

International Society of Leather Trades' Chemists

CONFERENCE AT COPENHAGEN

THE biennial conference of the International Society of Leather Trades' Chemists took place at Copenhagen on August 29–September 2, the meetings being held in the Technological Institute there. The president for the years 1938–39 is Mr. W. R. Atkin (England). It was announced that the Procter Memorial Research Fellowship Fund had reached a total of £3,400, and it was hoped to appoint the first research scholar in October 1938. It was also decided to institute a Procter Memorial Lecture to be delivered at all future conferences, and the first will be delivered in London in 1939. Dr. E. Schell (France) was made an honorary member of the Society.

Several combined sessions were held with the German Internationalen Vereins der Leder Industrie Chemiker, before which many interesting communications were made.

Dr. K. Linderström-Lang gave the opening lecture on the constitution of proteins as elucidated by enzyme studies. Dr. Dorothy Jordan Lloyd followed with a paper on the swelling of structured proteins with special reference to the influence of the reticular tissue on the swelling of collagen in alkaline solutions.

Mr. W. R. Atkin discussed the titration curves of gelatin and collagen, pointing out that, by the application of the Procter-Wilson theory to the titration curve of gelatin, it was possible to construct a replica of the swelling curve of gelatin in hydrochloric acid. It was also demonstrated that the second isoelectric point of gelatin postulated by Wilson could not exist. Dr. F. Schneider gave a paper on the hide proteins, emphasizing that various hide proteins could be distinguished by determining their sugar and amino-

acid contents. Dr. F. Stather dealt with the technical problems of fat-liquoring and stuffing of leathers, while several aspects of the chemical testing of vegetable tanned leather were dealt with by Dr. V. Kubelka.

Mr. G. Parsy discussed the *pH* values of sulphonated oils, and a new electrode for *pH* determinations was demonstrated by J. Haugaard. Dr. D. Burton described a method for determining the amount of neutralizing agent required by a chrome leather, and Dr. K. H. Gustavson discussed the concept of the chrome-collagen compound as an internal complex salt. The tanning effect of polytungstic acid was described by Dr. C. Riess, and Dr. E. Elod pointed out in his paper the use of polyvinyl alcohol as a substitute for proteins in tanning research experiments. Dr. G. Otto compared the titration curves of synthetic tannins with those of natural tannins, and Dr. W. Grassmann described a nephelometric micro-method for the identification and estimation of tannins.

Mr. A. Dohogne discussed the relative water permeabilities of sole leathers tanned by slow and rapid methods, and Dr. A. Mieklerley described some work on the combination of lignin sulphonic acids with hide substance. The fractional extraction of pine bark was the subject of a paper by Dr. V. Nemeč, while Dr. L. Pollak explained methods for the chemical control of hide soak liquors.

During the official banquet which followed the conference, Dr. E. Stiasny was presented with the first copy of a special "Festschrift" volume published to commemorate his sixty-fifth birthday, to which contributions have been made by well-known leather chemists throughout the world.

Metallurgy and the Aero Engine

THE sixteenth Autumn Lecture of the Institute of Metals was delivered by Dr. D. R. Pye, director of scientific research to the Air Ministry, on "Metallurgy and the Aero Engine", at the Sheffield meeting on September 6.

During recent years, there has been a remarkable increase in the power output from aero engines. A comparison of two engines of the same general type and cylinder capacity shows an increase in the last seven years of more than a hundred per cent. This increase has been achieved by improvements in the quality of the fuel, which allows the combustible mixture to be supplied by a supercharger at a higher pressure and temperature. A parallel improvement in the materials of construction to meet the severe conditions of temperature and mechanical loading has taken place, and there is scarcely one major component of the two engines of which either the material or its treatment has not been modified. The problems so far as they concern the metallurgist are both thermal and mechanical. It is fundamentally impossible greatly to increase the proportion of the heat generated which is turned into mechanical work.

The marked increase of power has, therefore, involved a corresponding increase in the waste heat which is to be removed. The piston, which must be receiving about forty per cent more heat, is a critical factor and the temperature attained on the piston is, from examination of the recrystallization of aluminium alloy pistons after use, of the order of 450° C.

The discovery of a new material of about the same specific gravity and thermal conductivity, but better able to maintain its strength at temperatures of 300° C. and above, would be one of major importance.

The increase of waste heat, combined with the chemical problems introduced by the use of lead tetra-ethyl in the fuel, has profoundly affected the metallurgy of the exhaust valve. In spite of great improvements in the steel, it is now necessary not only to transfer heat away from the valve head by means of hollow valves containing liquid, but also to coat the valve with special alloys to resist oxidation at the high temperatures involved. Improvements of sparking plugs involve interesting problems in which the engineer needs the help of the physicist.