Serenoa serrulata of Hooker. This is the old Sabal serrulata, upon which Hooker has recently founded a new genus, dedicating it to our associate, Sereno Watson (*Palmam qui meruit ferat*), there being already a Watsonia in honor of an earlier botanist of this name. Finally we have, just beyond our national borders, namely, on the islands off Lower California, a palm of a peculiar genus, instituted by Mr. Sereno Watson, the Erythea edulis; and in southern California the elegant Washingtonia bilifera, with which Wendland has complimented our country by naming this palm in honor of its first president. The only other president so distinguished is Jefferson. Jeffersonia diphylla is one of our choicest spring flowers.

THE DEARBORN OBSERVATORY.

THE report of Prof. G. W. Hough, the director of the Dearborn observatory, to the board of directors of the Chicago astronomical society, exhibits an encouraging state of activity in that establishment. The eighteen-inch equatorial and the Repsold meridian circle have been kept in excellent order and in constant use; though it does not appear, from the report, that this latter instrument has been employed in any service where a smaller and less adequately equipped instrument would not equally have sufficed. The objects specially studied with the great telescope were the great comet of 1882, difficult double stars, and the planet Jupiter, in addition to which a few miscellaneous observations were made. The comet-observations are of interest as throwing some light on the question of the breaking-up of this body into three separate and distinct fragments, and the testimony of so powerful a glass is of high importance. Professor Hough's observations, from Oct. 5, 1882, to March 6, 1883, are all consistent with regard to the apparent separation of these three centres of condensation; but they were all the time connected by matter of less density, so that no complete separation took place between the parts of the head.

Sixty-six new double stars were discovered during the year, most of which are difficult objects, and can be measured only when the seeing is good. Professor Hough estimates that not more than one observing night in three is suitable for such observations. In the search for D'Arrest's comet, six new nebulae were detected, three of which were found by Mr. Burnham. The companion to Sirius was measured on a goodly number of nights by both these observers. Professor Hough expects this object to be, in a few years, entirely beyond the reach of all telescopes except the largest ones, as the distance between the components (now nine seconds of arc) is diminishing about three-tenths of a second annually.

The great red spot on the planet Jupiter, first noticed in 1878, and which has been, until the past year, of a reddish-brick color, has gradually grown paler, until, at the present time, it is barely visible. Professor Hough ventures the opinion that it cannot be seen much longer in any telescope. Its stability has been remarkable, not having changed very ma-