dinner will take place in the evening of that day at the Westminster Palace Hotel. Mr. Jonathan Hutchinson will, it is announced, deliver an introductory address at the opening of the session at the Owens College on October 2. At University College, Liverpool, the session will commence on October 1, on which date Sir William O. Priestley will distribute the prizes. Mr. Victor Horsley has consented to open the session of the Medical Department of the Yorkshire College, on October 1, with an introductory address; he will also distribute the prizes. The winter session of the Queen's Faculty of Medicine, Mason College, will commence on October 1; so also will the sessions of the College of Medicine, University of Durham, and the Sheffield School of Medicine. At Durham, the scholarships and prizes will be distributed by the Bishop of Newcastle; and at Sheffield, Sir Henry Littlejohn will deliver an introductory address.

THE current issues of the *Lancet* and the *British Medical Journal* are almost wholly devoted to information likely to be of service to those who are students, or who are about to become students, in one or other of the medical schools of this country. The *Chemist and Druggist* for September 5 contains articles and details specially written for the future chemist and druggist.

MR. EDGAR THURSTON, Superintendent of the Government Museum, Madras, has, with the assistance of Mr. T. N. Mukerji, prepared a copious index to the valuable "Dictionary of the Economic Products of India," by Dr. G. Watt, a review of which appeared in our columns of November 1, 1894. Those who have to refer from time to time to Dr. Watt's great work will, we have no doubt, be grateful to the compilers of the present volume. It is issued from the office of the Superintendent of Government Printing, Calcutta.

THE Sub-Committee charged with the reception of the British Association have done a very excellent work in compiling an interesting handbook to Liverpool and its neighbourhood, entitled "A Scientific Handbook to Liverpool," a work which, though mainly intended for the benefit of those attending the meeting, will possess a considerable value after the meeting is over. We do not know to whom the happy idea originally occurred, but are probably not far wrong in attributing it to Prof. Herdman, who certainly undertook the duties of editing and general arrangement, and has carried them out very happily. The various authors by whom he has been assisted are not only peculiarly qualified to deal with the subjects severally treated, but each has apparently been solicitous to collect a mass of details which will save any one interested in a similar research a great amount of time and trouble. We have only space to give the bare titles of the several chapters; but this is of the less consequence, as the little book, it may be hoped, will find its way into the hands of all intending visitors. Mr. W. H. Picton, able to draw on the work and research of his father, deals with history and antiquities; while Mr. G. H. Morton is responsible for the notes on the geology of the district. Dr. Forbes, of the Liverpool Museum, treats of the vertebrate fauna; Prof. Herdman reserving to himself the marine fauna. Mr. W. E. Sharp and Mr. R. Brown share the entomological and botanical interests. Mr. Plummer gives statistics connected with the climate of Liverpool and Birkenhead; and Dr. Oliver Lodge contributes an article on the Mersey and its tides. The article on the Docks and the principal engineering features of the city is jointly produced by Prof. Hele-Shaw and Mr. Percy Boulnois, the city engineer; while Sir W. Forwood treats of the city's trade and commerce. The history of the chemical industries is entrusted to Dr. Kohn. This list of names amply justifies the remark that each section has been entrusted to the authority best qualified to deal with it. An appendix supplies some useful information concerning the Isle of Man, where it is proposed to hold a subsidiary meeting at the conclusion of the Liverpool meeting properly so called. Five maps are included in the book—a geological map of the district, a biological chart of the Irish Sea, a chart of Liverpool Bay, a geological map of the Isle of Man, and a chart of the sea round the southern extremity of the isle, including the biological station at Port Erin. Such a book cannot but add greatly to the interest of the meeting, and afford much valuable instruction not only to the members of the British Association, but also to the inhabitants of Liverpool, who must have often felt the want of such a handbook. It is issued for the British Association by Messrs. Philip, Liverpool.

IN addition to the above-mentioned guide-book, the British Association has issued, also through Messrs. Philip, an "Excursion Guide Book," in which is to be found just the information likely to be of interest and use to those taking part in the numerous outings arranged; and being partly the work of leaders of the excursions, and under the editorship of one of the local secretaries of the meeting, its contents may be thoroughly depended upon.

THE additions to the Zoological Society's Gardens during the past week include a Mona Monkey (*Cercopithecus mona*, ♀) from West Africa, presented by Mr. F. Wyville-Thomson; two Garnett's Galagos (*Galago garnetti*) from Mombassa, East Africa, presented by Rear-Admiral Rawson, C.B.; a Brown Capuchin (*Cebus fatuellus*, ♀) from Guiana, presented by Miss Cissie Wade; a Suricate (*Suricata tetradactyla*, ♀) from South Africa, presented by the Rev. Wilfred Fisher; an American Black Bear (*Ursus americanus*, ♂) from Vancouver Island, presented by Lieut. Bryan Godfrey Faussett, R.N.; a Llama (*Lama peruana*, ♂) from Peru, presented by the executors of the late Colonel J. T. North; a Moorish Tortoise (*Testudo mauritanica*), a Chameleon (*Chamæleon vulgaris*) from North Africa, presented by Mrs. Fraser; an Alligator (*Alligator mississippiensis*) from Florida, presented by Mr. Hugh Mytton; a Brown Capuchin (*Cebus fatuellus*, ♀), a —— Bell Bird (*Chasmorhynchus*, sp. inc.) from Guiana, three Painted Terrapins (*Clemmys picta*) from Nova Scotia, deposited; a Long-tailed Glossy Starling (*Lamprotornis æneus*), two Yellow-backed Whydah Birds (*Coliopasser macrurus*, ♂ ♀) from West Africa, purchased.

OUR ASTRONOMICAL COLUMN.

NEW COMET.—A telegram from Kiel announces the observation of Comet Giacobini on September 4 last, at 8h. 44m. Nice mean time. Its position was then R.A. = 17h. 10m. 30s., Declination = − 7° 29′. The given movement per day is 1·8m. in R.A. and 0′·25 in declination, so that the comet should be looked for soon after sunset, the above position being about 22° due south of α Herculis, making also a very obtuse isosceles triangle with ζ and ν Ophiuchi. Another telegram gives particulars of a second observation of Comet Giacobini at Nice, on September 6, 8h. 26·5m. Its position as observed was R.A. = 17h. 14m. 16s.; Declination = − 7° 49′. The comet is noted as very feeble.

COMET BROOKS (1896).—A telegram received from Kiel announces the observation of this comet at Geneva on September 4, at 10h. 0m. It was then in R.A. = 13h. 30m.; Declination = + 55° 40′. This gives a position admirably suited for observation, being about 2° due east of ζ Ursæ Majoris. The motion of the comet is eastward. Another observation of the comet has been made at Lick Observatory. Its position as seen there on September 6, at 11h. 56·5m., was R.A. = 13h. 51m. 44s.; Declination = + 55° 25′. The motion per day is 6·5m. in R.A. and 36″ in Declination, the general direction being easterly. No mention is made of the appearance of the comet.

TELEGRAMS TO "ASTRONOMISCHEN NACHRICHTEN," No. 3376.—We gather the following information from the current number of the above journal. Prof. Holden, writing from Mount Hamilton, dated August 11, says: "A telegram just received from Schaeberle says that the sky was wholly clouded at his eclipse station in Japan." Mr. Lowell telegraphs from his observatory at Arizona on August 31: "Companion Sirius re-discovered by Dr. See. Angle 219°. Distance 5″·9." Prof.

Pickering telegraphs, also on September 1, from Cambridge, Mass., to the following effect: "Bailey at Arequipa finds μ' Scorpii spectroscopic binary. Period 35h."

THE PLEIADES.—Some time ago, we gave an account of several legends and myths connected with that most interesting cluster of stars, the Pleiades. These myths were, for the most part, gathered from an article which appeared in *Globus* (Bd. 64, p. 362). It seems, however, that our stock is by no means complete, for Dr. Heinrich Samter, in the current number (Bd. 70, p. 176) adds considerably to it. We make this reference for those readers who take a special interest in folk-lore, and would wish to look up this article.

METEORS TRANSITING THE SOLAR AND LUNAR DISCS.—What apparently appear to be unique observations, recorded quite recently in America, are given in the current number of the *Revue Scientifique*. It seems that during the night of July 21 and 22 last, Mr. William Brooks, the director of the Smith Observatory at Geneva (New York), saw all at once a round dark body pass slowly before the bright disc of the moon, the latter being almost full. The apparent diameter of the body is given as about one minute, and the duration of its transit amounted to three or four seconds, its direction being from the east towards the west. The second observation was made about midday on August 22, by Mr. Gathmann, an American astronomer, but the place of observation is not stated. He saw a meteor pass before the solar disc, occupying a period of time amounting to eight seconds in its transit. It is suggested that this body is one of a great number which circulates round our planet; it does not seem at all necessary to assume that our earth is the centre of attraction, indeed it seems rather improbable, as the observation would then, no doubt, be more common. Our present idea of space is that it is a meteoritic plenum, and full of bodies traversing through it at various speeds and at various distances from us, so that the chances of making such an observation, especially at periods of shooting-stars, is not altogether impossible, but is likely to occur, provided the observer is fortunate and happens to watch a comparatively slow-moving meteor.

THE GREAT SEISMIC WAVE OF JAPAN.

FULL particulars of the terrible wave which devastated the coast of Japan last June, causing the destruction of 20,000 lives and 12,000 houses and other buildings, have recently been given in the daily papers. The official report made to the Japanese Government having now reached this country, it may be interesting shortly to summarise the particulars of this occurrence, and to give the causes which have been assigned for its creation; and also to refer to waves of a similar character that have occurred on former occasions and in other localities.

The wave appears to have originated at a short distance from that part of the coast of Japan which trends in a north-easterly direction from the northern part of Sendai, midway between Tokio and the island of Yezo or Hokkaido. From Kiukasan, the northern island of the Archipelago, the coast is fjord-like in character, abrupt mountain ridges running down almost to the water edge. In the bays and estuaries that interrupt the shore line several important towns and many fishing villages were situated; with a few exceptions these have all been destroyed. The distance over which the effect was felt has been variously given as extending over a length of coast of from 200 to 300 miles.

Suddenly, almost without warning, between eight and nine o'clock in the evening of the 15th, three successive waves, the highest estimated as being fifty feet in height, swept over the land bordering on the coast, and in a space of a few minutes had caused a frightful devastation of property and the death of nearly all the inhabitants. There was nothing to presage the disaster or give warning. The barometer gave no indication of anything abnormal in the atmosphere. About half an hour before the catastrophe three or four shocks of earthquake were felt—not violent shocks, but of the vertical kind, which are known to be dangerous. Shortly afterwards a booming sound came from the direction of the sea. At first the noise was only like that of a coming gale; rapidly it increased until the sound assumed the volume and din of artillery; then in a moment three successive waves, varying in height from twenty to thirty feet, came rolling on the shore. In a space of time of about two minutes these waves had accomplished their fearful work of devastation and ruin.

Beyond the destruction of life and property some remarkable incidents occurred. At Kamaishi one wave came curling round the land-locked bay from the left in a semicircle, meeting another wave, which came in from the right, and before the waters could recede a third wave came in from the centre. In five minutes the town was wiped out. Temples, houses, and vessels lying in the bay, were alike swept away, broken up and destroyed. A large two-masted schooner of 200 tons was left lying almost uninjured five hundred yards inland, in the centre of what had been a wheat field. Another had its bows stove in, its stern post and rudder carried away, its deck ripped open, and the planking of its sides broken in short lengths. Altogether nineteen schooners and junks were cast ashore, In one place, men swept out to sea from one side of a bay were thrown up alive on the opposite beach; and in another case, several persons were deposited on an island nearly three miles from the town whence the wave had carried them.

The disturbance was not felt at sea at any great distance from the shore. Fishermen engaged in their occupation near the centre of the disturbance off the coast of Shizukawa heard, as they supposed, the booming of big guns in the distance; looking seawards they saw the surface of the ocean heave in huge masses, which, after rising to a great height, broke in the middle and swept northward and southward, striking the coast with a deafening roar. The waves passed under the boats without swamping them, but the water in the vicinity of the shore remained so rough throughout the night that the fishermen could not make the land until the morning. In other parts fishermen, plying their trade four miles from the coast, on returning to shore in the early morning after the catastrophe, received the first notice of what had occurred; others, engaged three miles out in the same locality, encountered heavy breakers rolling from the north. A steamer which left Hakodate in the morning of the day of the disaster, and must have been near the scene of the calamity at the time it occurred, experienced nothing out of the common; and other passing steamers reported only an abnormal current.

The Japanese Government have self-recording tide gauges fixed at various parts of the coast. The three nearest stations to the scene of disturbance are situate at Ayukawa, in the Oshiaka district; at Hanasaki-mura, in the Hanasaki district; and at Misaki-Machi, in the Miura district in Choshi Bay. At the first station the sea had been calm all the day of June 15. Suddenly at 8.25 p.m. the water fell 7·9 inches; five minutes after it rose 4·59 feet; and after an interval of five minutes had fallen down again. After this there occurred a succession of waves at intervals of about four or five minutes. At 11 p.m. the height of the wave, as indicated on the gauge, was 6·56 feet; the difference between the maximum and minimum height of the waves being 8·86 feet. After this the water gradually subsided to the ordinary sea-level.

At the second station, at 8.50 p.m. the water fell 3·28 feet, followed by five or six disturbances in an hour. After this an accident to the gauge prevented any further record. At 8.10 the next morning, when the gauge was visited, the sea had become calm.

At the third station some small waves began to show at 8.40, their height being 7·90 inches, and occurring at intervals of five minutes, gradually decreasing in height until the normal condition was obtained.

From these records it appears that the influence of the wave was greatest at the north station, and that an interval of twenty minutes elapsed before the gauge at the southern station was affected.

The effect of this seismical disturbance of the crust of the earth was sensible all over its surface, so far as may be judged from the records of instruments thousands of miles distant. On June 15, the day of the earthquake at Japan, at about 8.30 p.m., Prof. Vicentini, in Italy, noted the commencement of the disturbance on the seismograph, and a similar disturbance was recorded on the instrument at Shide, in the Isle of Wight.

As to the cause of the disaster, Prof. John Milne, in an article in the *Geographical Journal*, states his opinion that this was due to a seismic, rather than volcanic origin. The disturbances which have occurred in this locality have been, without exception, confined to the eastern sea-board of Japan, where the land suddenly sweeps downward beneath the deep Pacific. Along the line of