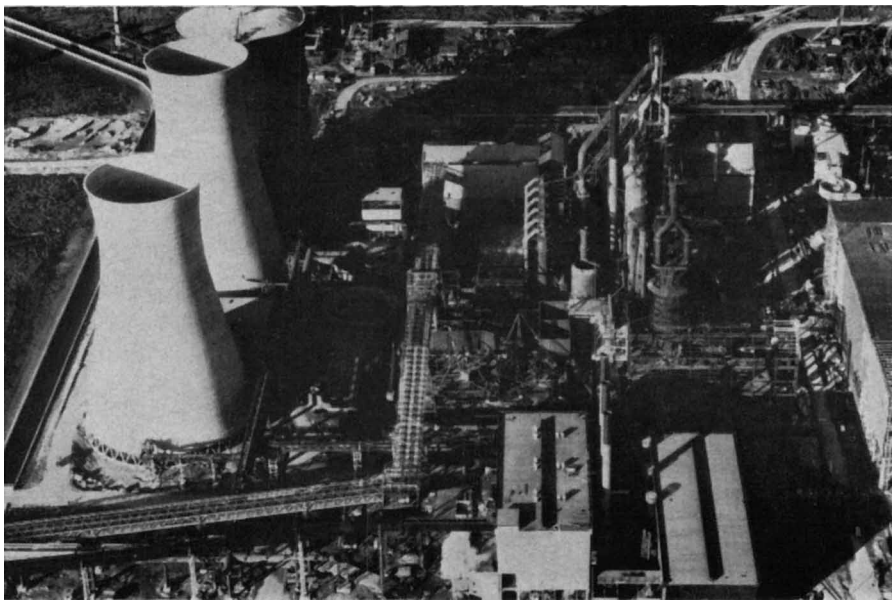
Automated hot-strip mill nearing completion in Wales



View of completely automated hot-strip mill at Llanwern, Wales, which will enter initial phases of operation later this year

The world's first completely automated hot-strip mill will enter the initial phases of operation later this year in Llanwern, Wales.

International General Electric Company said that all operations of the 68-inch hot-strip mill at the Spencer Works of Richard Thomas and Baldwins, Ltd.—from the slab reheating furnaces to the coil conveyors—will be eventually under control of a GE-412 computer.

The 2,800-foot-long mill—believed to be the longest in the world—will include speed regulators, automatic gauge control, screw-down position regulators, automatic crop shear control, as well as the mill's over-all process computer system.

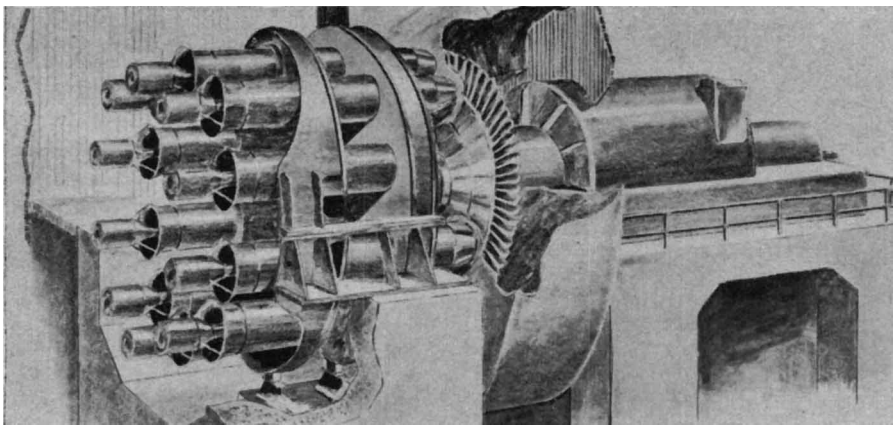
Basic inputs to the computer control system will include: steel grade, slab dimensions, desired finished thickness and width, finishing temperature, and coiling temperature.

Customer specifications and scheduling data will be entered on punched tape in the same sequence as the bars scheduled to enter the mill. Bars will be tracked through the mill by hot metal detectors which signal position information to the computer, and will be paced through the mill by the computer system.

The computer will perform the critical functions of furnace push rate, determining drafting in the roughing and finishing trains, holding slabs on the table, varying the run-out table sprays, and determining and controlling the finishing mill stand speeds, including mill speed-up after the head end of the strip has entered the coiler. Reheat furnace temperature control is also planned for computer operation.

General Electric's automatic gauge control system will control strip thickness. In this system, a G-E gagemeter employs a continuous closed-loop regulator to maintain computer-directed openings at the bite of the role. When thickness or hardness of incoming strip varies, causing a change in roll-separating force and a momentary change in roll opening, the screw-downs of the mill stand affected will automatically move to restore the original opening. An electronic monitor continuously updates absolute gaugemeter system calibration.

New gas turbine-generator uses 10 jet engines as driving force



Artist's drawing of reserve power turbine–generator which generates 100,000 kw of electricity by using a cluster of 10 powerful jet engines as the driving force

A new type of reserve power turbine–generator uses a cluster of 10 powerful jet engines as the driving force. The new unit, developed by General Electric Co., will be used by utilities and industry for meeting such increasing power demands as seasonal peak loads, daily peak loads, and system reserve requirements.

Arranged cylindrically, the 10 lightweight high-performance aircraft-type gas turbines will operate as gas generators exhausting simultaneously into a single-stage 100,000-kw load turbine, which drives a conventional, hydrogen-cooled generator at 1,200 rpm.

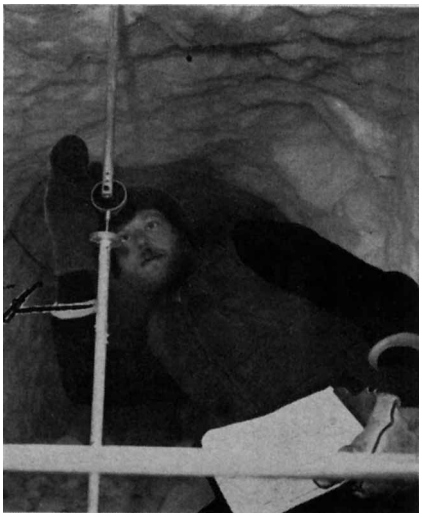
The jet engines will be essentially the same as GE's CJ-805 aircraft gas turbine now in service on the Convair 880 and 990 aircraft in use by the airlines. The engines are the commercial version of GE's J-79 military turbojet engine.

The product is a simple, low-cost large-capacity quick-starting reserve power generating unit that should help keep power costs low. The unit will be housed in a sound-proofed steel and concrete structure. A separate control and maintenance building will be adjacent to the power unit's foundation. One section will contain plant instrumentation, controls, and the auxiliary power transformer; another section the plant heating and sanitary facilities; and the third section, a maintenance shop.

NBS Recruits Scientists for Antarctic Research Program

The Boulder Laboratories of the National Bureau of Standards has opened its 1962-63 campaign to recruit electronic engineers and physicists to serve for 12-18 months in the Antarctic research program, which includes a short training period at Boulder. Applications are now being considered. The recruiting drive is headed by William S. Hough, Field Engineering Section of the Central Radio Propagation Laboratory, in Boulder. Hough, a former Antarctic researcher, himself, emphasized today that the recruiting program is being pushed with the "utmost speed."

November is the summer season in the Antarctic and is the time when rotation of personnel takes place. Those



Wintering ionospheric physicist takes readings from a gauge in 90-foot snow mine at South Pole, where scientists are studying closure rates of the mine's walls over a span of time

who have carried on polar projects for the past year will greet the newcomers—break them in on their new jobs—and turn important research projects over to them before returning to the United States.

NBS research projects in the Antarctic are a continuation of those which were begun during the International Geophysical Year (IGY), and will lead to the program known as the International Year of the Quiet Sun (IQSY). Conducted in co-ordination with the National Science Foundation, the Boulder Laboratories' projects are concerned chiefly with the measurements of electromagnetic phenomena, with the characteristics and behavior of the ionosphere, and with the effects of solar activities on radio transmissions.

The study of the electromagnetic geophysical phenomena of the polar regions includes aurora, air glow, magnetism, very low frequency emission, riometry, micropulsations, radio noise, and ionosphere physics. In the Antarctic the land mass has provided permanent fixed locations for scientific stations, making possible the continuous study of the variables of nature without the complications caused by constantly changing position, as in the case of Arctic stations located on the pack ice.

The radio noise section operates a network of recording stations throughout the world to determine the level and character of the radio noise (static) with which radio signals must compete. One of the stations in this network, located at Byrd Base, Antarctica, is in the unusual geographical location that allows study of the propagation of noise from thunderstorms along the equator over a nighttime path. Located near the center band of auroral activity, Byrd Base is in a good spot for studying effects of this phenomenon on radio noise and reception. The noise-recording equipment is located about a mile from the base camp and is complete with its own diesel-electric generating equipment. The radio noise is recorded automatically on eight discrete frequencies from 51 kc through 20 Mc per second. The recordings are made on two channels simultaneously and on a time-sharing basis so that each frequency is sampled for 15 minutes each hour.

The corpuscular bombardment effects of energetic particles on the earth's ionosphere will be observed in the Antarctic at the new Eights station and at Byrd station. Simultaneous observations of very low frequency emissions and whistlers, air glow and aurora, ionospheric absorption, and magnetic micropulsations will be made in a comprehensive geophysical experiment. This series of related experiments will make possible a detailed study of energetic particle behavior as influenced by the earth's magnetic field, and the effect of these particles on the ionosphere. Similar observations will be made in the northern hemisphere.

One of the principle instruments to be used in these stations is a vertical incidence, sweep frequency, pulsed radar, for determining certain characteristics of the upper atmosphere, including the heights and electron densities of the ionospheric layers. The data from each station are transmitted to the World Data Center in Boulder, where they are available to other research workers for analysis.

Positions are now open for qualified physicists, electronic engineers, or experienced technicians prepared to spend twelve months in the Antarctic to operate the experiments, maintain the instruments and supporting equipment, and participate in data analysis. Personnel who successfully pass the qualifying tests will be given a 30-90 day training period at Boulder Laboratories before departing for the Antarctic in November. Inquiries may be addressed to the Personnel Officer, Boulder Laboratories, NBS, Boulder, Colo.

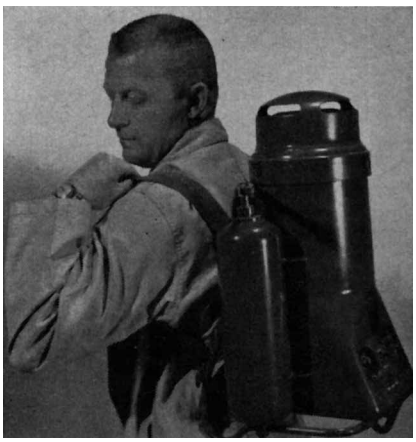
"Back Pack" thermoelectric generator under development

Atomics International, a division of North American Aviation, Inc., has received a 1-year contract to provide the Army with a prototype of a unique power supply which converts heat directly to electricity without moving parts.

The generator will supply 150 watts of power to operate Army field equipment. Weighing less than 30 pounds with a full load of fuel, it will be much lighter than gasoline-engine generators of similar output. To permit soldiers to carry it conveniently, the generator will be mounted on a back pack base. Among its other advantages will be silent operation and undetectability in darkness.

Specifications call for the generator to operate for 4 hours on two 3-pint tanks of standard army vehicle gasoline. It can be refueled without interruption of power generation.

Designed for ruggedness, it will be required to operate at high altitudes, at extreme high and low temperatures and to withstand rigorous field conditions including parachute drops.



Portability of a unique thermoelectric generator under development for the U. S. Army by Atomics International is demonstrated by a company technician using a full-scale mock-up

The generator operates on the thermoelectric principle. Gasoline, pressurized by a simple hand pump, is fed through a jet into a combustion chamber where it burns to an intense heat. The heat warms a ceramic mantle similar to the one in an old-fashioned gasoline lantern. The mantle is surrounded by thermoelectric elements of lead-telluride which, when heated, provide a source of electric power.

Telstar may remain aloft 200 years

Telstar, the Bell System's experimental communication satellite, will have completed hundreds of orbits around the earth by publication time of this story. As it is traveling these orbits, it provides engineers and scientists at Bell Telephone Laboratories with valuable scientific information, some of which is obtained through precise tracking of Telstar by the Bell Telephone System's Earth Station at Andover, Maine, and by NASA Minitrack stations around the world. Other information is obtained through communication tests to and from Telstar by Bell stations at Andover, and Holmdel, N.J.; by the British station at Goonhilly, Cornwall; and by the French station at Pleumeur-Bodou in Brittany. Also, a wealth of data is obtained through telemetry from Telstar and received by both Bell System and NASA stations.

So far, all data indicate that Telstar is in excellent condition and behaving in a perfectly normal manner.

Telstar's orbit was planned so as to provide the best possible conditions of mutual visibility between Maine and Europe under the limitations of the lifting capabilities of the Thor-Delta rocket system and safety requirements for launching from Cape Canaveral. The satellite's perigee and apogee are 579.5 and 3,454.1 statute miles, respectively.

With a perigee of 579.5 statute miles, air drag will affect the orbit only very slowly. Also, the pressure of sunlight and earthshine will have only a very