

profitable for this country to develop a part of its steel-making practice along similar lines, and from home Jurassic ores to produce at least sufficient metal to take the place of the two or more million tons of semi-manufactured metal which until lately was imported from abroad. Probably in peace-time scarcely more than one-fifth of the total output of British pig-iron is applied to purposes which suitably refined basic iron could not serve. "Does it not, therefore, seem that when labour again becomes available for the mining or quarrying of home ores, and for handling the relatively greater bulk as it passes through the furnaces, it will be sound policy here to adopt the basic process on such a scale that, even with expanding trade, it will become unnecessary to purchase from

quarrying or mining within fifty miles of a region which holds at least fifty thousand million tons of the very best non-anthracitic coal, there is no valid reason for the iron and steel industries of eastern England to look forward except with confidence to the time when the price of overseas hæmatite becomes prohibitive."

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The professor of anatomy has, with the consent of the Vice-Chancellor, reappointed Dr. W. L. H. Duckworth, of Jesus College, to be senior demonstrator of anatomy for five years.

A SILVER medal, which will be known as the Adami medal, in honour of Prof. J. G. Adami, F.R.S., is to be awarded annually in the department of pathology in Queen's University, Belfast. The founder of the medal is Mr. J. H. Stirling, Belfast.

IN connection with the Students' Section of the Institution of Electrical Engineers an address will be delivered to-morrow, November 23, at 7 o'clock, at the City and Guilds (Engineering) College, South Kensington, by Sir Oliver Lodge, on "Astronomical Application of the Electrical Theory of Matter."

THE Parliamentary correspondent of the *Times* states that the chances of the Education Bill passing into law this session have been materially improved. Mr. Fisher has in the last few days been in personal conference with important bodies representing local education authorities with reference to the administrative clauses of the Bill; it is understood that their support may be counted on for its second reading.

THE Maypole Dairy Company has given 100*l.* to the governors of the Southall County School to establish a leaving scholarship in connection with the school, tenable at the Royal College of Science, London, and to be known as the "Maypole Science Scholarship." The headmaster of the school, Mr. S. Pollitt, recently appealed to local manufacturers for financial aid to establish such science scholarships, and the example of the Maypole Company, whose works are at Southall, will, it is hoped, be followed by other industrial enterprises in the district, so that the school may be able to take its part in meeting the need of the immediate future for highly trained technical chemists and other experts in science.

WE learn from *Science* that the Board of Regents of the University of Minnesota has ratified by a unanimous vote the permanent agreement making the Mayo Foundation at Rochester the absolute property of the University, to be used perpetually for higher medical education and research. Securities totalling 330,000*l.*, representing the fortunes of Drs. William J. and Charles Mayo, were turned over to the University. Expenses of the foundation will be paid by the Drs. Mayo until a fund of 400,000*l.* has accumulated. Thereafter the income from the fund will maintain it. The foundation has been affiliated with the University for two years, which was agreed upon as a trial period. Under the final agreement the headquarters of the foundation can be moved from Rochester to another point in the State after twenty-eight years.

THE report of the president of the University College, Cork, for the year 1916-17 has been received. The number of students attending the college during that year was 486, as against 422 during 1915-16, and

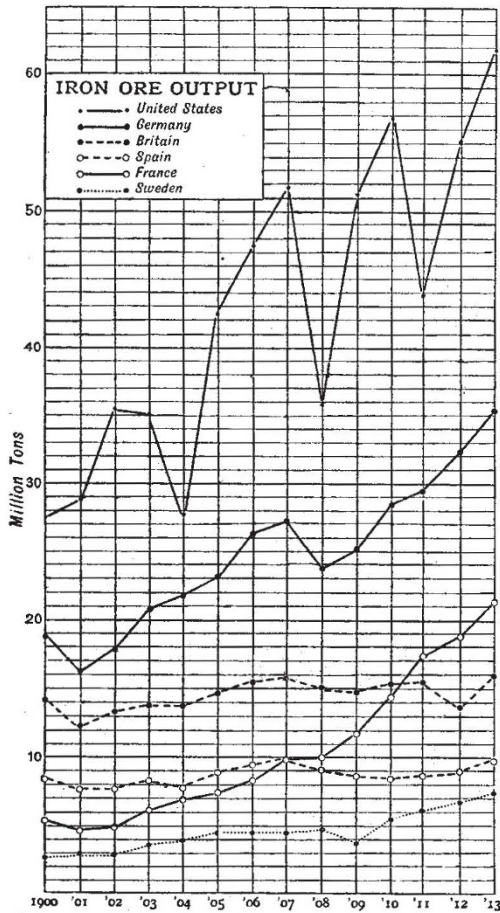


FIG. 3.—Curve of iron-ore output of the United States and Europe.

abroad so large a quantity of ore, for the carriage of which so great a proportion of our mercantile shipping tonnage has in the past been employed?"

Because of the short sea passage, the blast-furnaces near the western coalfields are likely to continue to bring ore from Spanish or Mediterranean ports, and to manufacture hæmatite pig-iron therefrom. To the Cleveland and East Midland districts the orefields of western France and Scandinavia are more convenient, and there are immense possibilities for the extension of the basic iron industry for the smelting of home Jurassic ores. This latter development has already well begun, and in Yorkshire, Lincolnshire, Derbyshire, and Nottinghamshire is proceeding rapidly.

"With five thousand million tons of ore ready for



only three of the 486 were not studying for the degrees of the National University, of which the Cork University College is one of the constituent colleges. The report records that the city of Cork has made a grant of 150*l.* per annum to the college for the purpose of promoting the higher education of the working men of the city. Additions have been made to the physiological and pathological departments of the college to supply in some measure the accommodation for the large number of students now entering the medical faculty. Further additions are urgently necessary as soon as funds permit of their being carried out. A comprehensive list of books and papers published by members of the college staff during the session is printed at the end of the report.

A copy of Section X., Higher Education, of the Handbook of the Education Committee of the County Council of the West Riding of Yorkshire has been received. It gives full particulars regarding the scholarships and exhibitions offered by the committee for competition in 1918. The needs of every class of deserving student appear to be catered for. We notice among these numerous aids to the prosecution of higher education the county major scholarships, of the estimated value of 60*l.* to 65*l.* per annum, to be held at universities, university colleges, or other approved institutions; the county free studentships, covering tuition fees at the University of Leeds or the University of Sheffield; the county technological scholarships, value 60*l.* per annum, tenable for day courses or for combined day and evening courses at institutions where higher technical work is carried out; and county coal-mining exhibitions, covering tuition fees for full courses in coal-mining, or in electricity applied to mining, at the University of Leeds or at the University of Sheffield. There are also scholarships for qualified women desirous of specialising in midwifery and nursing, dairy work, horticulture, and other activities. Section IX. of the same part of the handbook will be published in its revised form next January; meanwhile the committee has issued a circular summarising the particulars respecting scholarships and grants available for persons intending in 1918 to adopt the teaching profession.

AMONG other papers included in the June issue of the *South African Journal of Science* is one by the Rev. J. R. L. Kingon on native education in the Transkei. Mr. Kingon refers to the national importance of educating the native, and urges that the plain fact of the matter is that the natives are determined to have education, and will resort to private schools if they cannot get encouragement from the authorities. More than sixty years of native education have produced a rich harvest and fully vindicated the efforts of pioneer workers in this field. A new situation has arisen in South Africa, the article points out, since the consummation of the Union. The responsibilities and dangers of the white men are greater, because of the millions of black men who are now subject to one central Government. Hitherto in the Orange Free State, the Transvaal, and Natal little has been done to educate the native. Again, owing to a defective system, education in the Transkei, which is taken as a typical example, is almost wholly literary in character, though agricultural education is receiving attention apart from the schools. But for the future, Mr. Kingon says, agricultural education must be given a large place in the schools; industrial education, at present a scandal, must be developed, and facilities must be provided for commercial education. From his experience in Transkei, Mr. Kingon insists that the introduction of a liberal and far-seeing policy of native education throughout the Union of South Africa would secure the future progress and stability of the Union.

NO. 2508, VOL. 100]

## SOCIETIES AND ACADEMIES.

LONDON.

**Royal Society**, November 15.—Sir J. J. Thomson, president, in the chair.—E. E. T. **Hinze**: A new gyroscopic phenomenon.—A. P. **Laurie** and C. **Ranken**: Investigation into the imbibition exhibited by some shellac derivatives. The paper deals with experiments made on the substances obtained by boiling shellac with carbonate of soda or borax. These solid substances, very similar in consistency to gutta-percha, are found to expand rapidly when placed in water. The control of the expansion by the addition of soluble salts is not the same as in the case of gelatine, since, at any rate in a large number of cases, it does not seem to depend upon the nature of the salt, but simply upon the strength of the solution, the amount of the expansion increasing with the diminution of the strength of the solution. If the expansion is allowed to become complete in cold water, it is not possible to contract the mass again, but in the case of the expansion in a salt solution it is possible to get the mass to contract again by putting it into a stronger solution. Strong salt solutions are also found to precipitate the soluble portion of the shellac borax compound.—G. I. **Taylor**: Phenomena connected with turbulence in the lower atmosphere. In a previous paper by the author it was shown theoretically that a connection should exist between the rate at which heat is conveyed into the atmosphere by means of eddies, and the amount of retardation of the velocity of the lower layers of the atmosphere behind the gradient velocity due to the friction of the ground. In the present paper the amount of the turbulence over Paris is calculated from temperature observations taken on the Eiffel Tower. It is shown that the amount is the same as that calculated from observations of the change in direction of the wind between the bottom and top of the Eiffel Tower due to the friction of the ground. The daily variation in wind velocity which depends on the daily variation in turbulence is next discussed, and it is shown that the chief characteristics of the observed phenomena of daily variation are explained, both qualitatively and, so far as is possible, quantitatively by the author's equations.—E. G. **Bilham**: The relation between barometric pressure and the water-level in a well at Kew Observatory. The water-level shows a well-marked response to changes of barometric pressure at all times of the year. Under similar conditions a given increase of pressure,  $\delta p$ , will depress the water-level in the well by an amount  $\delta u$ , which is proportional to  $\delta p$ . The value of  $\delta u/\delta p$  varies with the mean level of the water, but is always negative. The validity of the equation  $\delta u = a \cdot \delta p$  was established between limits given by  $d p/d t > 0.5$  mb./hr., and the value of  $a$  was determined in the case of three groups of months representing high, intermediate, and low levels. The sensitiveness of the water-level to pressure was found to increase rapidly with the height of the water, the value of  $a$  for a height of 360 cm. above M.S.L. being four times as great as for a height of 200 cm. The change of sensitiveness appears to be entirely due to the change in the condition of the soil. The average value of  $a$  is 1.1 mm./mb. There appears to be no lag in the response of the well to changes of pressure, and under favourable conditions the most rapid fluctuations of pressure are shown on the water-level trace.

**Zoological Society**, November 6.—Dr. A. Smith Woodward, vice-president, in the chair.—Lieut. F. F. **Laidlaw**: Some additions to the known dragonfly fauna of Borneo, with an account of new species of the genus *Cœliccia*.—Dr. G. A. **Boulenger**: The use of the names Plesiosauria and Sauropterygia.—Dr. J. C. **Mottram**: Some observations upon concealment by the apparent disruption of surface in a plane at right angles to the surface.