

and maintenance. The Division maintains close liaison with other research organizations and power utilities, and staff members participate in the committee work of major technical societies and standardizing associations.

Electrical investigations pertain to methods of generating, transmitting, distributing and utilizing power, and to improvement in equipment for these purposes. Among the topics studied are transmission at extra-high voltage; problems of electrical insulation; system operation and control, and system protection against lightning; communications and telemetering; illumination; and power metering. Attention is given to the performance and efficiency of power equipment, to improved measuring techniques, and to means of minimizing the hazards of electric shock.

Among the structural and mechanical topics studied are the following: soil mechanics as related to foundations, roads and earth dams and dykes; the physical properties of structural components and of numerous items such as conductor joints and line hardware; the mechanical performance and safety features of equipment and various types of machines; metals and metallurgy; welding materials, techniques and applications; atmospheric and underground corrosion of metals; stresses in materials and structures; noise and vibration conditions; and a variety of problems associated with the design, construction and maintenance of concrete structures, the application of masonry materials, and the production, placement and quality control of all concrete used.

In addition to chemical analyses and tests performed on a wide range of materials and products purchased, chemical research work is conducted with regard to such subjects as wood preservation, plastics applications, protective coatings, brush and weed control, lubrication, liquid electrical insulants, water treatment, thermal insulation, and corrosion prevention.

Other studies contributory and supplementary to the main branches of work are carried on in the fields of physics, biology, petrology and mathematics. Operations research studies are used in determining optimum policies and procedures in vehicle replacement, inventory control, reserve transformer capacity and economical power dispatch.

### Subsection 3.—Medical Research

**Medical Research Facilities.\***—Support for medical research is provided by the federal and provincial governments, by private foundations or corporations, by voluntary agencies which raise money by public subscription, and by universities and hospitals. From these sources there are available (a) research fellowships for training, (b) grants-in-aid for assistance in problems of a fundamental or clinical nature, (c) salaries for trained personnel, and (d) the necessary capital and running expenses for investigations which are of particular interest to governments, hospitals or pharmaceutical houses.

The Departments of National Health and Welfare and National Defence maintain establishments in which research is done in well-equipped laboratories with highly trained personnel. The Department of Veterans Affairs encourages its staff to do research in its own hospitals; much of this concerns chronic illness, such as arthritis, atherosclerosis, metabolic and nutritional derangements (see pp. 332-334).

Most of the fundamental medical problems are studied in medical schools through the system of grants-in-aid. Funds from the Federal Treasury are provided through the National Research Council, the Defence Research Board, and the Department of National Health and Welfare. The National Research Council supports mainly research in the basic medical sciences—*anatomy, physiology, biochemistry, pharmacology, bacteriology, pathology, and experimental surgery*—but approximately one-quarter of its grants are for clinical investigations. The Defence Research Board makes grants for studies particularly related to problems of defence, such as shock, the preservation of blood and the use of blood substitutes, the effects of low temperatures, etc. The Department of National Health and Welfare provides funds for research, available on the recommendation of

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