

DIVERSIONS AND DIGRESSIONS

A German Chemist's Experiences in Turn-of-the-Century America

In 1907 a young German chemist by the name of Samter returned to Germany after a year in the United States and recorded his impressions of the opportunities and problems confronting American industrial chemists of the period. Samter's talk was summarized the same year by a reporter for Scientific American and provides us with a unique portrait of our profession at the turn-of-the-century:

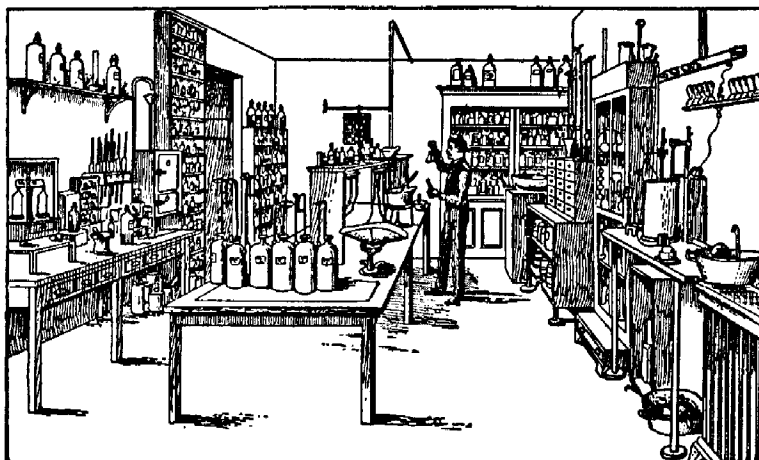
In a paper read before the Märkische Bezirksverein Herr v. Samter, a young German chemist, has given a remarkably fair and impartial account of his American experience, which contains information of interest to all chemists in search of employment.

An American electrician connected with a great Berlin establishment wrote to friends on this side, recommending Samter as a man "who impresses me favorably." This phrase is quoted as characteristic of America, where personal appearance, manner, and dress are often more important than testimonials to special ability. A position as analytical chemist, at a small salary, in a factory near a large American city was offered to Samter, and he sailed for New York. He regrets that he did not come in the first cabin, where he might have made useful acquaintances, but he congratulates himself on evading the contract labor law, and warns others against betraying the fact that they have secured positions.

At the factory he finds three other chemists and a German foreman, who furnishes him with excellent board and lodging for \$4.50 a week. This experience suggests two interesting comments. One is that a great number of Germans in America, like this foreman who had lived here twenty years, have almost forgotten German without mastering English, so that they cannot express themselves decently in any language. The second comment relates to the cost of living in America, and the exaggerated conception of it formed by those Germans who assert that a

dollar will purchase no more here than can be bought in the old country for a mark (24 cents). Samter says this is sheer nonsense, as good board and lodging can be obtained in America for \$5 to \$8 a week in small towns and \$7 to \$10 in large cities, and there is no expense for "trinkgelder" or tips. The cost of living, however, is considerably higher in Western mining districts and some others and also in New York, "which genuine Americans have almost ceased to regard as an American city." The average German is too fond of his liberty to take kindly to a boarding house, but he can live cheaply in lodgings and restaurants unless he insists on unlimited beer and German dishes, which are to be had only at high-priced German restaurants. The comparison should be, not between German and American prices of German articles, but between the cost of living in German fashion at home and in American fashion here.

Samter was compelled to sign a contract for a year. This he did reluctantly, for he was eager to obtain higher and more remunerative work than analysis. He finds that employers prefer to make still longer contracts, at least with chemists who have proved their ability and learned the secrets of the establishment. He concedes that a contract for a year is, on the whole, advantageous for a young foreigner, for though it may delay a



A turn-of-the-century industrial laboratory

possible promotion, it removes the danger of being left stranded before becoming familiar with the language and customs of the country.

He quotes the average monthly pay of chemists in large American establishments at \$60 to \$75 for the first, \$85 for the second, and \$100 for the third year, with a gradual increase thereafter up to \$200. Even managers of the large factories demand only \$4,000 to \$7,000 per year. The payment of percentages on improvements is less common here than in Germany.

Nor is special knowledge so essential as it is in Germany. There are two reasons for this: the dearth of applicants possessing such knowledge, and the American habit of attaching paramount importance to general knowledge and intelligence. This trait is reflected in the remarkable breadth of the course of study in American

technical schools, where a little of everything is taught, specialization being left to practice. A good result of this system is that few American chemists betray the dense ignorance of matters not connected with chemistry that is so common in Germany. Every American chemist has some knowledge of machinery, mechanical drawing, and other things essential to the conduct of a factory. The German chemist is educated for a scientific career in a university or technical school or for the scientific solution of special problems in the laboratory of a great factory, while the American demand is for men qualified to act independently in positions of responsibility and to utilize the natural forces, circumstances, and men at their disposal.

Positions are most easily obtained through the scientific and technical schools, in which reigns a solidarity or *esprit de corps* that is absent from similar German institutions. The school, as well as the individual professors, looks out for the advancement of its graduates, and these, in turn, apply to their *alma mater* both for positions and for assistants. The Massachusetts Institute of Technology, the Armour Institute in Chicago, and many similar schools have standing lists of situations, and some of them have more positions than their own graduates can fill. Hence young German chemists are advised to seek assistantships in such schools, through recommendations from German professors, for most professors of chemistry in those schools have studied in Germany, and Boston is said to harbor more of Ostwald's pupils than any other city except Leipzig.

The pre-eminence of Germany in the manufacture of dyes, medicines, and pure chemicals has created the erroneous impression that she leads the world in all chemical industries. But the most important of those industries are concerned with the production of staple articles on a large scale, or with processes that have been developed empirically and are not yet amenable to rigorous scientific treatment. The importance of science to industry is overestimated. Often science merely approves methods discovered empirically. With the exception of the few branches in which strictly scientific methods are essential, applied chemistry is in a flourishing condition in America. The exception is due chiefly to the lack of thoroughly trained chemists, the high price of labor, and the more profitable employment of capital in the production of staples.

Paper, starch, sugar, glass, and the products of the distillation of wood are manufactured in large quantities. The production of cement increases fifty percent annually, but fails to supply the demand. America leads, or will lead, the world in petroleum products, glucose, iron, copper, silver, and lead. American shoes and overshoes are sold throughout the world, and America's supremacy in electrochemical industries is universally recognized. The meat industry, in which \$175,000,000 are invested, offers unlimited possibilities in the chemical treatment of waste

Errand Boy to Chief Chemist

When I enrolled with the I. C. S. for a Complete Chemistry Course I was employed as errand boy, earning only \$19.50 a month. My Course with the Schools has benefited me very much from a practical point of view. Your Reference Library Volumes are so explicit that I find no difficulty in carrying out analyses and making the required solutions needed for the plant where I am at present employed. I had only a common-school education before my enrolment, therefore I give great credit to your Course, since I would be unable to carry out experiments and calculations without it. I am at present chief chemist of the Oakland plant for the DuPont Powder Company, earning a salary of \$125 a month.

BERNHART TROXLER,
Oakland, N. J.

A testimonial for the International Correspondence School Course in Chemistry. Circa 1912. Some of the laboratory personnel encountered by Samter probably followed this route into chemistry.

products. An important industry, almost unknown in Germany, is the preparation of cereal "breakfast foods."

There are opportunities for employment outside of factories. Governmental and municipal bureaus for analysis and research are certain to be multiplied in response to the awakening of public opinion by recent disclosures. Agricultural stations and laboratories connected with boards of health, which do many things left to private initiative in Germany, are already numerous.

In discussing the social and business rank of the chemist, which he finds lower here than in Germany, Samter says that we have little respect for scientific attainments. "Success" and "results" are mottos of American life. "Successful businessman" is a title of honor which assures its bearer general admiration and makes him eligible for the highest offices. Some of these idols have recently been thrown from their pedestals, and the American people are probably acquiring a better notion of greatness.

Some German chemists have been convinced by experience that chemists are regarded as common workmen in America. One, who has engaged to devise improvements in silvering mirrors, was put under a foreman and received weekly pay and a time card. In many factories chemists and ordinary workmen have the same hours. Samter fared better because his employer was a graduate of a technical school, but he resigned his position on account of continual friction

with the manager, an energetic and intelligent but uneducated man, who, after working successively as shop boy, factory hand, and foreman, had been promoted to his responsible post over the heads of the chemists. Samter heard of many similar cases. He ascribes them to the very high value put upon administrative talents, especially the ability to increase the output, largely because of the high price of labor and its poor quality, most of the workers in Eastern factories being Italian and other immigrants.

He found the condition of the working classes not quite as favorable as he had expected. He quotes the following daily wages in Eastern manufacturing districts: laborers, \$1.25 to \$1.50; non-union mechanics, \$2.50 to \$3.33; union mechanics, \$4.00 and over. The workman is more independent and more prosperous here than in Europe, but he enjoys less protection against accident and less benefit from benevolence. If injured at work, he can obtain damages only by proving the negligence of his employer by means of a long and costly lawsuit. Hence he usually compromises for a small sum. Samter cannot understand why American workmen do not exert their great influence on law makers to improve these conditions.

He concludes with the diverting story of a sulphuric acid manufacturer who visited a tannery to investigate a complaint about the strength of the acid he had furnished, and asked the manager to produce the aerometer for comparison with his own. The tanner, who had never heard of an aerometer, bared his left arm and said: "See those blisters? They were raised by the old strong acid. Your acid is so weak that it only makes red marks like this." *Scientific American*, 1907, 97, 203.

Regrettably the anonymous reporter who summarized Samter's talk failed to give Samter's first name. Readers interested in learning more about the trials and tribulations of early industrial chemists should consult Edward H. Beardsley, "The Rise of the American Chemical Profession, 1850-1900", University of Florida, Gainesville, FL, 1964 and Otto Eisenschiml, "Without Fame: The Romance of a Profession", Alliance, New York, NY, 1942.

CHEMICAL ARTIFACTS

The University of New Hampshire

When Charles Lathrop Parsons resigned as Professor and Head of Chemistry at New Hampshire State College in 1911 to become chief mineral chemist at the U.S. Bureau of Mines in Washington, he was succeeded by his colleague Charles James. James, a student of William Ramsay at University College, London, continued to head the



Charles Lathrop Parsons

Chemistry Department at Durham from 1912 until his untimely death in 1928. During James' period at New Hampshire, research on the chemistry of rare earths was actively pursued. Under his tutelage, B.S. and M.S. students purified salts of many of the rare earths by laborious fractionation procedures, some of which had been worked out by James. The raw materials came from James' personal collection of rare earth ores and minerals, said to be the most extensive in existence at that time.



Charles James