International Society of Leather Trades' Chemists

THE bi-annual Conference of the International Society of Leather Trades' Chemists was held at the Institut des Arts et Métiers, Brussels, on September 1–6, jointly with the bi-annual meeting of the German sister society, the Internationalen Vereins der Leder Industrie Chemiker. Owing to the national mourning for Queen Astrid, some of the social functions in connexion with the Conference were cancelled. The meeting, however, was pronounced as one of the most successful yet held.

The Conference proper opened on Monday, September 2, under the chairmanship of M. G. Colchen (president of the Belgian Section, I.S.L.T.C.), assisted by Mr. Van Gijn (president of the I.V.L.I.C.) and M. C. R. Loos (president of the I.S.L.T.C.).

The Executive of the I.S.L.T.C. for 1936–37 was elected as follows: *President*, M. G. Colchen (Belgium); *Vice-Presidents*, M. C. R. Loos (France) and W. R. Atkin (University, Leeds); *Treasurer*, Prof. D. McCandlish (University, Leeds); *Hon. Gen. Secretary*, Dr. J. Gordon Parker (London); *Members of Committee*, Dr. P. Chambard (France), Dr. A. Gansser (Italy), M. R. Paniker (Spain) and L. Masner (Czechoslovakia). It was decided to hold the 1937 conference at Copenhagen. Dr. J. Gordon Parker was elected an honorary member of the Society in appreciation of the enormous amount of work he has devoted to its welfare. The official methods of analysis of the Society are to be published in book form, and it is hoped to have the publication ready by the end of the year.

Kubelka, Weinberger and Heger showed that acid rotting of vegetable tanned leather can be detected by extracting the sample first with water and then with 1 per cent caustic soda solution, and determining the nitrogen in the extracts, rotting being indicated by unusually high amounts of soluble nitrogen. Kubelka and Nemec demonstrated that the deposition of tannin sludge from a liquor depends upon concentration, the sludge increasing with concentration up to a maximum, and then on further concentration decreasing in quantity. In discussing the effect of metallic iron on vegetable tanned leather, Kubelka, Nemec and Zuravlev stated that the presence of unsaturated and oxy fatty acids in oils used for dressing resulted in a greater uptake of iron than with saturated acids such as stearic acid or neutral greases such as paraffin wax.

Dr. D. Jordan Lloyd discussed the modern theories of tanning, stating that X-ray examinations of collagen and of good quality and poor quality sole leathers show that tanning occurs at the active centres of the side chains of the collagen molecules and influences the side chain spaces of the bundles of parallel molecules that go to build up the collagen fibril (or fibre). If the tanning processes weaken or affect the collateral forces directly binding the backbones of the bundles of collagen molecules, or the longitudinal forces down the backbones of the molecules, the leather is of poor quality. All these inter- and intra-molecular forces can of course be affected by the pre-tanning processes, such as those which have been used for curing and in beamhouse work.

The influence of the hydrogen ion concentration of suspender tanning liquors on the fixation of tannin was the subject of a paper by G. Rezabek. He showed that at *p*H 4, hide powder fixes about one sixth to one quarter more tannin than at the natural *p*H of the liquors, namely 5 or 6. Tannage in alkaline medium, that is, at *p*H 8, gives approximately the same tannin fixation as in the non-adjusted liquors. The value of the microscope was illustrated by Dr. R. H. Marriott, who emphasised the value of an understanding of the fibre structure of leathers when assessing their value. Apart from its use in examining finished leather, microscopical examination is of the utmost value in detecting faults in the early manufacturing processes.

Dr. A. Jamet described a method for the estimation of formic acid in lactic acid based on distillation in the presence of a definite amount of lactic acid, whereby the formic acid can be recovered almost quantitatively. Dr. V. Casaburi and Dr. E. Simoncini discussed tanning by means of tungsten salts, particularly those of a more complex type. These tungsten compounds also act as excellent mordants for dyeing. A study on the action of nitrous acid on collagen, and the properties of the de-aminated collagen, was presented by Prof. L. Meunier and Dr. E. Schweikert. An excess of nitrous acid results in a true tanning effect, particularly if followed by treatment with sodium bisulphite. Further, at the iso-electric point of collagen, sodium nitrite alone has a marked tanning effect on collagen. The action of acids and basic dyestuffs towards deaminated collagen were described in some detail. Prof. C. Otin and G. Alexa gave an account of their work on the fixation of vegetable tannins by pre-chromed hide powder, indicating that the amount of vegetable tannin fixed depends upon the quantity of chromium present, also on the particular vegetable tannin used.

Some work on the accuracy of the glass electrode in alkaline solutions was discussed by Dr. D. Burton and J. Bateson. Prof. L. Meunier with A. Abbassi showed that a sulphur tannage takes place when pelt is treated with an acid pickle (salt and sulphuric acid) followed by a sodium thiosulphate bath. A very practical paper was that by L. Houben, who demonstrated the important part played by the stuffing grease mixture on the efficiency of leather belting. Prof. L. Meunier with P. Audrey described a method for preparing a uniform ossein from bones, and showed that this can be used as a substitute for hide powder in the determination of tannin in vegetable tanning materials. The estimation of methoxy (in the form methyl alcohol) in vegetable tannin extracts is the basis of a method for determining the presence of sulphite cellulose described by C. van der Hoeven.

In a paper on the theory of leather dyeing, Dr. G. Otto suggested that in dyeing with anionic reacting dyestuffs, the reaction of the principal valencies is more or less influenced by auxiliary valencies. Dr. F. Stather described experiments he has made on the relative rates of diffusion of vegetable tannins into pelt. Dr. Pollak gave details of his method for determining pyrogallol tannins in the presence of catechol tannin, the latter being precipitated by formaldehyde and hydrochloric acid (Stiasny), and then the former by urea. Sulphite cellulose extract

formed the subject of a paper by Dr. Kuntzel, who showed that this material is taken up by the basic groups of the hide substance molecule, and acts generally like the synthetic tannins.

A conclusion arrived at in a paper by Dr. E. Elod on the dyeing of leather is that if a series of acid or direct dyes be arranged in order of their dissociation constants, such order represents also their relative fastness to washing. The importance of drying in leather manufacture was discussed by Dr. K. Wolf, who mentioned that drying occurs in two stages, first the evaporation of the loosely held water, and secondly the loss of bound water, this latter being governed by the type of tannage and degree of tannage of the leather. Dr. W. Grassmann dealt with the chromatographic adsorption analysis of tanning materials. This depends on passing the solution through a tube of an adsorbent material (silica gel, kaolin, etc.) when a characteristic separation occurs, the strongly adsorbed constituents being retained in the upper layers while other constituents infiltrate to various depths. The preparation of sulphite cellulose extracts was discussed by L. Masner and V. Samec, and Dr. W. Hausam described certain pin hole defects in calf and goatskin.

Prof. Leplat gave an interesting lecture on the need for closer co-operation between the histologist and leather technologist, and showed how the newer science of histo-chemistry has been able to differentiate structural differences between tendon fibre and skin substance, which may account for their different behaviour on acid swelling.

Higher Agricultural Education in Great Britain

THE Report of the Departmental Committee on the Reassessment of Annual Grants to Institutions providing Higher Agricultural (excluding Veterinary) Education in England and Wales, 1934, is regarded by the Minister of Agriculture as of such importance that the non-confidential portions have been reproduced in full in the *Journal of the Ministry of Agriculture* of August 1935. It is understood, however, that some of the recommendations have already been implemented.

The fifteen institutions concerned, comprising agricultural colleges and university departments of agriculture, were visited by members of the Committee, and all available information as to work and finances considered in detail. The Committee lays great stress on the importance of education and research for the development of agriculture, quoting many specific instances where the results of research have materially altered the methods of agricultural practice. The importance of the agricultural colleges lies in the fact that experience shows that the farmers who are the first to introduce improved methods on their own farms and, indirectly, to their neighbours, are those who have received training at a college or farm institute. Any attempt to reorganise the agricultural industry in Great Britain must, therefore, ensure that the agricultural colleges are on such a footing that they can perform their functions with efficiency.

The attitude of the Committee was sympathetic and liberal, the object being to make such recommendations as would ensure the financial stability of each institution, without countenancing any waste or unnecessary expenditure of public money. At the same time, it was agreed that it is a mistake to penalise an institution that is successful, and that one that is so well managed that it pays its way should not on that account alone suffer a reduction in its grant. The financial crisis of 1931 prevented any increases in grants, and caused reductions in many cases, and as lowered incomes from this and other sources mean reduced expenditure, the position of the colleges in 1934 was one of stagnation due to lack of funds, rendering them unable to play their full part in the leadership of the agricultural industry.

Most of the colleges work in direct relation to the surrounding county areas; but the amount of local financial support varies considerably, both as regards direct grants and the award of scholarships, and in some cases this support is far from adequate. An increase in both types of financial aid from certain counties is very desirable, together with a greater co-operation for making the facilities provided by the colleges more widely known.

In most cases the existing staff is adequate to meet present demands, but the level of the salaries paid leaves much to be desired. This, added to the salary cut imposed in 1931, has resulted in deplorable conditions in certain specified colleges, and recommendations have been made for extra grants to improve conditions.

One result of the 1931 depression has been a fall in the number of fee-paying students, with a certain increase in scholarship holders, and in some cases the quality of the students is less good than formerly. It is recommended that the colleges should be pressed to satisfy themselves that all their students are suitably equipped to benefit by their course of instruction, and that a more rigorous attitude should be adopted in the weeding-out of students who are not availing themselves of their opportunities. At the same time, it is desirable that every effort should be made to increase the numbers of students drawn directly from agricultural circles, which can be encouraged by scholarships given by the Ministry and by county authorities. There seems to be scope for a much greater measure of county assistance in this respect.

The attention of the Committee was also directed to the question of adequate farm areas attached to the colleges. Although most colleges already possess such farms, in some cases they might be used more freely for the practical instruction of the students. For urban colleges, the distance to the farm may present difficulty, and in one instance the establishment of a local farm institute on the farm itself has been recommended as the condition of the continuance of the existing grant.

In spite of the reduced incomes, due to various causes, it is most undesirable that any increase in the level of fees paid by students should be made, as even now the cost is too heavy for members of the agricultural classes without the aid of scholarships or reduced fees. The heavy burdens of interest charges and bank overdrafts could best be dealt with