Petrochemicals now account for roughly one-third of the volume of chemicals produced in Canada and about two-thirds of the value. It is expected that the physical share will rise to 50 p.c. by 1965, with a dollar value of almost three-quarters of the production of the entire chemical industry. Capital investment in Canada's petrochemical industry is now roughly $500,000,000, a remarkable increase from the $6,000,000 invested in the first plant twenty years ago. Sulphur ranks as the number one petrochemical in volume of production, with capacity reaching approximately 2,000,000 tons in 1962. This ranks Canada as the world's second largest producer of this material, although more by circumstance than by design since Western Canada's sour natural gas must be cleaned of its sulphur content prior to sale. Sulphur is used almost entirely for the production of sulphuric acid, which probably enters a greater variety of industrial processes than any other single chemical, but goes primarily into the manufacture of fertilizers and pulp and paper. Ammonia is in second place in volume and the capacity of over 500,000 tons is used mainly in the manufacture of fertilizers. Both sulphur and ammonia are inorganic chemicals and are therefore in a class by themselves compared to other petrochemicals.

Approximately 100 different organic chemicals are produced in more than 25 petrochemical plants in Canada, with a combined capacity of over 1,000,000 tons. Primary petrochemicals are those obtained relatively simply from natural gas streams or oil refineries while secondary petrochemicals are those produced from the primary type. Benzene and ethylene are the two largest volume primary petrochemicals, with a capacity for each of approximately 200,000 tons per year. Both these chemicals are used in the production of a host of secondary petrochemicals such as synthetic rubber, polyethylene and polystyrene plastics, detergent alkylate and ethylene glycol. Carbon black capacity of about 60,000 tons enjoys third position among the primary petrochemicals. Among the secondary petrochemicals, synthetic rubber capacity leads the field at approximately 180,000 tons, and polyethylene capacity is next at nearly 80,000 tons.

One of the most versatile starting materials in the thriving petrochemical industry is ethylene. If ammonia and sulphur are excluded as special cases in Canada, it is expected that by 1965 over one-third of the Canadian-produced organic petrochemicals will utilize ethylene somewhere in their syntheses. Ethylene capacity in Canada now exceeds demand and it is expected to remain in plentiful supply for the foreseeable future. While polyethylene now leads the way as the most important outlet for ethylene, for years the largest market for this primary petrochemical was in the manufacture of ethylene glycol which, in turn, is used in the manufacture of anti-freeze, synthetic fibres, explosives, resins and other miscellaneous chemicals. Tetraethyl lead, polystyrene, synthetic rubber and vinyl chloride are further examples of chemicals produced in large volume and derived at least in part from ethylene.

Recent announcements of various new petrochemical ventures by Canadian oil and chemical establishments have provided fresh proof of the rising importance of the country's wealth of petroleum and natural gas as a source of raw materials for the domestic chemical industry. An especially notable example of its beneficial effects on the national economy was the recent upsurge of projects for the large-scale production of benzene and other aromatic chemicals from petroleum. These materials, which are in fast-growing demand for a host of processes in the manufacture of synthetic chemicals, could hitherto be produced domestically in substantial quantities only as by-products of coke oven operations. However, as supplies from these sources have long been lagging behind requirements by an ever-widening margin, they have had to be supplemented by correspondingly increased imports. Now, four oil companies have embarked on making benzene from petroleum, making Canada not only self-sufficient in the product but also providing a sizable surplus for export. The chart on p. 614 illustrates the basic petrochemical relationships for certain chemicals and the raw material sources from which they originate.

The supply of raw materials by oil refiners to chemical companies is a logical and natural situation. Usually the refiners can provide the chemical companies with a reliable source of basic materials at a definite saving. The chemical company can, in turn, use its