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Mellon Institute

RESearch PROCEEDINGS OF MELLON INSTITUTE, 1951-52, the annual report of the president, Edward R. Weidlein, to the board of trustees, describes the activities of the institute during the fiscal year ended February 29, 1952.

The institute is a nonprofit organization. During the year expenditures for pure and applied scientific investigation, all of which is long-range in scope, amounted to \$3,835,314. Of this sum \$727,654 was spent for supporting research programs in pure science on nine fellowships and in the departments of chemical physics, physical chemistry, physical measurements, instrumentation, and organic chemistry. Altogether 117 members of the institute were engaged in various pure science research projects. The applied science investigations have been conducted by 77 other fellowships employing 441 specialists and their aides. One of the fellowships is 40 years old; five are 35 years old; two, 30 years; nine, 20 years; sixteen, 15 years; and thirteen, 10 years. The institute's servicing staff numbers 162 supplemental members.

In 1951 there came from departments and fellowships of the institute 16 bulletins, 67 research papers, 65 other scientific articles, and 52 U. S. patents. *Air Repair*, *Industrial Hygiene Digest*, and *Nutritional Observatory* are periodicals edited by fellows. Traditionally, Mellon Institute is both a national and a local science center, being the meeting place of many professional societies. The observance of National Chemistry Week last September was climaxed for Pittsburgh people by a two-day open house at the institute, attended by 25,535 persons of the area.

Pure scientific research has been concerned with molecular and crystal structure of dicyanoacetylene, infrared spectra of inorganic salts, emulsion calibration procedures in emission spectroscopy, diffraction studies of reinforcing carbon blacks, and crystal structure of chlorine. Other noteworthy investigations have related to the biochemistry of mental diseases, cancer inhibition, air-pollution control, fate of industrial dusts following inhalation, chemical hygiene, new orthopedic devices, mine-acid control, distillation

theory, synthetic rubber properties, conservation of paintings, and digital computing machine components.

In applied science many fellowships have broad programs for the benefit of mankind through the professions and the industries. Seven new fellowships began operation: air purification, allotropy, automotive chemicals, clayworking, gaseous combustion, glass properties, and yeast chemistry. Seven others will begin as soon as personnel and facilities are available. Twelve programs were concluded during the year. The fellowships on refractories, bentonites, and soybean technology initiated new long-term projects. The optical glass, bone products, and agglomeration fellowships were broadened in scope. The acid-recovery fellowship evolved a promising process for treating waste pickle liquor with coke-oven gas. Marked progress was made with meter technology, heat insulation, metalworking, abrasive wheel grinding, arc welding, chemical storage, steel protection, coal-waste control, and basic coal-chemical technology; and success was attained in the reverse drawing of steel. A new series of polyfunctional monomers was synthesized, and a large number of derivatives of alkylated phenols have been studied in coal-chemical research. Notable advancement has been achieved in contriving methods for petroleum sulfur-compound analysis. Projects on catalysis in petroleum technology have been fruitful, and eleven papers came from those studies. Pyrenone grain protectant, a creation of the insecticide fellowship, has been put to effective practical use. New dextrose derivatives came from researches on corn products. A cluster of fellowships was quite productive in the field of textiles, and novel and efficient cold-climate insulation fillers and modified chicken-feather preparations for sleeping bags were devised. Extension of the manifold applications of vinyl resin dispersions through plastigels that have important industrial significance increased versatility of the silicones, and the development of two new floor coverings are some of the other results of the institute's varied 1951 program.

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