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(Continued from page 1.)

mous waste of the forests in this country has caused the necessity of increasing the wood products especially those derived from destructive distillation.

Wood heated in the absence of air gives off many compounds the most valuable of which are combustible gases, wood-alcohol, acetic-acid, wood-tan and charcoal. The proportions of these products depend not only upon the kind of wood, but more especially upon the temperature to which the wood is heated and the rapidity with which the heat is applied.

The investigation was carried out in the Wood Distilling Plant of the Avery Chemical Co. at Lowell, where the best of apparatus was at the students' disposal. After many experimental runs had been made, the results of the observations and the tabulated analysis clearly showed that for a large yield of commercial products a slow even application of heat and a relatively low maximum temperature were needed.

Loss in Soda Cycle

The manufacture of paper from wood was another thesis investigation of industrial chemistry, under the charge of Dr. W. H. Walker, carried on by Eleazer Myers and Chesney H. Criswell with special reference to the unaccountable loss in the soda cycle.

To determine the unknown outlet or outlets of about one-fourth of the soda in use, which theoretically should complete its cycle with no loss, it was necessary to find how much was in action and consequently how much was lost in each operation. Special apparatus and methods were required. What went up the flue proved a hard thing to answer because of the excessive temperatures involved. This was at last successfully deduced as were the majority of the other loopholes by a good deal of ingenuity.

Although the total loss was not entirely accounted for the results enabled the investigators to suggest changes which the general manager of the paper mill says have already repayed them for any slight inconvenience the test may have made.

Water Analysis

Mrs. E. H. Richards has been studying a means of presenting the subject of water analysis to Technology students in the limited time allowed for the subject on the attendance cards. The difficulties of the course have been greatly increased by the growing use of deep, driven wells as sources of commercial supply, and the unknown influence of these waters upon the life of conveying pipes, and the maintenance of boilers. Mrs. Richards has materially increased the possibilities of the course through her determination of the best use of available data, and the most suitable means of illustrating the many varieties of water from different locali-

ties as well as the amount of laboratory work required for such a course.

Pure Food Analysis

Prof. Henry P. Talbot in the recent Technology Review writes the following with regard to the work done in the laboratory of food analysis under the direction of Prof. Woodman. "The passage of National Pure Food Act and the consequent greatly increased interest in all that pertains to food has directed much attention toward the improvement of present methods of food analysis, both general and official. The fact that the results of chemical analysis will in many cases be brought into the courts necessitates a critical study of existing methods, and in not a few instances the development of new ones. Prof. Woodman's position as associate referee on revision of the official methods, and direct connection with the practical enforcement of the pure food laws, has made it possible for the fourth-year students in the laboratory to undertake work which will be of immediate and practical importance in this line.

Among the problems which have been worked out may be mentioned a new method for the assay of commercial almond extract. The amount of almond oil in a pure extract is fixed by definite standard, but the methods for determining the amount present have been, for the most part, very unsatisfactory. The new method which has been developed for the examination of these extracts is accurate, rapid, and easy of execution. It can be applied also to the assay of almond oils and to pharmaceutical preparations of benzaldehyde. In connection with this work it was found possible to shorten and improve in many details the process for the preparation of specially pure alcohol, which will prove of considerable value in the examination of whiskies and lemon extracts.

Much work has also been done on coffee with special reference to the estimation of its tannin and alkaloid contents. There have appeared on the market in recent years several brands of "purified" or "refined" coffee, for which physiological virtue is claimed on the ground that they have been freed from the excess of tannin and caffeine. Accurate and rapid methods for the determination of these constituents are greatly in demand. The present methods are tedious to a degree requiring several days in order to obtain even approximate values. It has been found possible through the work in the food laboratory to shorten some of these processes, the modified method, for instance, giving results in three-quarters of an hour that formerly required seventy-two hours, and results of greater accuracy, as well. New applications of volumetric methods for alkaloid assay to the case of caffeine have brought about distinct improvement. In connection with the examination of coffee a thorough revision of the present methods for the analysis of tea, cocoa, and chocolate, has been undertaken with the aid of the students in (Continued on page 4.)

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