

Congress of Radiology wishes to place on record the desirability of adopting a standard scheme of X-ray and radium protection throughout the world."

The morning session was brought to a close with a valuable paper by Prof. F. L. Hopwood, who dealt in detail with the organisation of a hospital radium service. Considerable discussion ensued, in which Dr. Ferreaux, of the Radium Institute, Paris, and Dr. Failla, of the Memorial Hospital, New York, took part.

The afternoon session was opened with a paper (read in title only) by Dr. George Clark (U.S.A.), which was followed by an interesting contribution by Dr. Lewis Simons (London), entitled "The Basis of the Selective Chemical Action of X-rays and Light," and the work of the Section was brought to a close by a discussion dealing with modes of producing currents at constant high potential. This discussion was opened by the chairman (Maj. C. E. S. Phillips), who gave a general survey of the subject. Many speakers stated their views, and Prof. Dessauer described his new methods now in use in Germany. Dr. Moore, Mr. Gunstone, and others contributed to the discussion in which all were agreed as to the desirability of adopting constant high-tension apparatus for accurate physical or therapeutic work.

It is clear from the work of the Congress that physics is playing an important part in the progress of medical radiology, and that the scope of its use-

fulness is ever widening. The study of X-ray spectroscopy, for example (to mention only one aspect of it), has already led to the design of wave-length measuring instruments for use in the ordinary routine work of a medical X-ray department, as well as furnishing a knowledge of organic structures unobtainable by other means. A well-organised exhibition of apparatus held in conjunction with the Congress also testified to the many practical applications that have arisen from work in radiation physics, which has been carried out in many parts of the world during recent years, as well as to the ingenuity of those who provide appliances for medical radiologists.

The truly international character of the Congress was very striking. There were representatives from India and Iceland, from Sweden, Russia, Czechoslovakia, France, Belgium, Germany, Italy, U.S.A., Canada, and so forth; and it was a remarkable fact that this great medical meeting had been made possible by the researches of a physicist whose rare distinction it was to have given to the world a discovery of such far-reaching possibilities for the good of mankind. It was generally acknowledged that the Congress had proved a success; it had, in fact, brought together representative men from many parts of the world, whose enthusiasm was tempered only by a desire to advance cautiously in a field of medical work which is admittedly still imperfectly understood.

C. E. S. PHILLIPS.

Industrial Water Supply.

THE subject of industrial water supply and stream pollution was discussed at the joint meeting of the Institution of Chemical Engineers and the American Institute of Chemical Engineers, which was held on July 17, in Leeds. Messrs. F. P. Veitch and L. C. Benedict, of the Bureau of Chemistry (U.S.A.), contributed a valuable paper on the composition and disposal of wool-scouring waste liquors, in which they described current methods of recovering wool-grease and fertilising material from them, as well as recent work done by the Bureau which indicates the superior advantages of extracting with naphtha and subsequent scouring with soap and water. They estimate that the wool-scouring liquors annually produced in the United States contain, in millions of pounds weight, grease 60-70, potash salts 40-48, nitrogenous matter 15, and dirt 60-90, the total value of which is about 5 million dollars. The authors are convinced that wholesale economic recovery of the valuable ingredients is possible.

Mr. W. L. Stevenson, chief engineer to the Department of Health, Commonwealth of Pennsylvania, criticised most legislative efforts to control pollution of streams as being too peremptory and too punitive, and he advocated the policy of scientific and friendly co-operation between municipality and manufacturer; such a policy is successfully pursued by the Sanitary Water Board of Pennsylvania, which, *inter alia*, has re-classified the waters of that State on the principles of conservation and controlled utilisation. The nature of the restrictive and penalising legislation passed by most States was well shown by Mr. E. B. Besselievre, of New York, whose paper included a summary of the rules upon which the decisions of courts of justice have been based. Mr. H. C. Parker, of Pennsylvania, described recent developments and improvements in the apparatus used for determining hydrogen-ion concentration in industrial effluents and sewage liquors.

Of the papers presented by British workers, that by Dr. T. Lewis Bailey, of the Ministry of Health, on effluents from ammonia plants of coke-oven and

gas-works, was of outstanding importance. Such effluents, it is well known, are the source of much trouble at sewage-disposal works, and Dr. Bailey has for years past been investigating methods of prevention and cure. He described the probable origins of, and the possible ways of eliminating, the harmful ingredients (chiefly ammonium thiocyanate, ammonium thiosulphate, phenol, organic bases and higher tar-acids), but holding that prevention is better than cure, he indicated how relatively clean ammoniacal liquors can be produced by minimising the time of contact between tar and liquor, and by rapidly cooling the crude gas in water-cooled systems, together with rigid exclusion of "adventitious" air. Bad effluents from ammonia plants can be successfully purified in percolating filters, given proper dilution and adequate regulation, although this method is seldom practicable at gas-works owing to lack of the necessary ground space.

Mr. R. D. Littlefield, also of the Ministry of Health, retold the interesting tale of how the Royal Commission on Sewage Disposal solved the problem of purifying the effluents from Scottish distilleries. Here again the percolating filter did what was required, after suitable inoculation.

Water-softening by the base-exchange method was the subject of two contributions. Dr. E. B. Higgins and Mr. J. P. O'Callaghan summarised the advantages which this method has over the older lime-soda process, and described in outline the preparation of "Permutit," both the artificial material (made from sodium silicate and sodium aluminate) and the natural material, which is prepared from greensand or glauconite. In their opinion, natural zeolite is the better owing to its rapidity of action and of regeneration with sodium chloride solution, as well as on account of its superior mechanical and chemical stability. On the other hand, Dr. T. P. Hilditch and Mr. H. J. Wheaton claimed that the water-softener "Doucil" is practically free from the defects which the previous authors held to be inherent in all such artificial base-exchange materials.