



PITTSBURGH SECTION
AMERICAN CHEMICAL SOCIETY
Golden Anniversary, 1903-1953





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50 YEARS OF CHAIRMEN
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ORGANIZATION

PITTSBURGH SECTION AMERICAN CHEMICAL SOCIETY

Golden Anniversary, 1903-1953

This record, in word and picture, of the evolution of the Section from its founding to the present day, is an official part of the commemoration of the first 50 years of the Pittsburgh Section of the American Chemical Society. It is still another service of a member who has served the Section in many ways in the past half century, Chester G. Fisher, chairman of the board of the company that bears his name.

The Executive Committee also wishes, at this time, to add to the public understanding of the role of research in American institutions, and to recognize outstanding achievements in the Pittsburgh area in all branches of science. These two additional aims will furnish the subjects for afternoon and evening programs, September 17, 1953, under the direction of a special committee headed by John C. Warner, president, Carnegie Institute of Technology.

Our thanks go out to these men, and to all our fellow workers, in this Golden Anniversary Year.

—THE EXECUTIVE COMMITTEE
1952-1953

FROM CARBON TO CARBON-14

[A History of the Pittsburgh Section
American Chemical Society]

By CHESTER G. FISHER

MEMBER, 1908—PAST CHAIRMAN AND COUNCILOR
PITTSBURGH AWARD, 1947

IT ALL BEGAN with those strange clouds of smoke over the little settlement at the head of the Ohio almost 200 years ago. Travelers heading West found them strange enough to note in their journals, those clouds of coal smoke in a country where the only common fuel still was wood.

Who could know that those coal fields were the Pittsburgh Seam that underlies parts of four states, the most valuable single mineral deposit in the world? But because it was the City of Coal, Pittsburgh could become the City of Iron . . . of Steel . . . and subsequently the world center of Analytical Chemistry.

Today, the era of mining, metallurgical and chemical activity ushered in with those clouds of smoke has yielded place to a new era, one ushered in with another cloud of smoke, this time over Alamogordo. The Pittsburgh Section of the American Chemical Society spans the years between the two eras, between carbon and carbon-14.

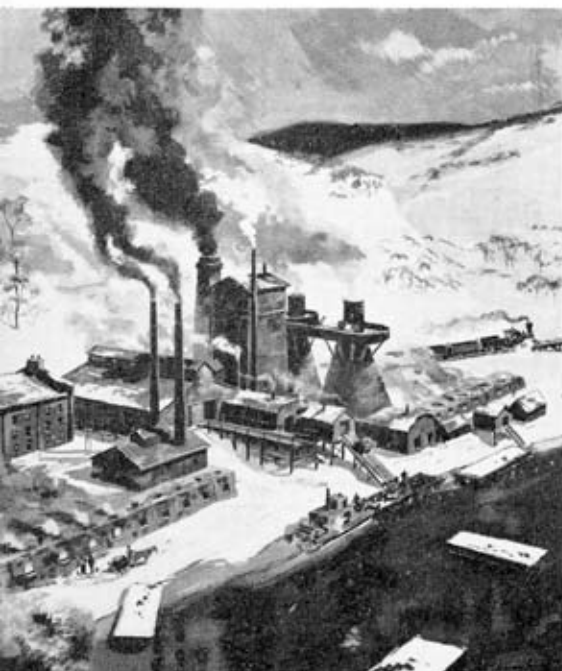
In its early days the Section was the after-hours forum in which the

pioneer mill chemists swapped shop-talk and evolved the analytical methods later to be adopted throughout the world. The "Carbon, Sulphur & Silicon Section," we called it then.

Soon, the Section became a gadfly in civic affairs, bringing pure drinking water to the city, driving home the need for recognizing the professional status of that little-understood creature called the chemist.

Finally, with the dawn of the Atomic Age, and the chemist suddenly thrust into the role of spokesman and arbiter, the Section became at times almost a civic forum, bringing in the best of the nation's researchers to give the area first-hand insights into contemporary science. It carried the word to the high schools by radio and—in a unique departure—by personal visit as the problem of technically-trained manpower became more urgent in the cold war than that succeeded the hot one.

Today, with the Section entering its second half century of service, a brief look at where it's been might not be amiss in throwing light on where it's going . . .



WHEN STEEL CAME TO TOWN (here are the homely little Eliza Blast Furnaces, circa 1861), steel chemists weren't far behind. Their first professional group was the Engineers Society.

P. C. & P. S. — A Forerunner

The Pittsburgh Section was the seventeenth of the 139 that now comprise the world's largest scientific body. But Pittsburgh chemists can be equally proud of that forerunner of the Section, the quaint Pittsburgh Chemical & Physiological Society, re-discovered in 1916 by the indefatigable Irishman who was *THE CRUCIBLE*'s first editor, John O'Connor, Jr.

This pioneer organization of Pittsburgh chemists, formed down on Market Street in 1813 when Pittsburgh was a frontier borough of 7000, was one of the first *three* in America, preceded only by Philadelphia's Chemical Society, that James Woodhouse started in 1792, and Columbian Society, founded in 1811.

Pittsburgh's first society grew out of the well-attended lectures of Dr. Christian Aigster, "physician and chymist" residing "in the Diamond." He packed 'em in three days a week,

Dr. Aigster did, in "the Laboratory" of the red-brick Pittsburgh Academy (which later evolved, through several turns, into the University of Pittsburgh), corner of Smithfield and Second.

The subject of Aigster's lectures: "the appplication of Chemical Knowledge in private & social Life" (including agriculture, brewing, clothmaking, glassmaking, mining, papermaking, tanning—and even cookery).

The Society had to disband when many of the group's chemists began to be busy with the laboratory they opened for manufacturing "lead, alcohol, ether, sweet spirits of nitre, aqua fortis, muriatic acid, red precipitate and calomel." At any rate, chemical industry—of sorts—had been established in Pittsburgh.

Then Came Steel

It was the rise of the steel industry that really attracted professional chemists to the area; a landmark was the first steel laboratory established in 1875 in conjunction with the opening of the Edgar Thomson works by the Carnegie interests, with Dr. A. Julius Preusse as chief chemist. In the same year Professor John W. Langley (brother of aviation's Samuel P.) was appointed chemist at the Crescent Steel Company's Crucible works.

(In industries other than iron and steel, to be sure, the works managers still had little use for chemistry. Confronted by a chemical problem they relied first on rule-of-thumb; then on the shop foreman; and, as a final authority, the *bookkeeper*. Someone might do a monograph

some day on "The Bookkeeper in Industrial Chemistry.")

By 1880, Pittsburgh scientists were able to set up the Engineers Society of Western Pennsylvania, with a foundation broad enough to include chemists and everyone else interested in the natural sciences. Of the 450 members in 1892, 34 organized a chemical "section" with Langley as chairman.

It is noteworthy that at the very first meeting of this section, member James Otis Handy (later a Chairman of the Pittsburgh Section) talked about the determination of phosphorus in steel. Then and there he proposed "solution of the phosphomolybdate precipitate in sodium hydroxide and titration of the excess alkali," a method still found in steel laboratories.

The meetings, naturally enough, were devoted to metallurgical questions, especially the analysis of furnace products and raw materials. Pittsburgh chemists seemed to have

developed a special talent for cooking up accurate and rapid methods of analysis, and the methods discussed at the meetings were published in book form in 1899 with the no-bones-about-it title of "Methods for the Analysis of Ores, Pig Iron and Steel As Used by the Chemists of the Pittsburgh Region." A best-seller, too.

By now, however, the American Chemical Society, at first pretty much a New York City organization, was expanding nationally. When Pittsburgh was selected host to the Society in 1902, there were no fewer than 57 ACS members within 70 miles of the town; sentiment favoring a local organization strictly for chemists came to a head.

The Year Was 1903

Thus it was that on a snowy evening in February—the third—1903, 18 chemists got together in the rooms of the Southern Society at 1809 Fifth Avenue to draw up plans

THEY WERE "Daddy" and "Mother" Phillips to Pitt chemistry students and teachers from 1875 to 1915. When Francis Phillips sparkplugged formation of the Section, he taught Pitt's inorganic, organic, physical chemistry and gas-analysis classes; did research in natural gas. Below: the ACS Medal that arose from his lifelong championship of one Joseph Priestley.





SOUTH SIDE CHEMISTS got to meetings of the "Carbon, Sulphur & Silicon" Section in style.

for a Pittsburgh Section. Included were the dean of Pittsburgh chemists—the Western University of Pennsylvania's Dr. Francis Clifford Phillips—and a kid: Alexander Silverman, a rosy-cheeked Bachelor of Philosophy from the University, today still busy practicing chemistry in town.

The others: O. I. Affelder, L. L. Arnold, H. C. Beggs, G. M. Berry, J. M. Camp, P. H. Conradson, C. H. Davis, N. H. Finley, Abraham Gross, Philo Kemery, G. P. Maury, A. G. McKenna, H. E. Meyers, Robert Miller, G. B. Murray, C. H. Rich, H. E. Walters (who is still very much alive, and a loyal Pittsburgher), and F. J. Wilson.

February 3, 1903 . . . the news that night, as the Section's Founding Fathers traveled to the meeting, was that the Kaiser was preparing to send battleships to Venezuela. In Washington the Senate was in heated debate over the question of statehood for Oklahoma; in St. Petersburg the Russian Government prepared for war with Turkey. Eggs were 22 cents a dozen; coffee, seven cents a pound, and beef, six; men's quality shoes were \$1.52. Gay blades on Fifth Avenue were whistling such

hit tunes as "I Can't Do That Sum," "Under the Anheuser Bush," and "Hamlet Was A Melancholy Dane."

In chemistry the world had just seen the first work on X-rays, radioactivity and the general structure of the atom, and in Stockholm Svante August Arrhenius received the Nobel Prize for his theory of ionization . . .

That evening in 1903, temporary officers and a by-laws committee were elected and the group was invited to hold its future meetings at the house of the Engineers Society of Western Pennsylvania at 416 Penn Avenue, meetings to be held jointly with the chemical section of the Engineers Society, the two chairmen alternating. (The old chemical section did not finally disband until 1907 and the Engineers Society is still, of course, very much alive.)

At the first meeting, the by-laws were adopted. The group's area was fixed as "all members in Good Standing of the American Chemical Society residing within a radius of Seventy (70) miles of Pittsburgh, and in Blair County, Pa. [but] any member, in Good Standing, of the American Chemical Society, residing outside the above territory, may, upon application, become a member of this Section."

We were in business.

At once, Dr. Karl Friedrich Stahl (the German-born chemist who had brought over, inside an orange peel, a choice variety of Europe's finest yeasts—and so through the years could offer his Section friends some of Pittsburgh's finest wines) presented an important communication from the Society of Chemical Industry:

Would we entertain the distinguished foreign chemists and technologists who were coming over next year in connection with the St. Louis Exposition? We would.

The first of fifty years of papers was read by Harry Walters: "The Analysis of Bronzes and Bearing Metals." The meeting broke up after a barrage of questions and note-taking only because tomorrow was another day, and the men had to journey into the night, back to Wampum and Leetonia and Youngstown and Avalon—and East Liberty . . .

Trolley Cars, Gas Stoves, Typhoid

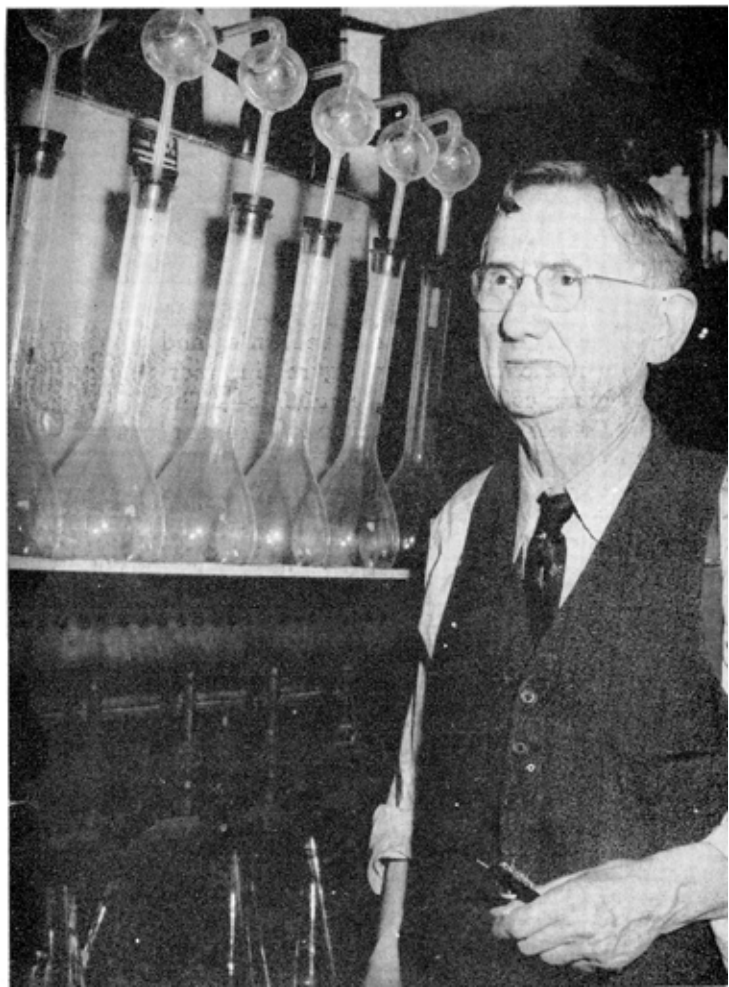
Membership mushroomed. Soon, there were 135 men and—horrors, or bravo!, depending on the commentator of that early day—one girl chemist (Miss Emma L. Stuart of 5448 Hay Street).

True, iron and steel still remained a major interest of the Pittsburgh Section. Historians of American tech-

nology would probably give a great deal to have a tape recording of that historic meeting in 1903 when Howard Hunter Craver, of the Pittsburgh Testing Laboratory, read a paper on the "Early Analysis of Iron," and then, hour after hour, members got up to give *their* early experiences too, the great names like Charles Morris Johnson, chief chemist of the Park Steel Company, who pioneered the determination of carbon in steel via combustion in the electric furnace, and Lincoln Foundry's Walters, who gave America the persulfate method for manganese in iron and steel.

But the Section's interests were broadening. In October, at its sixth regular meeting, Alexander Silverman made his first address: "Carbon

LAST DAY in the laboratory—July 1, 1950—for Charles Morris Johnson, who for 60 years was one of the steel world's great chemists. He gave the Section his pioneer methods for the control of alloys of steel (but is also proud of his cure for poison-ivy rash, hives).





THE MAN-ON-THE-STREET wouldn't believe what sand filters could do for drinking water, but on an Oakland lot our Handy showed 'em.

Dioxide in Allegheny Schools" and announced that a study of Pittsburgh street cars "would reveal some interesting figures, too." He was followed by Dr. Phillips on "The Gas Stove Considered from a Sanitary and Chemical Standpoint" and "The Chemical Status of Bread Making" by David Chidlow (so enthusiastically received, that he invited the whole Section, on the spot, to visit the Ward-Mackey Bakeries—which they did).

Via their Section, the information-hungry chemists roamed from the *earthly*—"The Art of Pottery Making" (by ceramics expert Harrison E. Ashley—then the Section's, and America's, leading figure in inorganic colloids) to the *sublime*—"The Ultimate Constitution of Matter" (by Washington and Jefferson's Dr. H. E. Wells). Chautauqua never had it so good.

One night, when less than a year old, the Section took up arms against the contaminated water supply that was giving Pittsburgh and the City of Allegheny (today Pittsburgh's North Side) the highest typhoid death rate in the civilized world.

For some years now, chemists had been spending their own money, their own time to alert the two cities

to the danger. It was our Handy, chief chemist of Pittsburgh Testing Laboratory, who suggested the radical measure of using Allegheny River sand to purify its own water.

("Imagine," the 1903 man-on-the-street was saying, "some danged fool says you take *dirty* sand from the bottom of the *dirty* river and squeeze *clean* water out of it!")

Handy wrote a series of articles for the press, lectured every spare moment, collected funds, and finally, in the vacant lot at the corner of Craig and Fifth in Oakland (where St. Paul's Cathedral now stands), he and some fellow chemists set up a miniature filtration plant. A year was spent running the river water through its own river sand, but they got bacteria-free water.

Hence the resolution that Dr. Phillips presented on November 19, 1903 before the Section:

"Whereas, the question of the purification of the water supply of Pittsburgh has been made the subject of a thorough investigation . . . conducted by experts of ability and experience, and . . .

Whereas, it is a matter of common knowledge that the community is suffering from a continuous epidemic of Typhoid fever, resulting from the use of polluted Drinking Water, be it therefore resolved

That it is the sense of the Pittsburgh Section of the American Chemical Society that the councils of the City of Pittsburgh give the matter immediate consideration with a view to the establishment of a system of *sand filters*!"

Twin resolutions were dispatched to the mayors and councils of the cities of Pittsburgh and Allegheny. And although, next moment, the versatile chemists switched over to a paper on "The Jellies of Pittsburgh" (delivered by, of all people, a chemist from the Union Spring Steel Company of New Kensington) they had made history.

The resolutions read that night led to the adoption of filtration by

the two cities, and, within four years, the entire water supply had become acceptable. Typhoid, needless to say, vanished.

It is only fitting that it should be a Section chemist who catalyzed still another revolutionary treatment of the water supply in the years ahead—fluoridation to prevent tooth decay—which got into motion as a research project when Aluminum Research Laboratories' Harry Van Osdall Churchill got interested in the determination of trace fluorides in water as an analytical problem. (A curious instance of *serendipity*, this, "the finding of that which is not sought . . .")

Lucius Allen's Big Bag

In those early days the Section was still a work-place, too. When members questioned the wide range in analyses published by cement scientists in a national journal, Lucius Allen of the Crescent Portland Cement Company opened up a big bag and passed around samples of cement.

Members took them home to try to get more concordant results and, next meeting, marched in clenching their notebooks.

It was in these early meetings, too, that Alexander Silverman gave his first paper on a subject on which he was to become an authority in the next half century, glass, and exhibited a number of exotic samples, while Joseph E. Babb, inventor of the Babb stopcock (and George Westinghouse's personal chemist), announced an improved portable gas analysis apparatus.

A precedent was started in 1905 with the arrival of the first out-of-town speaker, Charles S. Bradley of New York, dusty but undaunted, who spoke on industrial electrochemistry. He was the forerunner of the Nobel Prize winners and other inter-

national experts who would one day come before the Section. The Section still remained a shirtsleeves forum, however, and an address by the National Bureau of Standards' distinguished Dr. William Albert Noyes might be followed, next meeting, by a spirited discussion set off by Dr. Phillips' query: "How do I open a plugged cylinder of liquid chlorine?"

By now the Section was meeting hither and yon . . . once in the Fulton Building, Sixth Avenue and Duquesne Way; sometimes at the new Carnegie Technical Schools in Schenley Park; or the Central Turnverein (somewhat linguistically mis-located

SEEING'S supposed to be believing. Here is "Hank" Kohman in his pioneer baking-laboratory in the wooden Industrial Research Laboratory of the University of Pittsburgh. Below him, high-collared earnest researcher Edmund O. Rhodes.



at the corner of Thackeray and O'Hara Streets); or Thaw Hall; or even the Colonial Annex Hotel.

The moving started when a secretary of the Engineers Society one night refused to allow the meeting of the Section to proceed unless an officer of the old chemical section was in the chair . . . and there wasn't an officer in the house.

Some of the chemists wanted to meet with the Engineers Society directors and appeal the secretary's unilateral decision; others said absolutely no overtures. It's characteristic of the early Section that the tempestuous meeting was restored to order only when chemist Harry Walters called attention to a new method for the separation of tin and antimony based on the precipitation of tin as phosphate. (*What did a roof over your head matter as long as you could hear news like that?*)

The dispute was amicably settled, and for the rest of 1907, meetings were held with the chairman of

either group present. Thereafter, the Section met at the other places mentioned until it found its final home in the new Mellon Institute's auditorium (it was to provide a meeting-place for the Pittsburgh Section, which could also be used by others, that the planners of the new building included the large auditorium with its own entrance on Bellefield Avenue).

If the Gentleman Doesn't Object

In 1908 the Section decided to become more financially robust (the parent Society was then undergoing the financial strains of the *Journal* and of *Chemical Abstracts*). It decided to advertise itself more effectively by printing "the name and occupation of the speaker together with any interesting facts concerning the nature of his paper (providing the gentleman has no objection) in the cards announcing the regular meetings of the Society." **THE CRUCIBLE** (if you grant ten years) was on its way!

An Entertainment Committee reared its head, too, and soon the chemists were having their first informal dinners together at the German Club, 222 Craft Avenue—five full courses for \$1.00—then walking en masse through Schenley Park to the Carnegie Technical Schools to hear the evening's address. Chemistry under the elms, you might say.

They'd hear a brilliant chemical engineer from way down East, Dr. Arthur D. Little, tell about "The Opportunity of the Division of Industrial Chemists and Chemical Engineers," or Mr. Earl Blough, chief chemist of the Aluminum Company of America that Section members George Hubbard Clapp and Captain



PRE-WORLD-WAR-I glimpse of Pittsburgh's first aluminum skyscraper was given us by Earl B.