

cancer rate, corrected for the increasing age of the population, rose slightly to 1,003 per million, but was still below the levels reached in 1928 and 1929. A new feature of the review is the tabulation of a 'comparability factor' for each separate town and rural district, which shows at a glance whether the distribution of persons by age and sex in the population of that area would lead to the expectation of a death rate above or below that of the country as a whole, and makes it possible to correct the death rate by a simple multiplication for valid comparison with that of any other area similarly corrected. After correcting in this way, the administrative County of London and the south eastern counties of Kent, Surrey, Sussex, Hampshire, Isle of Wight and Berkshire gave a combined mortality rate after correction only 84 per cent of that of the country as a whole, compared with 113 per cent for the north of England, namely, Durham, Northumberland, Cumberland, Westmorland, Yorkshire, Lancashire and Cheshire.

#### Archæological Investigation under the Soviets

ARCHÆOLOGICAL activities in Russian territory, in which the work of the Historical Museum of Moscow has been reinforced by the co-operation, financial and other, of museum authorities in the United States, have produced results of no little historical importance. Archæologists on the staffs of the various Russian museums are now engaged, according to a report from the Moscow correspondent of the *Observer* in the issue of October 27, in examining material brought in by expeditions to the Crimea, Kazakstan in Central Asia, the Georgian Republic in the Caucasus and the Ural Province. From the Crimea comes further evidence relating to Neanderthal man in the form of stone implements from a settlement site—not a cave—on the Katcha River, while in the neighbouring village of Pychka rock-paintings in red, depicting battle scenes, were discovered, which are attributed to a pre-Scythic culture of the third millennium B.C. The expedition of the Historical Museum to Kazakstan was occupied in excavating a site of the Bronze Age, on which a communal hut, measuring twenty-five metres in length, has been uncovered, as well as an altar about which were the charred bones of domestic animals, vessels containing the remains of food and bone cubes, which are said to resemble modern dice. In the Caucasus, cave deposits were examined, which yielded a number of flint implements of the palæolithic age.

#### Illuminating Engineering

IN his presidential address to the Illuminating Engineering Society, delivered on October 8, Mr. A. W. Beuttell took an optimistic view of the future of illuminating engineering. He based his claim on the inevitable demand for more artificial light which must approximate more and more to daylight. At the moment, the cost of this light is prohibitive, and the problem is to produce more light whilst using no more energy. The keeping low of energy costs will increase the cost of equipment. It is now

realised that having incandescent metals near their melting point does not give the solution. On the other hand, vapour discharge lamps, although we are only at the threshold of these fields of discovery, whilst giving cheaper light, do not give white light. The question is now being thoroughly explored. The disturbance of electrons causing light is produced by heat, but at present much energy is lost in the non-visible spectrum. This problem is of great importance owing to the future great demand for light and the well-defined field with which we have to deal, and the fact that the production of light is based on the fundamental principles which physicists study. In considering the production and use of light, the psychological aspect has also to be considered. Mr. Beuttell expressed the view that in both the physiological and psychological processes concerning light, cause and effect hold good. Whilst we are learning rapidly, it is necessary that specialists should pool their knowledge.

#### The Internal Combustion Engine and its Fuel

ON OCTOBER 9, Mr. H. R. Ricardo received the Melchett Medal of the Institute of Fuel, and after the presentation delivered his Melchett Lecture on the "Progress of the Internal Combustion Engine and its Fuel". This progress he characterised as one of the most startling developments of the last fifty years, and now, he said, more than eighty per cent of the total power output of prime movers is based on petrol. He traced the development of the views held on the cause and character of the phenomenon of 'engine knock' and the formulation of the well-known method of evaluating 'knock-tendency' by means of the variable compression engine. The value of aromatic hydrocarbons was established by this machine and later the practice of rating fuel by an 'octane-number'. The production of fuels with high 'octane-numbers' has permitted the use of higher compression ratios with consequent greater engine efficiency, culminating in the 60 horse-power per litre attained by the Schneider engines. Further increase in the octane-number of petrols is not anticipated, nor the use of supercharging in pleasure cars. The Diesel engine is displacing the petrol engine in heavy commercial vehicles, and will continue to do so even at the same cost of fuel per gallon, owing to the 70 per cent advantage in the figure of miles per gallon.

#### The King's Fund Miniature Hospital

IN order to make known more widely the great work of the voluntary hospitals, Mr. Saxe Wyndham in 1929 suggested to the King Edward's Hospital Fund for London that a model of a modern hospital, complete in its smallest details, would be likely to arouse the interest of the public and so help the King's Fund. The Propaganda Committee of the Fund decided to undertake this work, and a design for the model was commenced by the late Mr. Percy Adams, and completed after his death by Mr. Lionel Pearson. At first, there was some difficulty in obtaining the necessary funds, but eventually Messrs.