

When reactor engineers and operators, under the direction of superintendent Gib James, successfully changed uranium fuel rods while the huge NRU reactor was in operation they passed an important milestone in the development of atomic energy. It was the first fully operational test of the fuelling machine. The NRU reactor first went into operation last November 3 and has been undergoing a series of tests before being put into routine operation.

The fuelling machine, which like all other components of the \$57,000,000 NRU except the heat exchangers was designed and built in Canada, is 43 feet high and weighs 240 tons, about twice the weight of a diesel engine that pulls a Canadian passenger train. The machine travels on rails and can be positioned within one hundredth of an inch over the top of the reactor. Some idea of the complexity of the machine can be gained from the fact that it has four control panels on which are some hundred colored indicator lights and a variety of instruments.

Much of the great weight of the machine is due to the heavy shielding required to protect engineers and operating personnel from gamma radiation given off by the fuel rods. This radiation creates so much heat in the rods that they must be cooled continuously while they are being removed, thus adding to the complexity of the fuelling machine. Seventeen pumps on the machine handle the cooling system. Heavy water cools the rod, ordinary water cools the heavy water, and then a refrigeration system cools the ordinary water.

The machine, carrying a fresh uranium rod within its tower-like structure, moves over the top of the reactor, pulls out a used rod, puts in a fresh rod, and then moves across a bridge to a point over a water-filled canal. The highly radioactive rod is lowered onto a carriage in the canal and is then moved into a large water-filled tank that looks much like a swimming pool. The rod is stored in this tank for six months to allow much of the radiation to die away and it is then chemically processed to recover unburned uranium and plutonium.

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FINANCIAL POSITION

The regular monthly statement of the Government's financial operations for January, 1958 and the first ten months of the current fiscal year showed that for January, budgetary revenues were \$457.3 million, expenditures were \$423.2 million and the surplus was \$34.1 million. For January last year, revenues were \$523.3 million, expenditures were \$348.1 million and the surplus was \$175.2 million.

For the first ten months of the current fiscal year, budgetary revenues were \$4,213.1 million or \$50.3 million more than for the same period a year ago, while expenditures, which included a payment of \$100 million to

the Canada Council, were \$3,891.3 million or \$264.8 million than a year ago. The surplus for the first ten months of the current fiscal year was \$321.8 million compared with a surplus of \$536.3 million for the same period a year ago.

Operations of the old age security fund, which are not included in budgetary transactions, resulted in a deficit of \$7.8 million for January, 1958 and an accumulated deficit of \$73.2 million for the ten months to January 31, 1958. Last year for the ten months to January 31, 1957, there was an accumulated deficit of \$15.3 million. The deficits were covered by temporary loans by the Minister under the terms of the Old Age Security Act.

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GOLD MINING INDUSTRY, 1956

Gold production in Canada declined 3.5 per cent in 1956 to 4,383,863 fine ounces from 4,541,962 in 1955, according to the Dominion Bureau of Statistics annual report on gold production. The value dropped 3.7 per cent to \$151,024,080 from \$156,788,528. Output of gold from base metal mines was up to 604,074 fine ounces from 597,217 in the preceding year, while that from auriferous quartz mines and placer deposits was down to 3,779,789 fine ounces from 3,944,745.

Production in 1956 was smaller than in 1955 for all producing areas except Newfoundland and Northwest Territories. Totals in order of magnitude were: Ontario, 2,513,912 fine ounces (2,523,040 in 1955); Quebec, 1,036,059 (1,154,522); Northwest Territories, 352,669 (321,321); British Columbia, 196,692 (252,979); Manitoba, 120,232 (123,888); Saskatchewan, 82,687 (83,580); Yukon, 72,001 (72,201); Newfoundland, 8,213 (6,337); Nova Scotia, 1,279 (3,880); and Alberta, 119 (214).

Average value per ounce of gold was \$34.45 in 1956, \$34.52 in 1955, \$34.07 in 1954, \$34.42 in 1953, \$34.27 in 1952, \$36.85 in 1951, \$38.05 in 1950, \$36.00 in 1949, \$35.00 in 1947-48, \$36.75 in 1946, \$38.50 in 1940-45, and \$36.14 in 1939.

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TRANSFUSION SERVICE EXTENDED

Extension of the Red Cross Transfusion Service to all the hospitals of Metropolitan Toronto and to many centres east and north of Toronto, with the assistance of federal health grants, has been announced by Mr. J. Waldo Monteith, Minister of National Health and Welfare.

A grant of \$30,000 has been approved for the purchase of equipment, supplies and materials. This will supply the hospitals of Toronto, Barrie, Orillia, Minden, Owen Sound and Collingwood to the north, and Ajax, Whitby, Oshawa and possibly Peterborough to the east. It is estimated that the Service will require 80,000 donors for the Toronto hos-