cells of the mesocarp in particular, during the activity of the protoplasm and not on account of the degeneration of the latter. The malic acid in the berries of *Hippophæ rhamnoides* is identical with the acid in *Pyrus aucuparia*. Greshoff has investigated the Pisang wax, the product of an unknown plant of Lower India. The carbohydrates of Tragacanth have been re-investigated by Widstoc and Tollens. Xylose was obtained from the white and arabinose from the brown varieties respectively. Dulcite and not mannite has been found by Hoehnel in *Euonymus atropurpureus*. The same carbohydrate is present in *E. Europæus*.

According to the investigations of J. Grüss, the enzyme in *Penicillium glaucum* acts less powerfully on starch or reserve cellulose, but more energetically on cane sugar, than malt diastase. Semnase, the ferment in leguminous seeds possessing a horny albumin, differs from malt diastase in that its action is less active on starch, but more active on the albumin of the locust bean than diastase. An enzyme (hadromase) has been found by Marshall Ward in the fungi (*Pleurotus pulmonarius* and *Merulius lachrymans*) which destroys the lignified cells of timbers.

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THE PRESIDENT'S ADDRESS BEFORE THE SOCIETY OF CHEMICAL INDUSTRY.

The annual general meeting of the Society of Chemical Industry took place on July 18th in the lecture theater of the Royal Institution, London. After the transaction of some formal business, including the presentation of the council's report, which showed that the society has now 3459 members, the president, Professsor C. F. Chandler, of Columbia University, delivered his address. According to the abstract in the London *Times* he said that on looking over the addresses of past presidents he found that almost every chemical topic—theoretical, practical and historical—had already been dealt with, and his only hope of being able to say anything that was not already thoroughly familiar rested in the presentation of matters purely American. Treating, first, of chemical and technical education in the United States, he described its beginnings and development, paying special attention to the Columbia School of Mines, afterwards merged in the Columbia University. He ascribed the prompt success of this school to the fact that a fixed and definite progressive course of study was offered for each profession, from which no deviation was allowed. The faculty decided what subjects were necessary for a student to pursue in order to qualify him for his profession, and did not permit him to select the studies which he happened to find most interesting. While Columbia was developing her system of professional education in the applied sciences many other institutions were doing the same. The most striking feature of the American system of higher and technical education was to be found in the fact that most of the institutions had been founded and maintained by liberal gifts of money from wealthy citizens, in many cases made during the donor's lifetime, and that only a small number had been endowed or supported by the public funds. Thus in 1899 over 33 million dollars were given in this way, the largest sum being the 15 million dollars given by Mrs. Leland Stanford, together with large tracts of land, to which as yet no precise value could be attached, to complete the endowment of the Leland Stanford Junior University. There were in all 174 donors, averaging $190,000 each.

Schools of chemistry were now so numerous in the United States that it was almost impossible to state their exact number, but he was safe in saying it was more than 100. In all there were 480 universities and colleges, and 43 technical schools not included in this list. In 1899 it was stated that there were 9784 students pursuing professional courses in the schools of engineering, while 1487 graduated that year, receiving the degree of civil, mechanical, electrical or mining engineer. No one could estimate the value to the industrial development of the United States of such an army of thoroughly trained engineers and chemists. Professor Chandler next referred to what had been done by the chemical societies in benefiting and consolidating the profession in America, and went on to speak about the original investigation carried on by American chemists. He said he

could present a long list of valuable contributions to chemical science from American laboratories but it was a regrettable fact that many of their teaching chemists were so overburdened with the duties of instruction and the business of managing large laboratories that they could find but little time for original work.

The president next gave an account of the many important investigations in agricultural chemistry which had been conducted by the chemical division of the United States Agricultural Department, among those mentioned being the practical determination of the number and activity of the nitrifying organisms in soil, the influence of a soil rich in nitrogen on the nitrogen content of a crop, the manufacture of sugar from the sorghum plant, and the comparative study of typical soils of the United States. Of agricultural experiment stations there were now 59, and the 148 chemists connected with them had done a large amount of original investigation in subjects more or less closely allied to agricultural and physiological chemistry. One of the most important purposes of these stations was the protection of the farmer from the cupidity of the dealers in artificial manures, every fertilizer sold being now subjected to careful analysis, of which the results were published from time to time. Many other researches in this branch of chemistry were enumerated in the address, which went on to refer to the work of the United States Geological Survey and to the progress of sanitary chemistry in America. Professor Chandler next gave a long and comprehensive account of the chemical industries of the United States. Beginning with a statement of the raw materials produced by the country, he passed on to speak of the various ways in which they were utilized, and gave an immense amount of information respecting the manufacturing processes in use.

In particular he referred to the progress made in electro-chemistry, and described the methods now adopted for the reduction of aluminium at Niagara and also for the manufacture of carborundum and artificial graphite. Speaking of water gas he described the opposition which had been brought to bear against its introduction for illuminating purposes. The question came before the Health Department of New York, of which he was at the time president, and after careful investigation the department decided that the gas was such an improvement in quality and price while the increased danger as compared with that from old-fashioned coal gas was so slight, that it was not wise to interfere with it. The water gas industry had now taken almost complete possession of the whole country. It seemed safe to say that there were at least 500 gas companies using water gas wholly or in part, and it was estimated that in 1899 three-quarters of the entire consumption, or 52,500 million cubic feet, consisted of carburetted water gas. The price of this was reduced ultimately to $1 per 1000 cubic feet, the average quality being between 26 and 27 candle power, as against bituminous coal gas at $3.75 per 1000, with an illuminating power of 16 or 17 candles.

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*THE JESUP NORTH PACIFIC EXPEDITION.**

MESSRS. WALDEMAR JOCHELSON AND WALDEMAR BOGORAS, of the *Jesup North Pacific Expedition* of the American Museum, have recently started for the northeastern part of Asia, by way of San Francisco and Vladivostok, to continue the work of the Expedition in Siberia.

The region which Messrs. Jochelson and Bogoras are about to visit is situated northeast of the Amoor River. They will study the relations of the native tribes of that area to the inhabitants of the extreme northwestern part of America, and also to the Asiatic races visited by Dr. Laufer, under the auspices of the Museum, and to those living farther west. It is expected that in this manner they will succeed in clearing up much of the racial history of these peoples, and it is hoped that the question as to the relations between the aborigines of America and Asia will be definitely settled. Thus the work of these explorers is part of the general plan of the Jesup North Pacific Expedition, which was organized for the investigation of the relations between the tribes of Asia and America. It is fortunate that this inquiry has been taken up at the present time, since the gold discoveries along the coast of

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