THE AMERICAN CHEMICAL SOCIETY. IV

Symposium on annual patent renewal fees with the Division of Pharmaceutical Chemistry and Section of Dye Industry. E. J. PRINDLE, *chairman.* The symposium discussed various features of the proposal that a system of annual patent renewal fees shall be adopted for the United States. There were verbal or written discussions by: T. H. Anderson, L. H. Baekeland, J. M. Francis, Edwin A. Hill, A. D. Little, John Uri Lloyd, L. V. Redman, Mr. Stinchfield, Elihu Thomson, W. R. Whitney and others, including members of the Patent and Related Legislation Committee of the American Chemical Society, and members of the Patent Committee of the National Research Council. The chief ideas brought out in this discussion were found in the October, 1919, issue of the *Jour. Ind. and Eng. Chemistry.*

The use of crystallizers in cane sugar manufacture: CHARLES E. COATES.

The centrifugal method for the rapid determination of potash: L. S. CONVERSE. For control work, the common methods too long. Description of centrifugal method. Calibration of tubes, effect of speed and time on centrifuge effect of other salts, etc. Comparison of centrifuge and other methods. Usefulness and accuracy of method. It is impossible to obtain results accurate to 0.1 per cent. if the sample contains more than 12 per cent. potassium nitrate. Because of rapidity—20 minutes—it is useful for control work.

Comparison of methods for determining ammonium nitrate: J. T. GRISSOM. Need of rapid method for estimating ammonium nitrate. Comparison of nitrometer, kjeldahl and formaldehyde methods.

Effects of chlorides on nitrometer determinations of nitrates: M. T. SANDERS. It is not possible to determine nitrates in the presence of larger amounts of chlorides. Determinations with known quantities of chloride are given, results are discussed and reasons for abnormal results suggested. It is impossible to obtain results accurate to 0.1 per cent. if more than 15 to 17 per cent. sodium chloride is present in the dried sample.

The oxidation of methane. Quartz combustion apparatus: F. C. VILBRANDT and JAMES R. WITHROW.

Carbon black—its properties and uses: G. ST. J. PERROTT. An investigation of the carbon black industry has been undertaken by the United States Bureau of Mines as a result of economic issues brought up during the war. In the present process of manufacture carbon black is made by burning natural gas with a smoky flame against a metal surface and collecting the liberated carbon. The yield is from 2 per cent. to 7 per cent. of the total carbon in the gas. Other possible methods of making carbon black are considered. The uses of carbon black are discussed with particular attention to the ink and rubber industries. Testing methods are described and results of chemical and microscopic analyses of blacks making "long" and "short" inks are given. An explanation for the difference in working qualities of blacks made by different processes is proposed.

Adherent rust as an accelerator in the corrosion of iron and steel: W. D. RICHARDSON.

Some properties of commercial silicate of soda: J. G. VAIL.

The leaching of zinc chloride from treated wood: ERNEST BATEMAN. As the result of experimental work and analyses of ties which have seen several years' service, the following conclusions have been drawn: (1) In laboratory experiments as well as service tests the chlorine radical was drawn from the wood by leaching faster than the zinc radical. (2) The amount of each component leached can be calculated with fair accuracy from the diffusion constants of the hydrochloric acid and zinc chloride and the amount of each component present in the solution. (3) From the above it follows that the relative rate of leaching of any other salt from wood can be calculated if we know the amount injected and the diffusion constants of the salt. (4) The presence of comparatively large amounts of zinc in treated material does not insure that the wood is protected against decay unless a sufficient amount of acid be also shown to be present. (5) The basic chlorides of zinc seem to have little or no toxic effect.

Tensile strength of glue: G. HOPP. The paper describes a method for testing glue, by determining its exact tensile strength and elasticity. Hitherto all methods used were more or less arbitrary and entirely comparative. It was shown conclusively that the method is exact and opens a wide field for research and scientific standardization not only of methods of testing glue but also of selecting the right glue for a particular purpose.

A new illuminator for microscopes: A. SILVERMAN.

The stability of tetryl: C. L. KNOWLES. The following is an outline of the paper: Historical, general methods of preparation; general methods of purification; properties; most common impurities; causes of instability in tetryl; methods of testing stability of tetryl; action of sodium carbonate on tetryl; detection of sodium picrate in tetryl; effect of sodium picrate on stability of tetryl; conclusions; references.

The manufacture of trinitroxylene: JOHN MARSHALL. The paper included the following: Discussion of preliminary experiments on the production of TNX; a study of the properties of a mixture of TNX and TNT when cast together; a discussion of the fraction of xylene best adapted to the production of TNX for explosive shell filling. The methd of nitrating; the nitration of pure meta-xylene; the composition of the mixed acid; the study of raw materials with particular reference to the rectification of solvent naphtha and the results obtained from the various ranges of the xylene fraction; the relative suitability of coke oven and water gas tar xylenes.

The preparation of hexanitro-diphenylamine and its use as a booster for shell charges: JOHN MARSHALL. The following is an outline of the paper: Historical; the preparation of dinitrodiphenylamine; preparation of tetranitrodiphenylamine; nitration of tetranitrodiphenylamine to hexanitrodiphenylamine; preparation of hexanitrodiphenylamine by complete nitration of dinitrophenylamine with mixed acid; the neutralization of free acid in hexanitrodiphenylamine; the explosive properties of hexanitrodiphenylamine; sensitiveness of hexanitrodiphenylamine to detonation; sensitiveness to impact; sensitiveness to friction; rifle bullet test; explosive power of hexanitrodiphenylamine; effect as a booster; conclusions.

The composition of sponges: F. P. DUNNINGTON. The common sponge, used in washing, grows in some warmer ocean waters and consists of a network of fiber-like material which is somewhat related in composition to silk fiber. Sponge has long been known to contain the somewhat rare element iodine, and occasionally bromine is mentioned as occurring with it; but little has been published about it that is definite. The author proposed to determine the exact amounts of iodine, bromine and chlorine in some sponges from different sources, and specimens from Florida, Cuba and Bahama Islands were analyzed. The amounts of these elements in these specimens differ greatly, but the average percentages for the four specimens examined are, viz.: iodine, .603; bromine, 1.307; chlorine, 1.06. When we consider the very small amount of bromine and the minute trace of iodine found in the water of the ocean, it is indeed remarkable that these animal organisms can thus select and collect them from the large portion of chlorine in the salt found there. We also note in this an explanation of the fact that these sponges can only grow in "open ocean water."

Quantitative determination of potassium as bitartrate: SIGMUND WALDBOTT and FRED. W. WEISSMANN. This method was evolved in order to avoid the use of the expensive and difficultly accessible platinum chloride. It is applicable to mixtures of K- and Na-salts resulting from the regular analytical separation of other metals including Ca and Mg. Principle of procedure: To the *neutral* solution of K- and Na-salts add Na-bitartrate in slight excess, evaporate to dryness, displace the water-soluble salts by means of water saturated with cream of tartar at or slightly below the temperature of the laboratory, then judiciously displace the cream of tartar solution by the careful addition of alcohol. A straight calcium chloride tube containing a plug of cotton is useful in these operations. Finally heat to 100° C. for 1 hour in a current of air, cool and weigh. Fair uniformity of temperature is essential for the accuracy of the method.

The properties of pyroxylin plastics: R. P. CALVERT and J. H. CLEWELL.

The extraction of potash salts from kelp charcoal: J. W. TURRENTINE, P. S. SHOAFF and G. S. SPENCER. The charcoal yielded by the destructive distillation of dried kelp is porous and readily yields its values, potassium and sodium chlorides and iodides when treated with hot water. In order to obtain a highly concentrated solution and at the same time efficient extraction, some counter-current system was found to be necessary. A solution of the problem was found in the adoption of a number of mechanical filter presses connected in series with each other and with leaching troughs interposed. The brine from one press is pumped into the leaching trough of the preceding one, while the press-cake from each press falls into the leaching trough of the succeeding one. Thus the brine is pumped up hill while the charcoal passes downward by gravity. The two streams passing in opposite directions counter-current extraction results. Filter presses of the revolving disk type and known as the American are employed. Filtration and washing are effected under vacuum and the press cake is broken loose by compressed air. The apparatus

shows high efficiency, is automatic and is regarded as eminently satisfactory.

"Kelpchar" a new decolorizing carbon prepared as a by-product in the extraction of potash from kelp: J. W. TURRENTINE, P. S. SHOAFF and G. C. SPENCER. Following the researches in the laboratories, respectively, of Dr. F. W. Zerban, of the Louisiana Sugar Experimental Station and of the Experimental Kelp Plant, of the United States Department of Agriculture, it was shown that a carbon of high activity could be produced in large quantities from kelp, depending on the method of retorting. One-stage retorting was efficacious, under certain conditons but did not yield a product of uniform or even dependable grade. Two-stage retorting, however, did yield a product of constant properties and made possible the large scale production. Accordingly this method was instituted pending the determination of the optimum conditions surrounding the one-stage operation. The product of the retorting or destructive distillation of kelp, a porous charcoal, is leached with hot water to remove potassium chloride and iodide and the residue, in the form of a press cake, is treated with the required amount of hot, dilute HCl to dissolve out soluble constituents and is then washed with water to neutrality. It is then dried and sacked for shipment. The tank system of extraction at present is in use. Acid proof construction is employed. The material is transferred from tank to tank in the sludge form by means of pumps, and spent acid and water are removed by filtering in situ over vacuum. The product compares favorably with Norit on molasses solution being equal in value and shows great usefulness when applied to materials of widely varying characteristics. It offers every promise ultimately of meeting the requirements of the chemical industry for a carbon of the highest grade.

CHARLES L. PARSONS,
Secretary

(To be continued)

THE AMERICAN ASTRONOMICAL SOCIETY

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THE twenty-third meeting of the society was held September 2 to 5, 1919, at the University of Michigan, Ann Arbor, where during the same week were also being held meetings of the American Mathematical Society and of the Mathematical Association of America. Members of all three societies were housed at the Newberry Residence and at the Michigan Union, and the arrangements demonstrated the ideal condition of gatherings where members live close together for several days. There were about seventy members and guests present at the astronomical sessions.

In opening the first session, Acting President Schlesinger referred to the great loss which the society had suffered since the last meeting in the death of Professor Edward C. Pickering, who had been president of the society for thirteen years, and who had been the leading figure at its meetings throughout that time. The society had also lost Professor Charles L. Doolittle, who had acted as treasurer from the founding of the society in 1899 until he retired in 1912. The following resolution, which had been passed by the Council, was endorsed as representing the sentiment of the members of the society, and was ordered to be printed in the publications.

The council of the American Astronomical Society records with regret the death on February 3, 1919, of EDWARD CHARLES PICKERING, who had been president of the society since December 30, 1905. His success in introducing new methods into the observatory, particularly with regard to the determination of the brightness and the spectra of stars, his extraordinary ability in carrying out large projects, and the extent and diversity of his experience and knowledge, have given him a permanent place among the great names in the history of science. The society will keenly feel the loss of his presence at its meetings. The members of the society had every reason to regard him as a warm friend, and to them the sense of personal loss is very deep.

The visitors at Ann Arbor were hospitably entertained by the University of Michigan, and especially by Director and Mrs. Hussey at the Observatory. There was also opportunity to join forces with the mathematicians at a smoker and a dinner. There was one joint meeting of the three societies, with the following program.

"Mathematics and statistics." Retiring address of the president of the Mathematical Association of America. Professor E. V. Huntington, Harvard University.

"The work of the National Research Council with reference to mathematics and astronomy." Professor Ernest W. Brown, Yale University.

"Reports on the International Conference of Scientists at Brussels." Dr. Frank Schlesinger, Allegheny Observatory, Dr. L. A. Bauer, Carnegie Institution.

The time and place of the next meeting of the Astronomical Society was left to be determined by the executive committee.

Officers were elected for the ensuing year:

President—Frank Schlesinger.
Vice-presidents—George C. Comstock, Walter S. Adams.