

available to the 25-cycle areas until the change-over to 60-cycle has advanced far enough to utilize it all. It is estimated that this stage will be reached by the end of 1951. It will then be a matter of obtaining additional supplies of 60-cycle power. Such supplies will be furnished from both hydro-electric and steam-electric stations.

The Commission's 160,000 h.p. Chenaux station on the Ottawa River about 75 miles below Des Joachims will be in full service by November, 1951, with initial power deliveries scheduled for December, 1950. Chenaux is connected with a new transformer station at Peterborough by a 230,000-volt transmission line, part of which was constructed several years ago in connection with other eastern Ontario power projects. From Peterborough the new 60-cycle power is carried over a 115,000-volt line to Oshawa and Scarborough, whence further distribution is effected as required. Initial services from the 192,000 h.p. La Cave development via Des Joachims are scheduled for January, 1952, with full service the following November. In addition, the 80,000 h.p. development at Stewartville on the Madawaska River has been available for general supply purposes in southern Ontario since its completion in 1948.

In addition there are steam-generating stations under construction at Toronto and Windsor. The 160,000 h.p. Windsor station is expected to be in full operation by December, 1951—one of its two units was brought into service late in 1950. One unit of the 268,000 h.p. Toronto station, to be brought into service initially at 25 cycles and later converted to 60 cycles, is scheduled for operation in November, 1951, and the other, a 60-cycle unit, in the February following.

These two stations are intended primarily to help meet the greatly increased demand for power in southern Ontario during the autumn and winter seasons, but they will be ready at need to serve any power supply purpose including that of frequency standardization.

**System Facilities and Intercommunication.**—The Commission's new 60-cycle system in southern Ontario is being equipped with the most up-to-date transmission and distribution facilities. Much of the new equipment was already installed when the Des Joachims station was brought into service in 1950.

The main arteries linking Des Joachims and La Cave to major distribution points comprise approximately 829 route miles, or 1,200 circuit miles of 230,000-volt line and about 62 route miles or 120 circuit miles of 115,000-volt line. Between Des Joachims and La Cave generating stations and Kipling and Westminster transformer stations, the 230,000-volt transmission lines included 2,243 single-circuit steel towers and 1,909 double-circuit steel towers. The total weight of these structures has been calculated at 40,190 tons. There were 3,606 wire miles of steel-reinforced aluminum cable conductors, each measuring in cross-section 795,000 circular mils, with a total weight of 10,386 tons. Protection against lightning was provided by 1,660 wire miles of 3/8 inch ground wire, with a total weight of 1,211 tons.

Manual and automatic telephones have been provided to serve the Des Joachims Generation Station. They inter-connect with the Minden Switching Station, 93 miles away and with the Chats Falls Generating Station, 106 miles distant, by means of telephone lines and telephone carrier channels superimposed on the power circuits. Communication facilities are also provided between Des Joachims and principal transformer stations and switching points by a similar utilization of the transmission lines. These facilities will be extended to the operation of the La Cave Generating Station when it is brought into service in 1952.