

Name of Ship.	Date.	Length over all	Beam.	Depth.	Draft.	Displace- ment.	Speed.
		<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Tons.</i>	<i>Knots.</i>
Great Eastern.....	1858	692	83	57½	25½	27,000	14.5
Paris.....	1888	560	63	42	26½	15,000	20.5
Lucania.....	1893	620	65	43	28	19,000	22.1
Kaiser Wilhelm der Grosse.....	1897	649	66	43	29	20,000	23
Oceanic.....	1899	704	68	49	32½	28,500	20.7
Deutschland.....	1900	684	67	44	30	23,200	23.5
Kronprinz Wilhelm.....	1901	663	64	43	30	21,280	23.53
Celtic.....	1901	700	75	49	36½	37,700	16
Kaiser Wilhelm II.....	1902	706½	72	52½	26,000	*23

work at 225 pounds per square-inch pressure. The ship's accommodations are for 775 first-cabin passengers, 343 second-class passengers, and 770 steerage passengers. It may be interesting in this connection to give dimensions of existing leviathans, to afford comparison with the *Kaiser Wilhelm II.*; also to note the size of the famous *Great Eastern*, now broken up.

SCIENTIFIC NOTES AND NEWS.

SIR NORMAN LOCKYER has been elected president of the British Association for 1894, when the meeting will be held at Cambridge. The meeting next year, as already announced, will be held at Southport.

PROFESSOR W. H. WELCH, of the Johns Hopkins University, sailed last week for England where he delivers the Huxley lecture before the Charing Cross Hospital on October first.

LIEUTENANT ROBERT E. PEARY, on the *Windward*, arrived at Nova Scotia on September 18, and Captain O. N. Sverdrup, on the *Fram*, arrived in Norway on September 19. Both expeditions doubtless accomplished valuable work for geography, natural history and ethnology, the results of which will be subsequently published. The *Fram* had a corps of scientific observers, consisting of Naval Lieut. Victor Baumann (astronomer), Lieut. G. Y. Ysachsen (cartographer), Dr. Svendsen

* Contract calls for no less than 23 knots, like the *Kronprinz* and *Deutschland*, which do almost 1 knot better than their contract. It is confidently expected that the *Kaiser Wilhelm II* will break all records by going 24 knots and possibly more.

(meteorologist), Dr. Bay (zoologist), Dr. Herman G. Simmons (botanist), and Dr. P. Schel (geologist).

PROFESSOR ANGELO HEILPRIN has returned to Philadelphia from Martinique, having been on Mount Pelee on the afternoon of the recent eruption. This occurred at 9:10 in the evening, and the area of destruction was much greater than in the eruption of May 8.

PROFESSOR ARTHUR MICHAEL, who has been making a tour of the world during the past year, will resume the duties of the chair of chemistry at Tufts College at the opening of the college year.

DR. JACQUES LOEB, professor of physiology at the University of Chicago, is at present in San Francisco. It is said that he is still considering the call he recently received to the University of California.

PROFESSOR F. HABER, of the Institute of Technology, Karlsruhe, and Professor R. S. Hutton, of Owens College, Manchester, are visiting this country to study the electrochemical industries.

THE German commissioner, Captain Hermann, has reached Europe, bringing with him a large amount of new material for the mapping of the Kivu region.

FOR the study of the density of the earth, President F. W. McNair, of the Michigan College of Mines, and Dr. John F. Hayford, chief of the computing department of the United States Coast and Geodetic Survey, are conducting experiments at the Tamarack mine, near Calumet.

PROFESSOR THEODORE BOVERI, of Würzburg, has received the Stiebel prize of the Sencken-

berg foundation for his work 'Ueber die Natur der Centrosomen.'

LYMAN B. STOOKEY, Ph.D. (Yale), has been appointed assistant in physiological chemistry in the laboratory of the N. Y. State Pathological Institute at Ward's Island, New York City.

RAYMOND A. PEARSON, for the past seven years assistant chief of the dairy division of the U. S. Department of Agriculture, has left that position to enter upon scientific commercial dairy work in New York City and Philadelphia.

A COMMITTEE has been appointed at Dôle, where a statue of Pasteur has recently been erected, to collect funds to purchase the house in which he was born, as a permanent memorial.

M. BOUCHARD delivered a eulogy on the late Professor Virchow at the Paris Academy of Sciences on September 9.

THE funeral of Sir Frederick Abel took place on Sept. 11. The London *Times* states that many of the scientific societies and public institutions with which he was connected were represented. The Imperial Institute was represented by Sir Stewart Bayley, Colonel Makins, Professor Wyndham Dunstan, F.R.S., the director of the scientific department, and Lieutenant G. R. Maltby, assistant secretary; the Royal Society by Sir W. Huggins, the president, and Mr. A. B. Kempe, the treasurer; the Senate of the University of London by the Rev. Dr. Robertson, the vice-chancellor, and Professor Silvanus Thompson, F.R.S.; the Chemical Society by Professor H. McLeod, F.R.S., and Dr. A. Scott, F.R.S., hon. secretaries; the Board of Trade by Mr. Llewellyn Smith; the Athenæum Club by Mr. H. R. Tedder, the secretary; and the Goldsmiths' Company by Mr. R. Montagu Tabor, the prime warden, and Sir Walter Prideaux, the clerk.

THE civil service commission announces examinations as follows: on October 21, inspector of textile fabrics, in the New York Navy Yard, at a salary of \$1,252; on October 18, geometrical lathe operator in the Bureau of Engraving and Printing, at a salary of \$1,-

500; on November 1, scientific aid in the Bureau of Forestry and Bureau of Agriculture in the Philippine Service, at salaries of \$300 and \$480 respectively; on November 4, for preparator in the Division of Insects, U. S. National Museum, at a salary of \$480; on November 11, for forestry inspectors in the Philippine service, it being wished to fill two positions, one at a salary of \$800 and one at a salary of \$1,200.

WE have already called attention to the International Congress of Plant Breeding and Hybridization which will be held under the auspices of the Horticultural Society of New York, on September 30 and October 1 and 2. The sessions will open at 10 A.M. and 3 P.M. and will be in the rooms of the American Institute, 19 West 44th St. The program contains the titles of 61 papers, many of which are of great scientific interest.

THE Tenth National Irrigation Congress will be held at Colorado Springs from the sixth to the ninth of October. The National Association of Irrigation Engineers will meet at the same time and place.

THE International Mining Congress met at Butte, Mont., from September 1 to 5, under the presidency of Mr. E. L. Schaffner, of Cleveland. Resolutions were adopted advocating a government department of mines and mining with a cabinet officer. The congress, which will hereafter be known as the American Mining Congress, will meet a year hence at Deadwood, S. Dakota.

THE fifth International Congress for Applied Chemistry will be held in Berlin from June 2 to 8, 1903. The honorary president is Professor A. Winkler; the president, Professor O. N. Witt; and the secretary, Dr. G. Pulvermacher, Marchstrasse 21, Charlottenburg.

WE learn from *Electrochemical Industry* that an informal meeting to discuss a British Electrochemical Society was held on March 4, 1902, at which a committee consisting of the following gentlemen was chosen to consider the subject: J. Swinburne (the present president of the British Institution of Electrical Engineers), Dr. F. M. Perkin, Dr. Don-

nan, W. R. Cooper, S. Cowper-Coles and H. V. Simpson. This committee has held meetings from time to time at which the best methods of procedure have been discussed. The question of working in conjunction with one of the existing societies has been considered, and several societies have been approached on the matter, but the committee takes the view that such an arrangement is not likely, at any rate for the present, to have the desired effect. Steps in the direction of organizing an independent society have therefore just been taken.

THE season at the Minnesota Seaside Station on the Straits of Juan de Fuca was brought successfully to a close late in August. Thirty-eight botanists and zoologists were in attendance, only four of whom were from the Pacific slope. A new laboratory building, 24 x 40 feet, two stories high, was opened and this afforded space for the work in advanced and elementary botany. The old laboratory was devoted to the department of zoology. Courses, with lectures, laboratory and field work, were conducted by Professors Conway MacMillan and Raymond Osburn, and by Miss Josephine E. Tilden. Out-door lectures on plant and animal ecology, given in the forest and on the shore, were a feature of the season.

PROFESSOR LANNELONGUE, of Paris, has presented \$7,500 to the Paris Académie de Médecine for the endowment of a triennial prize.

MR. JAMES N. JARVIE, who has erected a library building for Bloomfield, N. J., at a cost of \$100,000, has added an endowment fund of \$50,000.

A PRESS dispatch from Alexandria says the total number of fresh cholera cases in Egypt in the week just ended was 6,587. There were 5,983 deaths. In the previous week there were 9,805 fresh cases and 8,497 deaths. Since the commencement of the epidemic, July 15, to the present time there have been 30,931 cases and 25,734 deaths.

A REUTER telegram from Rome states that the Italian postal authorities have examined a scheme submitted by an engineer, named Piscicelli, for the establishment of an electric

postal service. It is proposed, by means of this system, to transmit letters in aluminium boxes, traveling along overhead wires at the rate of 400 kilometers an hour. A letter could thus be sent from Rome to Naples in 25 minutes and from Rome to Paris in five hours. Signor Galimberti has appointed a technical commission to report on the system before instituting a series of experiments between Rome and Naples.

THE Scottish National Antarctic expedition, under the leadership of Mr. William S. Bruce, will sail for the Antarctic regions on the *Scotia* early in October.

THE managing director of Marconi's Wireless Telegraph Co., writes to the London *Times* that Mr. Marconi, who left England on August 23 on the *Carlo Alberto*, the flagship of the Italian Navy, has been in daily communication by wireless telegraphy with their long-distance station at Poldhu, Cornwall. They have received from him from Spezia a telegram in which he says that he has received perfect messages direct from Poldhu inside Gibraltar Harbor, and throughout the entire course of the Mediterranean tour. A reference to the map of Europe shows that the messages must have passed across the Bay of Biscay and Spain, across France, and across the Alps. Telegrams for the King of Italy and the Italian Minister of Marine have been sent from Poldhu and correctly received on the tape of the wireless telegraph receiving apparatus on the *Carlo Alberto* in Spezia harbor. Mr. Marconi has been commanded to visit the King of Italy, and has been informed by the Italian Minister of Marine that the *Carlo Alberto* is at his disposal for taking part at once in a transatlantic test of long-distance stations. The ship will, therefore, take him to Cape Breton, where the Canadian station for transatlantic telegraphy is installed, and subsequently to the long-distance station installed on Cape Cod, and now owned by the Marconi Wireless Telegraph Company of America.

THE British Sanitary Institute opened its annual congress in Manchester on Sept. 9, with two thousand delegates in attendance. The president, Lord Egerton, said in his ad-

dress, according to the report in the *London Times*, that he could only speak as a landowner in a populous district and as one responsible for dealing with the dwellings of the poor and the buildings on his estate connected with the farms, and as one who had taken an humble part in the various legislative measures which had been passed to improve the sanitary condition of our towns and the health of the people during the last 40 years. He could certify to the great sanitary improvements which had been made in the cottages, farms and farm buildings in his recollection, and in the water supply of our country districts. Yet they had been hardly sufficiently alive to the storage of rain water. The sanitary authorities still kept a watchful eye on the necessary supply of fresh air to their agricultural buildings, the cubical contents of their cow-houses, and the supply of pure milk. He proceeded to refer to the efforts made to purify the rivers, mentioning in particular the work of the Mersey and Irwell Joint Committee. They had in that great city of Manchester triumphs of engineering and mechanical art applied to various industries, but the population which inhabited it had, as in other large towns, degenerated in size and physical power from the ancestor or progenitor who was attracted into the town by higher wages from the country districts. The same process was still going on, the large percentage of rejections from physical disabilities among those who offered themselves as recruits even in Manchester itself giving an alarming proof of the degeneracy of the town population. One of their great problems was to arrest this deterioration and to make up for the necessary drawbacks of town life by greater care in the physical education of the young and in teaching them the principles of hygiene or the preservation of health. Though it was given to many of no great physical strength to succeed in the race of life and by sheer brain power to triumph over physical weakness, yet in most cases a strong physical frame was necessary to supplement the endowment of the mind in most of the careers open to man. This brought him to the question of the need for physical training. He agreed with Lord Meath, in the

address which he recently delivered in Manchester, as to the introduction of physical exercise in our elementary schools as the best way of improving the physical and moral training of our youth.

THE Ohio State Board of Health is this season continuing the investigation of the pollution of the important streams of the State. The Geological Survey is cooperating with the State Board of Health by measuring the flow of the rivers under investigation. The work is one of particular importance on account of the large number of towns which use water for municipal supply from streams already polluted by the sewage and manufacturing refuse of cities located at higher points upon them. Problems of this nature are being presented to all of the central western states, but the Ohio State Board of Health has taken the lead in the investigation of its polluted streams, and is taking preliminary steps to do away with this menace to the public health. Among the more important rivers under investigation are the Sandusky, Maumee, Scioto and Olentangy. In addition to these a number of smaller streams whose waters are now used, or may soon be used, for municipal purposes will also receive investigation.

In his report on the production of coal in 1901, now in press, in *Mineral Resources of the United States, 1901*, U. S. Geological Survey, Mr. E. W. Parker presents the statistics of fatal and non-fatal accidents which occurred in the process of mining coal in eighteen states and territories during 1901. In these eighteen states and territories the total number of lives lost in 1901 was 1,467, and the total number of men injured was 3,643. The number of tons of coal mined for each life lost varied from 426,094 in Maryland to 49,424 in Indian Territory. The average number of tons mined for each of the 1,467 lives lost in these eighteen states and territories was 188,668. It is interesting to note that in Pennsylvania the number of tons of bituminous coal mined per life lost was a little more than double the amount mined per life lost in the anthracite mines in the same state. Maryland enjoys the distinction of the largest

tonnage per life lost, while the Indian Territory has the largest percentage of deaths for the tonnage mined. The total number of men employed in the coal mines of the United States in 1901 was 485,544, who made an average of 216 working days, as compared with 448,581 men, with an average of 212 working days, in 1900. The distribution of this labor in 1901 was as follows: In the anthracite mines, 145,309 men, with an average working time of 196 days; in the bituminous mines, 340,235 men, with an average working time of 235 days.

Forestry and Irrigation gives details in regard to the seven new forest reserves which have been established recently by presidential proclamation. These include three new reserves in Arizona: The Mount Graham Forest Reserve, 118,600 acres in extent, located in Graham county; the Santa Catalina Forest Reserve of 155,520 acres, in Pima county, and the Chiricahua Forest Reserve, in Cochise county, of 169,600 acres in extent. In Montana two new reserves, the Madison Forest Reserve of 736,000 acres and the Little Belt Mountains Forest Reserve of 501,000 acres, have been established. The first-named reserve is in Madison and Gallatin counties, bordering on the western side of the Yellowstone National Park. The Little Belt Reserve is located in Meagher and Fergus counties. A large new reserve has also been set apart in New Mexico, to be known as the Lincoln Forest Reserve. It is 500,000 acres in extent and is located in Lincoln county. An unusually large reserve has just been set aside in Alaska, to be known as the Alexandria Archipelago Forest Reserve; it contains 4,506,240 acres. In addition to the foregoing new reserves, a number of changes have been made in the reserves already established. Lands have been added on the eastern side of the Yellowstone Forest Reserve, increasing its area by 24,960 acres. The Medicine Bow Forest Reserve, in Wyoming, has had recent additions made to the amount of 20,533 acres. The White River Reserve, in Colorado, has been decreased in area by 68,160 acres along the headwaters of the White and Yampa Riv-

ers. The Crater Lake National Park of 164,560 acres, which was established by Congress at its last session, reduces the size of the Cascade Forest Reserve, in Oregon, by 152,680 acres. The total area of all the forest reserves is now 58,850,925 acres. It is interesting to note that the total area of the United States, exclusive of island possessions, is 2,362,960,000 acres. Thus it will be seen that the forest reserves now amount to about one fortieth of the entire area of the United States. In square miles the area of the reserves is 91,954, or almost twice the size of Pennsylvania.

UNIVERSITY AND EDUCATIONAL NEWS.

A REUTER telegram, states that, as the result of the investigations of a party of British educationalists who have been making inquiries in Canada, it has been decided to establish a training farm in connection with Berkhamstead School. A site has been selected between Calgary and Edmonton, in western Canada. Upon its success depends the opening of several other farms where British youths will receive training.

PROFESSOR R. S. SHAW, son of Professor Thomas Shaw, of the Minnesota College of Agriculture, has been elected professor of agriculture of the Michigan Agricultural College. Professor Shaw has been professor of agriculture in Montana.

MR. RAYMOND BURNHAM, graduated from Cornell University in '97, has been appointed professor of experimental engineering at the Armour Institute, Chicago. He is the son of the well-known astronomer, Professor S. W. Burnham.

DR. F. H. SAFFORD, formerly instructor in Harvard University and assistant professor in the University of Cincinnati, has been appointed instructor in mathematics in the University of Pennsylvania.

DR. WILLY WIEN, of Würzburg, has been called to the chair of physics at Leipzig, to succeed Professor Ludwig Boltzmann.

DR. O. SCHMIDT, professor of chemistry at Stuttgart, has retired.