

comparatively small area of fertile land is of great importance. Since the rainfall is almost negligible, the irrigation of the country depends on the Nile. The Delta provides part of Egypt with a complete system of natural canals, and so it is possible to irrigate this part of Egypt at any time of the year and thus two or three crops can be grown annually. Along the banks of the Nile are situated a number of fertile areas called 'isolated basins' separated from one another by desert patches extending to the river's edge. The Nile is low for three months every year. It begins its rise of approximately 20 feet in May and from August to October all the isolated basins are flooded. When it subsides, one crop can be raised. Further irrigation is provided by primitive native water elevators, the water being elevated from wells and discharged into channels leading to the fields. The Egyptian Government has decided on an electrification scheme which will enable the land to be irrigated and drained in an adequate way. The contract for the supply and erection of the necessary overhead transmission lines, some of which are carried by towers across the Nile, others in underwater cables, has been given to the General Electric Co. by the Egyptian Government. In the *G.E.C. Journal* of August, a full description is given of the scheme by C. S. Ickringill and H. Peters. Power is generated at 3,300 volts, stepped up to 33,000 volts and transmitted to the pumping stations. A photograph is shown of the two lattice towers supporting the power cables across the Nile at Idfu.

#### Increasing the Speed of Atlantic Liners

FIVE years ago, four of the turbine vessels of the Hamburg-Amerika line were equipped with new turbines and water-tube boilers, so as to increase their output from 15,000 to 28,000 horse-power. This effected an increase in the speed of the vessels from 16 to 19.2 knots and reduced the time taken from Cherbourg to New York from 8 to 6½ days. The results of experiments and tug tests carried out with a model of the ships by the Hamburg Shipbuilding Testing Federation showed that considerable economies could be effected in the fuel consumption by altering the shape of the vessels. It was decided to increase their length by about forty feet and reinforce the hull structure so as to make it similar to the *Europa*. It is computed that the saving thus effected will in three years' time compensate for the total cost of the reconstruction, which was carried out by Messrs. Blohm and Voss of Hamburg. During last winter, the vessels were withdrawn from service one after the other and new bows were fitted. As these bows had been previously constructed, the time that each vessel remained in the dockyard did not exceed 60 days. The old bow was burned away from the hull by oxy-acetylene blowpipes and the new bow was drawn towards the hull and kept in position by grapples. All the shell plates were electrically welded together and also nearly all the other connexions, including the floor plates, pillars and girders. Interesting illustrations of electric-welded ship construction by Messrs. Blohm and Voss are shown in *Electric Welding* of August.

#### 'Dry Ice' in the Machine Shop

BY means of solid carbon dioxide, often called 'dry ice', it is easy to lower the temperature of a piece of metal to 100 degrees below zero Fahrenheit. At this temperature, the metal contracts considerably and so the workman can obtain a good 'shrink fit'. It is analogous to the riveting of boiler plates by red hot rivets, which on cooling draw the plates so tightly together as to form a joint impervious to high pressure steam. According to Science Service of Washington, W. H. Swanger of the U.S. Bureau of Standards, who has been conducting experiments with solid carbon dioxide, reports that machine shop practice may come to accept this new method of shrinking metals. When a metal band has to be slipped round a shaft it is necessary to heat it, and as it cools it contracts to a tight fit. Instead of doing this we can refrigerate the shaft causing it to contract, and thus enabling the band to be slipped in place. When the shaft warms to room temperature a tight fit is secured. As the domestic production of frozen carbon dioxide has in recent years exceeded 40,000 tons it is commercially available. Mr. Swanger concludes that the shrinking of metals with very low temperatures is commercially feasible.

#### Speculative Borings in the Earth's Crust

THE heat generated in the interior of the earth's crust has puzzled men of science for centuries. In recent years, radical changes have been made in the theory of what causes this heat. A modern theory is that there is no heat from radioactive materials at greater depths than 12 miles. Heat is also due to the oxidation of iron and friction of slipping rocks. The present high price of gold has turned the attention of South African engineers to the possibility of boring their mines deeper. In the *Heaton Works Journal* of June an interesting account is given of the work done by Sir Charles Parsons in this connexion, and on the proposals he made for sinking a bore hole 12 miles deep. He proposed an arrangement of brine-cooling by large steel pipes connected at the top and bottom of each half mile section by a closed ring. There would be air-locks also every two or three miles so as to prevent the air pressure from becoming excessive. The real difficulty in the way of boring a hole to a great depth lies in the cost of the undertaking, and in the fact that a financial return cannot be guaranteed. Practically the only inducement to business men to explore the depths of the earth by sinking a deep hole is the chance of finding rich deposits of precious metals. If this is ever done it would put the speculations of men of science to the acid test of practice.

#### Rabbits and Steel Traps

ONCE again the R.S.P.C.A. rabbit week in Great Britain (October 6-13) is being made the occasion of an effort to obtain support for the Bill promoted by the University of London Animal Welfare Society to prohibit the import, manufacture, sale, exposure for sale, possession, custody or use of steel traps or gins. This Bill has now reached the final stages of drafting, and