"YES, INDEED," muses Alexander Silverman, chairman of the Section's design committee. Handsome symbolistic plaque (right) by Sculptress Lois Whitcomb Rhead and Designer Frederick Fisher Florig won first prize. Cast into bronze, it became region's top honor in chemistry.

The First Pittsburgh Award

"Recognizing its leadership in chemical affairs in the community, the Pittsburgh Section of the American Chemical Society herewith establishes the presentation of the Pittsburgh Award. This Award symbolizes the honor and appreciation accorded to those who have rendered distinguished service to chemistry in this area."

The year: 1933. The recipient: Dr. Hall, the Bureau of Mines chemist who became the world's foremost authority on industrial and domestic water-conditioning simply by shaking his head when the experts of 1922 solemnly proclaimed that boiler scale was formed by sludge baking into the boiler surfaces.

Instead, Hall started the first *laboratory* investigation to find out how and why scale actually did form. His "calgon" (vitreous calcium phosphate) was to be named "chemical of the year."

1933 saw three internationally famous German scientists in the Section as they joined the staff of Carnegie Tech: Professor Otto Stern, pupil of Einstein, who developed the use of molecular beams in elucidating atomic structures; his assistant, Professor I. Estermann; and the fuels expert Ernst Berl. Of this last, it was said that "new information drops in floods from simply knowing him" and ACS members would frequently call on him after his day's work.

In 1934 the Pittsburgh Award went to Charles Edward Nesbitt, chief chemist of the Edgar Thomson works of Carnegie Steel, "who utilized his knowledge of the chemistry of iron and steel to formulate and standardize laboratory procedures for the entire industry."

This pioneer in the application of spectral analysis to steel laboratories shepherded the finances of the Section from the lean days of 1915 until 1933, when the books of the Section (if not of the nation) were safely in the black.

His efforts, like those of R. W. Bridges, who served as secretary from 1931 until his death in 1946, and the CRUCIBLE's pappa, John O'Connor, show the strange attachment that men were to feel for the Section.

PITTSBURGH AWARD

[1933-1942]

1933
RALPH E. HALL

1934
CHARLES E. NESBITT

1936
ANDREW W. MELLON

1936
RICHARD B. MELLON

1937
FRANCIS C. FRARY

1938
GEORGE H. CLAPP

1939
EDWARD R. WEIDLEIN

1940
ALEXANDER SILVERMAN

1941
WEBSTER N. JONES

1942
CHARLES G. KING

PITTSBURGH AWARD

[1943-1952]

1943
JUNIUS D. EDWARDS

1944
LEONARD H. CRETCHER

1945
JOHN C. WARNER

1946
WILLIAM P. YANT

1947
CHESTER G. FISHER

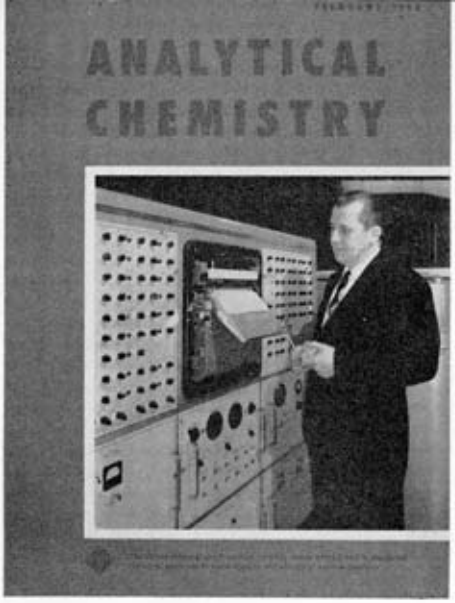
1948
HENRY H. STORCH

1949
HARRY V. CHURCHILL

1950
WILLIAM A. HAMOR

1951
WILLIAM A. GRUSE

1952
HOMER H. LOWRY



COVER BOY—one of Analytical's first picture covers featured J. R. Churchill, "one of the leaders of the new analytical revolution," famous son of a famous father. Other second-generation Sectioneers: Gilbert Thiessen, son of Reinhardt, who was a world authority on coal; Philip Maury McKenna, son of the Section's first chairman, Alexander G.; and Edward Weidlein, Jr.

In May of 1935 the Section trooped over to the Carnegie Tech Drama School to see that controversial drama "Liliom" (on which the Rodgers and Hammerstein musical "Carousel" was later to be based). THE CRUCIBLE noted with dignity (this was before the advent of *The Grapes of Wrath* and *From Here to Eternity*): "The presentation was expurgated, and hence the careless and wholly unnecessary indecencies of language and gesture were gone . . ."

In December of that year, 250 chemists turned out in a wintry blast to hear the Bureau of Standards' Dr. G. E. F. Lundell speak on the importance of the analytical chemist ("He must now be prepared to handle almost every element in the periodic system . . . the old cherished methods of separation are often painfully inadequate . . .")

Thirteen years later, the Section would found an annual symposium that would draw analysts to Pittsburgh from all over America and even abroad.

In Division There Is Strength

By 1936 the Section had grown in size far beyond its founders' original hopes . . . and to recapture some of the early work-a-day sessions for members in the same fields, it sanctioned the first formation of Divisions: "A", Analytical and Industrial; "B", Biological and Organic (at whose first meeting Dr. George D. Beal made an important attack on the bugaboos and misinformation regarding aluminum and food); "C", Physical and Inorganic; and, a few years later, "D", Chemical Education.

From September 7 to 11, 1936, the American Chemical Society again came to town, in what, the Section was later informed, "was one of the most successful meetings held." At least part of the average delegate's time must have been consumed reading the magnificent 108-page issue of THE CRUCIBLE awaiting them, in which a chemist from each characteristic industry in the area turned historian for the day and pictured his plant's work.

An unforgettable amalgam of significant technological events and the warm homey friendliness peculiar to the Pittsburgh Section was this national meeting. Here Thomas Midgeley, with a roar and a bang, demonstrated how something called "tetraethyllead" would eliminate the knock in an automobile engine, and 2500 chemists sat down to dinner on the lawn of Carnegie Tech, after which they watched a Tech Drama Department three-acter under the stars.

1936 saw, too, the unanimous decision to confer the year's Pittsburgh Award on Andrew Mellon and his brother, the late Richard Mellon,

founders and patrons of the "guild of scientists" that bears their name.

Within a year, another distinguished body of chemists had descended on Oakland for the dedication of the newly completed institute, and Section members heard three Nobel laureates: General Electric's Dr. Irving Langmuir (chemistry, 1932); Columbia's Dr. Harold C. Urey, co-discoverer of heavy hydrogen (chemistry, 1934); and Dr. William P. Murphy (medicine, 1934); as well as Sir Frederick Banting (who spoke on "Early Work in Insulin"); M.I.T.'s Dr. Karl Compton; and Bell's Dr. Frank B. Jewett.

In 1937 the Pittsburgh Award went to Dr. Francis Cowles Frary, director of research at the Aluminum Company of America, "for adding greatly to the prestige of Pittsburgh not only as a metal-working center but as a center for metallurgical research."

One of the joint inventors of Frary metal (the widely used lead-bearing alloy), he perfected the process for making phosgene used at Edgewood Arsenal during and since the war, and helped design the largest phosgene plant in the world, which was solemnly guarded by a volunteer Buck Private H. V. Churchill—who was immediately drafted for *laboratory* work when Frary ran across him (making Churchill his country's sole enlistee-draftee). It was Frary, too, who helped put the production of pure aluminum (99.98+%) from bauxite by electrothermal methods on a large-scale, commercial basis.

Another pioneer Pittsburgh chemist, an outstanding philanthropist and humanitarian, was to receive the Section's highest recognition a year later: George Hubbard Clapp, the young chemist with the Black Diamond Steel Works who joined with a laboratory colleague, metallurgist Captain Alfred Hunt, to form what became the Aluminum Company of America . . .

Incidentally, some latter-day metallurgical pioneering was taking place at this time in little Latrobe, although it was not until the summer of 1939 that the nation first learned about Rare Metallurgist Phillip Mowry McKenna's new material.

With 20 men he was turning out each month some 40 to 50 pounds of the hardest artificial substance ever made—harder than sapphire, only a few degrees softer than diamond. It seems that the 42-year old Section member, after 5000 or so experiments, discovered that the molecules in tungsten, titanium and carbon, when heated to 4000° F with nickel and a solvent, arrange themselves in a near-diamond-hard lattice.

Chamberlain had promised us peace in our time, but orders for the new "Kennametal" were piling in from the armament makers in England and America, who saw the handwriting on the Berchtesgaden wall.

As if to show that the chemical world recognizes none of the bounds of the political one, September 25-30,

"A CHEMIST'S DESK"

AN ART-CHEMIST of the Section captures one of the group's intangibles: the ability to take chemists out of their special fields, let them compare notes with men in the other fields.

1939 saw Section members and research leaders from Great Britain, France, Belgium, Germany and Poland sitting together at 4800 Forbes Street in the Bureau of Mines building, for the Fifth International Conference on Mine Safety Research. This most important of groups concerned with the safety of the world's miners stemmed from the efforts of the Section's Joseph A. Holmes, first director of the Bureau of Mines, who arranged for an international conference on coal-mine safety research at the Central Experiment Station in Pittsburgh in 1912.

In 1939, too, the Section honored with the Pittsburgh Award, Edward Ray Weidlein, Director of Mellon Institute, for his distinguished services to applied chemistry, to the chemical profession and to the American Chemical Society, which he had served as President in 1937. By 1935 alone, 10 new industries had been born as the result of research at the Institute he guided.

As if realizing that this was their last moment of relaxation before war duties became their daily lot, the Section's chemists enjoyed a Christmas Party, the highlight of which was a critical revision of the famous "Schnitzelbank" song by Dr. H. S. Olcott and Dr. W. J. Remington of Mellon Institute, "since no existing version had attained the scientific precision characteristic of the chemist's work." Their version is reproduced in the present history; as they pointed out, "Those who are familiar with the Schnitzelbank in various forms will note here several recently identified isotopes . . ."

Still, on the brink of another world catastrophe, the chemists were a sober lot; the featured beverage was a preview batch of Canada Dry's new formulation, "Spur."

The Pittsburgh Award that year went to Alexander Silverman, 35-year member of the Chemistry Department at the University of Pittsburgh, under whose leadership the department grew from 100 students to 1500; from three teachers to 30. Of him, it was to be said 11 years later, on being made Honorary Member of the American Institute of Chemists, that he "promoted a better understanding of applied chemistry by lecture, by precept, and by unselfish service to the chemistry profession . . ."

Another Pittsburgh school was honored when the 1941 Pittsburgh Award went to Webster N. Jones, director of the College of Engineering of Carnegie Institute of Technology. A great teacher, a great administrator, he had been the chemical expert of World War I's War Trade Board, had conducted research on Lewisite and, later, had helped produce the "age-resisters" which have since protected millions of tons of rubber products. "Guiding father to all the rubber chemists in America," he has been called, a formidable title, but accurate.

The Squadrons

In September, 1942, gas was again in Pittsburgh chemical news, with 135 county chemists forming a Gas Protection Division — just in case. Head of the Gas Identification Squadron: Dr. O. F. Hedenburg, of Mellon Institute. His job would be to identify the gas samples taken to his laboratory by the Gas Detection Squadron under George Jones of the Bureau of Mines. Dr. John C. Warner of Carnegie Tech, head of the Gas Decontamination Squadron, would then clean up the mess.

HIER IST ES, the one and only scientific version of the "Schnitzelbank," a sort of by-product of Pittsburgh chemistry. ◊ ◊ ◊

IST Das nicht eine

Schnitzel Bank?

"Ja das ist eine Schnitzel Bank"

Blaselampe

Wasser bad

Stirring Rod

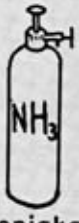
°C.

Centigrade

Flasche Gefunkt

Schmelzenpunkt

Becher Glas



Ammoniakgas

Haufen Mist

Böse Gift

Benzene Ring

Gefährliches Ding

THIS HANDSOME BOOKPLATE adorns countless reference books at Carnegie, symbolizes a memorable chapter in the history of the Section.

Lights burned late in Oakland as the chemistry departments at the University of Pittsburgh and Carnegie Tech announced tuition-free evening courses to train individuals for war industries . . . metallurgical analysis in steel works laboratories, microscopic testing of industrial materials, testing and control of foods...

To a former Pitt teaching assistant in chemistry went the 1942 Pittsburgh Award, Charles Glen King, in recognition of his outstanding service to chemistry through his scientific researches in biochemistry and nutrition, and for his extension of these services as an exceptional teacher and organizer.

Charles King probably wore out more shoe leather than any other member in the Section's history. The very sensitive, unstable vitamin preparations that protected guinea pigs from scurvy had to be stored in the same small icebox that serviced senior classes on the fourth floor of Thaw Hall. The guinea pigs, which required meticulous care each day during the continuous 10-week tests, were housed in a small room sandwiched between two freshman labs on top of the hill, above Pitt Stadium. Directions for reaching the animal room were "Four floors down, then a half mile up and a half mile over . . ."

Behind the scenes at Mellon, work went on diligently, quietly . . . with just about the first notice coming from *Time* magazine, March 29, 1943, which reported Dr. McGregor's work in developing silicone resins . . . and Dr. Wakeman's development of a leatherlike material expected to stand up 25 years without stretching even when flexed 900 times an hour.

In mid-1943 a letter came to the already overburdened Section from the national secretary: "Fall meeting awarded to Pittsburgh."

As ACS President Dr. Per K. Frolich explained, on the basis of chemistry's part in the war effort this meeting was fully justified as it would be a forum for vital topics (food, rubber, coal, petroleum, steel, technical manpower), a chance for progress reports and information pooling.

Although all of the Section members were then busy on vital projects of their own, they buckled down as hosts, and the final registration, 3,537, added up to the largest chemical meeting ever held in the city. For the occasion, the entire offices of Fisher Scientific Company were overnight converted into an art gallery, with several hundred alchemical and historical paintings and engravings, depicting the sweep of chemistry from China's Wei Po-yang (142 A.D.), and his gold elixir, to Britain's Alexander Fleming, and *his* gold elixir, on display for the city's visitors.

The Pittsburgh Award that year went to Junius David Edwards, assistant director of Aluminum Research Laboratories, "in recognition of his fundamental contributions in the fields of gas chemistry, the metallurgy of aluminum and aluminum paint, and the practical application of these developments for the betterment of mankind through his activities as inventor, author, editor."

Battle of the Books

By now Pittsburgh was in the midst of the most tremendous efforts its analytical chemists were to know, running tests on $19,000,000,000 worth of munitions as their plants switched from baked beans to bombers, corsets to parachutes, baby carriages to gun stocks . . .

War was beginning to tell on the Technology Department of Carnegie Library; in the first six months of 1944 alone Pittsburgh industry had called upon it for 5000 photostats of technical literature. And despite the enormously increased cost of technical publications, the Department's allotment for reference books, instead of being increased, had just been cut by the City to *one third* of what it had been. At once the Section took up the challenge . . . and thereby hangs a rescue . . .

The Technology Department, you see, had been the first of its kind in any public library anywhere, starting 53 years ago when the Carnegie Library added a *chemist* to build up a reference library that could answer the questions those steel laboratories were bringing in day and night (the Department's still on an 82-hour week). He was the Section's Harrison Warwick Craver, who thus became the first technical librarian in America.

As a matter of record, the Pittsburgh Section, the city's first advocate of a strong technical collection, has had a Library Committee since 1921. At that time its chairman, Dr. Handy, made an earnest effort to

ON BEHALF OF THE SECTION, J. Paul Fugassi (right) presents a scroll to E. H. McClelland, who added over 100,000 books to the Technology Library in his 44 years, compiled 60 important scientific bibliographies (including the famous one on "Smoke Control")—and named THE CRUCIBLE'S notorious "Under the Hood."

induce city council to appropriate $5000 a year *specifically* for the Technology Department. But the Year 1921 HCL (High Cost of Living) was not a good year for increased appropriations. So, the committee raised over half this amount *itself* through personal contributions from members of the Section, turning over some $2600 to the Library.

With the Section's helping hand, the Technology Department got along fairly well. Then came the war—and the crisis.

So, in the summer of 1944, Gilbert Thiessen, chairman of the Section's Library Committee, began the campaign. C. G. Fisher, chairman of the fund sub-committee, published a pamphlet explaining the need, then phoned and wrote every industry in the area. The Department needed a fund of $50,000; the Section raised $70,000.

As *C. & E. News* pointed out in a two-page spread on the unprecedented event:

"The fund is in no way restricted to chemical literature; it enables the Technology Department to regain and improve upon its former service in the entire field of pure and applied science. Since the fund operates in this comprehensive field, it is noteworthy that the progressive group which recognized the need and acted was the *chemical profession* through its local organization."

Wrote Carnegie Institute president William Frew:

"You have enabled the Technology Department to subscribe to nearly 300 new technical journals; *several thousand* English translations of Russian and German articles . . . All this could never have been achieved . . . The Board of Trustees is grateful to every member of the Pittsburgh Section . . ."

That fund was to last the Department through the most strenuous years in its history. In 1953, with the fund depleted, a Section committee was once again in action—this time with the most ambitious plan of all: to collect an endowment of sufficient size that its income would put the Technology Department's funds on a *permanent* basis.

In 1944 the Pittsburgh Award went to Mellon Institute's Leonard Harrison Cretcher, a standardbearer in the agelong war against human suffering and disease, a most noteworthy contributor to the chemotherapy of pneumonia.

In the fall of 1945, the Society of Analytical Chemists of Pittsburgh met and unanimously voted to accept the invitation of the Section to become the nucleus of its Analytical Division. This unprecedented move in the history of American technical societies was part of a Section plan to enlist the active participation of the largest possible number of chemists in the affairs of the American Chemical Society. The Society of Analytical Chemists served as a "pilot plant" to show that small *autonomous* groups of specialists could function—and function best—inside a larger, more general society.

Ruled the Section's Executive Committee:

"Members of the Section interested in any specialized field of chemistry may, with approval of the Executive Committee, organize as a Division of the Section . . ."

Response was enthusiastic. Soon some 600 Section chemists signed up for seven Divisions—Analytical Chemistry, Biochemistry, Chemical Education, Coal Technology, Organic Chemistry, Physical Chemistry and Polymer Chemistry. Each had its own membership lists, own elected officers, own rules; more important, each had its own meeting nights that would permit full freedom for the Division's specialized work. (In the rather amorphous A, B, C, D, group-

TODAY'S URGENT NEED for recruiting scientific personnel was anticipated by the Section. Its Pittsburgh Chemistry Award to high school students is only one of a half dozen different youth programs simultaneously conducted by the Section via high school contests, personal visits, Meetings-in-Miniature, Affiliate conclaves, radio.

ings of 1936, only three or four meetings a year were held, crammed into the hour before or after the main Section meeting.)

The national Society watched this innovation with lively interest, reporting it "for the edification of the other large Sections similarly faced with memberships of diverse scientific interests."

U^{235}: Members Only

On December 10, 1945 the Section held a Special Joint Meeting with the other leading societies of the area in the ballroom of the William Penn—the first meeting ever restricted to "Members Only." The reason: Dr. John R. Dunning was speaking candidly on atomic energy, the first in a continuing series of programs by the Section on the chief chemical concern of the day.

They were to hear, later, California's Glenn Seaborg on the future possibilities of radioactive tracers... Rochester's Harold Hodge on the toxicity of uranium and its compounds . . . Westinghouse Research's J. K. Stanley on the use of radioisotopes in chemistry and metallurgy . . . and California's Melvin Calvin on carbon-14 in photosynthesis.

Part of Pittsburgh's intimate connection with the atomic bomb was brought out at the presentation of the 1945 Pittsburgh Award to Dr. Warner, who had been granted a two-year leave from Carnegie Institute of Technology, where he headed the Department of Chemistry, to coordinate research in the chemistry, purification and metallurgy of plutonium at the top-secret laboratories of the University of California, University of Chicago, Iowa State College, M.I.T., Los Alamos and, later, Clinton Laboratories at Oak Ridge. (When, five years later, the trustees of Carnegie Tech looked for the best man to head that institution, they selected the Section's J. C. Warner, and all of us who knew him well were sure that things at Tech were "going to be Jake.")

A former Pittsburgh Award winner was honored in 1945, too. Dr. Frary, the Section's councilor, and Award winner in 1937, received the Perkin Medal for outstanding accomplishments in industrial research —the second Alcoa scientist to be thus honored (in 1911, Charles Martin Hall was honored for his development of the modern process of aluminum—an occasion when sev-

eral of his Section friends spent a frantic hour before the dinner trying to find some "tails" for the busy inventor, who had let the matter slip his mind).

In the spring of 1946, Section members were joining an Association of Pittsburgh Scientists "to consider and act on the social and political implications of the new scientific developments." With the Council of Churches of Allegheny County, they sponsored a highly-lauded Conference on Problems of the Atomic Age.

The Pittsburgh Award for 1946 went to Dr. William P. Yant, director of research at Mine Safety Appliances, for his studies of carbon monoxide poisoning and development of ventilation for vehicular tunnels (now standard throughout the world). With the "sea around us" of increasing interest, thanks to Pennsylvania College for Women's Rachel Carson, it is fitting that it was Pittsburgher Yant who introduced helium-oxygen mixtures for deep-sea diving.

The Younger Set

In May, 1946, the Section held its first Student Award night, with prizes for the three best essays on a selected subject in chemistry and a fourth to the student having the best chemical exhibit at the Annual School Science Fair sponsored jointly by Buhl Planetarium and the *Pittsburgh Press* Junior Science Clubs (as many as 1200 contestants from 124 schools compete). As the Section had foreseen, its young awardees were all targets of scholarship offers from the area's colleges and universities and today many of them are studying chemistry and engineering and industrial design in graduate school.

In September 1947, when the *Chemical Bulletin* of the Chicago Section asked its readers to send in answers to the question, "In my opinion, the 10 ablest chemists or chemical engineers now working in the United States in the above fields are . . . ," Pittsburgh Section chemists found themselves among the top men throughout the survey. The list included:

Analytical & Micro: H. V. Churchill, Chief Chemist, Aluminum Research Laboratories.

Fats, Oils & Soaps: H. E. Longenecker, Dean of Graduate School, University of Pittsburgh.

Gas & Fuels: H. H. Lowry, Director, Coal Research Laboratory, Carnegie Institute of Technology; A. R. Powell, Associate Director of Research, Koppers Company; H. H. Storch, U. S. Bureau of Mines.

Industrial & Engineering: Francis C. Frary, Director of Research, Aluminum Research Laboratories.

Water, Sewage & Sanitation: Gladys Swope, Chief Chemist, Allegheny Sanitary Authority.

In May, 1948, many members of the Section went out to Bruceton to the dedication of the new U. S. Bureau of Mines Synthetic Fuels Laboratories and Pilot Plant for development of liquid fuels from coal . . . and the "Disco" (smoke-less fuel) Low-Temperature Carbonization Plant near Imperial.

The press suddenly became *coal-conscious* and took a good look at these developments, and at the Bituminous Coal Research, Inc., a major supporter of fundamental research in coal gasification, combustion, and direct production of chemicals from coal; the Coal Research Laboratory at Carnegie Tech; and the laboratories of Pittsburgh Coke & Chemical's research program.

"Pittsburgh coal chemists are guaranteeing for the future an adequate supply of vital products and byproducts . . . for the mass production of low priced medicinal chemical bases . . . and ingredients for paint and varnish industries . . . plastics industries . . . wood preserving . . . all of

A TALE OF TWO YOUTHS—As the Section's Herbert Longenecker awards a Somerset High School junior a check for his home-made spectrophotometer (with ACS President Noyes looking on), the national Society's Charles Parsons awards another young scientist, Max Lauffer, its somewhat larger prize for his study of influenza viruses (the Eli Lilly Award for a young scientist). There's a parallel here.

which depend on coal derivatives for their very existence."

In June, Howard Hunter Craver (librarian H.W.'s brother) died at 72. For more than a quarter century (1922-1948) he had had a large part in the production and editing of THE CRUCIBLE; at meetings in recent years one would always hear "Isn't Craver coming?" and there was always regret at his absence (which was usually to take care of his mother, who survived him at the age of 99).

In September, our Dr. Weidlein was awarded the Priestley Medal by the American Chemical Society for distinguished service to chemistry. Sir Lawrence Bragg came from Cambridge, England to visit Pittsburgh, and the Section, in cooperation with the University of Pittsburgh, presented the eminent scientist in a lecture on the "Laws of Plastic Flow." Naturally enough, it set the all-time attendance record for technical lectures in Mellon Auditorium.

The 1948 Pittsburgh Award went to the Bureau of Mines' Henry H. Storch for his work on coal hydrogenation and the Fisher-Tropsch synthesis as well as his development work on improved methods of synthesizing liquid fuels. H.H. was a pioneer in the utilization of coal as a chemical raw material for the production of liquid fuels.

A Speaker in the House?

Due to "the scientist's increasing important role in virtually all phases of modern life," the Section established, in March of 1949, a Speaker's Bureau, with E. M. Kipp as Chairman. Soon, no fewer than 98 chemists and 257 topics that Section members could present to the public were registered with the Bureau!

The Section's active "youth program" reached a high point in May, 1949, when it brought together the young high school students who had