added. In addition, Special Scholarships valued at $1,900 per year and Post-doctorate Overseas Fellowships at $2,500 are offered. The Council also awards two classes of Graduate Medical Research Fellowships, which have values of $1,800 to $3,500 for awards involving graduate training, and up to $5,000 for senior awards in advanced research. Graduate Dental Research Fellowships of similar value are also made. Some 200 of these different awards were made for 1953-54, totalling in value over $265,000.

In recent years (since 1948), the National Research Council has opened its doors to a limited number of post-doctorate fellows who have been carefully selected on the basis of merit from the universities of the world. There are now about 100 of these keen young scientists working in the laboratories, most of them in chemistry, physics or applied biology. They are appointed for one year only but may be retained for a second year if conditions warrant. This flow of young men through the laboratories has a most stimulating effect; it creates a sort of university atmosphere that is both fresh and invigorating and keeps the Council young.

Principal Activities, 1953-54.—In the Division of Applied Biology and at the Prairie Regional Laboratory much work has been done in 1953-54 on industrial uses for surplus wheat, other agricultural products and waste materials. Some of the projects undertaken in the Division of Applied Biology are outlined in the following paragraphs.

Laboratory and pilot-plant studies of the production of butylene glycol from cereal grains, beet molasses and waste sulphite liquor have been completed. The product is of potential value in the chemical industry and, in one form, as an anti-freeze. Citric acid, now imported in large quantities, has been produced in high yield by a new and more rapid method of submerged fermentation of beet molasses; laboratory studies have been completed and pilot-plant investigation is in progress. Work has also been carried out on production of frozen concentrated milk. For normal storage conditions, slow freezing has been found to give a more stable product than rapid freezing.

At the Prairie Regional Laboratory, studies are being carried out on the drying of damp grain by a new process, with a view to the development of a more economical farm or country-elevator drier. The process originated in the Division of Applied Chemistry.

The Prairie Laboratory has carried out many analyses of the constituent fractions of the oils from flax, rape and safflower seeds and has a program of work under way which should help in making rape oil, in particular, acceptable to the food trades. Most food oils used in Canada are now imported and it is considered important that Canada produce its own requirements by replacing part of the acreage now devoted to wheat with oil-seed crops. Studies are also being made on the fractionation of linseed oil with a view to improving its quality for various industrial purposes.

Pilot-plant studies on the production of insulating boards (similar to Ten-test) from wheat straw have shown that excellent boards of superior quality can be made. Commercial production will be undertaken in the near future if the economics of the project are satisfactory to the industry.

Basic studies on the cereal rusts are continuing. An attempt is being made to grow these organisms in culture in order to ascertain the reason for so many different strains arising. Work is also being done on the biochemistry of starch, lignin, cellulose and other constituents of wheat.