

an account is given of the methods of distribution in the Chrysler Building, 1047 ft. high, and the Empire State Building, 1300 ft. high. Experience with the Irving Trust Company Building had shown that a saving could be effected by installing transformers not only in the basements but also on more than one floor of buildings more than forty stories high. In the Chrysler Buildings the high-tension feeders, therefore, are carried direct to substations with transformers on the thirtieth, sixtieth, and seventy-fourth floors, while in the Empire State Building there are substations on the forty-first and eighty-fourth floors in addition to that in the sub-basement.

The Empire State Building covers an area 420 ft. by 200 ft., and its 86 floors can house some 40,000 persons, or as many as a fair-sized town. Illumination is provided on a liberal scale, and the estimated lighting load is 6000 kw., while for the lifts, fans, pumps, and other plant electric motors of a total of 9600 horse power are installed. The substations are fire-proof brick structures and each contains four or five 600 kw., 13,800/200-volt transformers. The main vertical cables are rated for a pressure of 15 kw. and are about 3 in. in diameter with an approximate weight of 6 lb. a foot, and in the article referred to is an interesting account of the methods adopted for placing them in position and securing them.

University and Educational Intelligence

BIRMINGHAM.—Under the will of the late Mr. James Gittins Chidlaw, of Edgbaston, a member of the Court of Governors, a sum of more than £10,000 will be put at the disposal of the Council of the University for the endowment of scholarships.

MR. E. J. W. BARRINGTON of Oriel College, Oxford, has been appointed lecturer in zoology, and **Dr. F. C. Champion** of St. John's College, Cambridge, assistant lecturer in physics, at University College, Nottingham.

THE Council of the Institution of Naval Architects has awarded the Martel scholarship in naval architecture (1932), valued at £130 per annum for three years at the University of Liverpool, to **Mr. H. G. Herbert**, of Sheerness Dockyard, and the Earl of Durham prize to **Mr. N. H. Young**, of Devonport Dockyard.

A SURVEY of industrial education in the United States of America has been published by the Office of Education, Washington, as *Bulletin* No. 30, 1931. Among recent developments is noted the more general recognition of the importance of maintaining close contact and co-operation between the school officials and industrial firms. Committees composed of representatives of employers and employees have been especially valuable in selecting the courses to be included in the training programme, in securing properly qualified teachers and adequate equipment, and in the organisation of instruction so as best to meet the needs of industry. There is yet lacking, however, a sufficiently high degree of correlation between the courses provided in the schools of a given locality and the needs of the dominant local industries. Increasingly the public schools accept responsibility for vocational guidance with the view of placing their pupils in suitable occupations, and increasing interest is manifest in occupational information courses. Progressive specialisation in industries has led to corresponding specialisation in the schools, and the number of separate courses has been further increased by the inclusion of training for a number of semi-skilled occupations for which a short period of school instruction is now held to be worth while. Evening school

work has received more attention, because money spent on training persons already employed yields a more certain and immediate return than pre-employment training. The increasing use of electricity on the farm and in the home is stimulating the development, even in small schools, of courses in simple electric wiring, the operation and maintenance of electrical appliances, and other instruction in applied electricity. Similarly, a belief that aviation will constitute a principal method of transportation in the future is leading to the provision in secondary schools of courses in model aircraft building, etc.

Calendar of Geographical Exploration

Sept. 13, 1898.—**Capt. M. S. Wellby's Explorations**

Capt. M. S. Wellby left Berbera on the north coast of British Somaliland, penetrated to the Omo River, and thus entered Lake Rudolf. He then turned north-west and explored part of the course of the Sobat River. In 1896, Wellby and Lieut. Malcolm had carried out a journey in Tibet, crossing the country from Leh to Kuku Nor, afterwards following the Hwang-ho and reaching Peking. This journey filled in many previously blank spaces on the map of Tibet.

Sept. 14, 1927.—**The *Norvegia* Expeditions to the Antarctic**

The *Norvegia*, a vessel fitted out by Consul Christensen, left Sandefjord harbour to begin that series of antarctic researches which has added so much to scientific and especially oceanographical knowledge of the region. Various scientific workers and aeronauts have taken part in the *Norvegia's* work, and, under the leadership of H. Ruser-Larsen, Queen Maud Land, Ragnhild Land, and Princess Martha Land were discovered. Early in 1931 the *Norvegia* completed the circumnavigation of the antarctic continent. The Russian explorer, Bellingshausen, in 1819-21, had previously made the circumnavigation of the continent in high latitudes, while Cook and Biscoë had made similar journeys in somewhat less high latitudes.

Sept. 15, 1587.—**Davis Strait**

John Davis arrived at Dartmouth after his third arctic voyage, during which he had pushed through the strait named after him into Baffin's Bay and coasted the west of Greenland to 73° N. On his first voyage, in 1585, Davis had sighted southern Greenland, which he called the Land of Desolation, had crossed Davis Strait, explored part of the Canadian archipelago, and had penetrated some distance into Cumberland Sound. On his second voyage, in 1586, he again reached the north-east coast of America. His voyages pointed the way to the true north-west passage, though it was not given him to reach it. He added much to the knowledge of the coasts of Greenland and north-east America. In 1591 he accompanied Cavendish on his voyage with the object of "searching that north-west discovery upon the back parts of America". After the rest of Cavendish's party had turned back, Davis continued the journey and discovered the Falkland Islands. He was killed by Japanese pirates when off Sumatra in 1605. Davis is also entitled to fame as an inventor; his back staff and double quadrant held the field long after Hadley's reflecting quadrant had been introduced.

Sept. 17, 1776.—**Basin of the Colorado River**

Father Garcés, a Franciscan missionary, reached Bac. He had set out in 1775 from the Yuma country, travelled from the mouth of the Colorado to Mojave,