

matters ; while the Board of Trade is issuing an open general licence from the same date for the importation of compounds, preparations and articles, not suitable for use in dyeing, manufactured from synthetic organic dyestuffs. A joint committee of makers and users to consider prices and supplies will be set up by the trade early in 1934.

Charles Babbage, F.R.S.

At a meeting of the Newcomen Society held at the Science Museum on December 13, Dr. L. H. D. Buxton read a paper on Charles Babbage and his difference engine, during which he gave a sketch of the career of Babbage, explained the design of the famous calculating machine, and exhibited many manuscripts and an unpublished biography of Babbage compiled by Dr. Buxton's grandfather. Babbage was born in Teignmouth on December 26, 1792, and died in London on October 18, 1871. He was educated privately and went to Cambridge in 1811. He joined Herschel and Peacock in forming the Analytical Society, graduated in 1814, and in 1816 was admitted a fellow of the Royal Society. He assisted in founding the Royal Astronomical Society and the Statistical Society, and from 1828 until 1839 was Lucasian professor at Cambridge. Possessing ample means, Babbage was able to follow his own inclinations, and among these was to construct a machine for calculating mathematical tables. This led him to the construction first of a difference engine, secondly to the construction of an analytical engine, and then of another difference engine. The relics of his machines, none of them ever finished, are in the Science Museum ; his first difference engine was used by Dr. Buxton to explain Babbage's methods. Altogether Babbage spent some £6,000 of his own and some £17,000 allotted by the Government, on his first attempts, and then in 1842 the Government decided against any further expenditure. The failure of Babbage to bring to fruition his ideas was due to his constantly changing his mind, and being led off by some new scheme which promised better results, but which itself was only followed until a new idea arose.

#### Electrical Equipment of London's Latest Hotel

THE Cumberland Hotel at Marble Arch, London, is now open to the public. It has a thousand bedrooms and the total number of lamps installed throughout the bedroom floors is nearly 10,000, requiring 400 horse-power. The electrical installation work was carried out by the Electrical Department of Messrs. J. Lyons and Co., Ltd. The lighting is all done by the latest modern methods. In the octagonal lounge a continuous band of sun-ray tube encircles the room at ceiling level. It is partly hidden by a decorative cornice of amber glass rods. The drawing-room is lighted by eight inverted glass cone reflectors fitted in gilded recesses provided in the walls. In rooms with twin beds a somewhat novel switch is provided. It has two hinged doors. Should the occupant of the left-hand bed wish to read while the other sleeps, the light can be made

to illuminate one side only by closing the other door. By closing both doors it becomes a night light which can be switched off if desired. The maid can be summoned by pressing a button ; this lights a number of lamps which guide her to the room. The system for regulating the condition of the air in the rooms is very thorough. The air entering the building is passed through a huge air washer and dehumidifier which get rid of all impurity. It is then drawn through an oil filter and afterwards, if it is summer, it is cooled by refrigerators and, if winter, it is warmed by a bank of heaters. Guests can regulate the atmosphere of their bedrooms to three different levels by moving a valve lever. Throughout the public rooms are hundreds of concealed air inlets and also outlets which draw away used air, tobacco smoke, etc. The atmosphere is completely changed every four or five minutes. It is calculated that the fifty-four large fans move hundreds of tons of air hourly.

#### Health Considerations in Motor-Car Design

WE have received from Science Service interesting accounts of the meetings of the Society of Automotive Engineers held in Chicago during the past summer. Dr. F. A. Moss, of George Washington University, was of opinion that considerations of health would govern largely the design of motor-cars in the future. In particular he laid stress on the nature of the air inside the car, on the strain on the eyes of the driver and on his posture. Improvements in these respects will well repay the industry. The air condition inside the car should be thoroughly tested to find out the amount of carbon monoxide at various positions and also to measure the draught. In his opinion, control of the temperature and humidity inside a closed car would do much to improve the health of the occupants. Statistics prove that after a long journey accidents are more likely to occur. Dr. Moss attributes this mainly to eye strain. Tests with various types and makes of car show that prolonged driving leads to a great decrease in visual acuity, particularly after a distance of about 400 miles. Bodily posture, governed by seat design, is an important factor in the health and safety of the driver. No researches have been published on this point and it is worth investigating. Some attention might also be paid to the question of whether hard cushions or soft cushions are the best, and to the relative merits of cloth and leather upholstery.

#### Pioneer Broadcasting in Norway

ON February 23, 1933, Norway celebrated its tenth anniversary of radio broadcasting. An article by Mr. E. A. Brofus published in *Radiobladet* (Feb. 17) has been translated in the July issue of *Electrical Communication*, the journal of the Standard Electric Corporation. The author recalls that he erected in the office of the newspaper *Nationen* in Oslo in the early part of 1919 a small loudspeaker to broadcast the progress of the great skating race at Frogner to the people gathered in Karl Johansgate. A telephone line connected the skating rink to the newspaper office, but none of the amplifiers available

was suitable and so a clerk in the office had to act as a human 'repeater'. He repeated word by word the messages he received into a microphone connected with three small loudspeakers in the street. The police objected as the crowd blocked the thoroughfare, and so this early forerunner of broadcasting had a short life. Broadcasting began early in 1923, when a 500-watt station was installed at Oslo. In those days the ether was not, as now, jammed by high-power broadcasting stations and so the reception was excellent. It was at first proposed to put a tax on all receiving sets sold, but this was modified into an annual tax of 2-5 kroners on every set installed. As early as May 1923 it was demonstrated that it was possible to broadcast to the fishing fleet from the northern part of Norway. In the very early days, to receive a portion only of what was broadcast was considered satisfactory. Now not only is the complete message intelligible but the finer nuances of speech and music are transmitted over great distances without audible impairment. The small station at Oslo has been replaced by one of 100,000 watts. Marvellous progress has been made during the last ten years.

#### Archæological Research in the Indus Valley

ON December 8, Dr. E. J. H. Mackay delivered the Sir George Birdwood Memorial Lecture before the Royal Society of Arts. Dr. Mackay pointed out that until we are able to outline the history of the intervening centuries of darkness, the influence of the Indus Valley civilisation upon later times can only be tentatively discussed. He, therefore, preferred to indicate its relationship with other contemporary centres of culture. He welcomed the rejection of the earlier title 'Indo-Sumerian'. Commercial relationship almost certainly existed between the Indus Valley and the Middle East, but the culture displayed at Mohenjo-Daro must be regarded as distinct. He also supported the rejection of the title 'Chalco-Lithic'. Dr. C. L. Woolley, in seconding the vote of thanks to the lecturer, expressed the hope that Dr. Mackay will soon be able to resume his work, now that the Government has made it possible to obtain permission to carry out archæological researches in India.

#### Egyptian University's Excavations at Ma'adi

AN account of the excavations carried out last season at Ma'adi, the third season of excavation on the site, by the Geographical Department of the Egyptian University, is given in *Ancient Egypt* (pt. 4; 1932) recently issued. The excavations were conducted by Prof. Oswald Menghin and Prof. Mustafa Amer. More than 5,000 square metres were excavated. Among the more important finds was a complete square hut foundation, which throws light on Neolithic house construction in Egypt. A hoard of seven basalt vessels in a deep cellar hole cut in virgin soil is said to be "the biggest coherent find of prehistoric stone vessels made, so far, in Egypt". A vase of limestone had had red colour applied to it so that it resembled pottery. A large number of

exceptionally fine worked flints included several big, oval and exceptionally thin scrapers, and a fish-tail lance. Among a group of wooden objects was a boomerang. Personal ornaments included a comb made of ox horn, the first of this material to be found at Ma'adi. A very large amount of pottery was found, more than a hundred vases being complete, many of them new types and bearing likeness to the ceramics of the Syrian third millennium B.C. No complete vessel of painted pottery was found, though a big fragment painted inside and out was saved. The painted pottery of Ma'adi has a peculiar style quite independent of any painted Egyptian ware. The importance of this Neolithic site, especially as a source of information bearing on the early relations of Egypt with Palestine and Syria, is becoming increasingly apparent and makes its complete excavation a matter of considerable moment.

#### Salmon Fisheries Research

IN the Ministry of Agriculture and Fisheries Report of the Salmon and Freshwater Fisheries for the year 1932 (London: H.M. Stationery Office. 1s. 6d. net), it is stated that the catch of salmon and migratory trout showed a still further increase over the very poor catches that were made in 1930. It is also satisfactory to read that in 1932 there was no considerable outbreak of furunculosis, a disease concerning the determining factors of which we need much more information. Thanks to the preliminary work which has already been carried out, it has now been shown possible to disinfect ova with acriflavine, which if carried into practice should eliminate one possible source of spreading infection. The need for continued and increased research into the life-history of the salmon is stressed as bearing on the formulation of fishery laws. It is not yet known how great a part is played by heredity in the determination of whether a fish shall be early- or late-running; if indeed, as some apparently believe, this characteristic is carried on from one generation to the next, it would be advisable to cease protecting those fish which ascend the rivers after the close season and are thus of no commercial value. The clearing up of this question would indeed be of far-reaching interest in the racial study of fishes in general. The salmon is a fish on which such an investigation can be carried out in practice, and information thus obtained might throw light on similar phenomena among our sea fishes, such as spring- and autumn-spawning herring. It is all the more regrettable therefore that the recommendations of the Committee appointed in 1930 by the Minister and the Secretary of State for Scotland on artificial propagation of salmon have had to be regarded as not feasible at the present on the grounds of economy.

#### The Qattara Depression and Water Power

THE Qattara depression in the north-east of the Libyan Desert has an area of 19,500 square kilometres, an average depth of floor of 60 metres below sea-level, and a maximum depth of 134 metres. Rather more than a quarter of the floor is covered