

SPEAKING OF POWER

Correspondence with POWER readers in foreign countries is always interesting and sometimes has a peculiar charm. We have never forgotten one communication from South America, apparently laboriously produced by consulting a dictionary for the literal English equivalent of each Spanish word. It was evident that the writer wanted help, that he wanted to know where he could buy something. What had us ticked was what he said he wanted—a "male water sheep." Finally one of the smarter editors (now on the business staff and headed for a vice-presidency or something) came up with the answer; our friend wanted a hydraulic ram.

Joe Van Denburg, McGraw-Hill World News man on the India beat, reports from Ceylon that coconut oil pinch-hit successfully for diesel oil when a flood recently upset fuel deliveries in parts of the island. Since then researchers have studied coconut oil's properties, and find it a safe and practical fuel for slow-speed engines if preheated to 120 F before injection.

British interest in the gas turbine as a stationary power unit is demonstrated by two recent reports. The Central Electricity Board has ordered installation of a 15,000-kw oil-fired open-cycle plant at Trafford Power Station, which now contains 60,000 kw of steam capacity with 30,000 more being added. To be built by Metropolitan Vickers, the gas-turbine unit is expected to operate at a thermal efficiency equal to that of Britain's best steam plant. (Battersea Station registered 26.5% in 1946, based on units sent out.)

Toward the end of last year, John Brown and Co., British licensees of Echer Wyss, started construction of a 12,500-kw closed-cycle gas-turbine plant. This will resemble in many respects the plant of the same size being built by Echer Wyss for Gennevilliers Power Station, near Paris.

Marine development is never very far from the British mind and the gas turbine is no exception. British Thomson-Houston Co. is installing a 1200-hp 2-shaft gas turbine in a tanker, where

it will operate in conjunction with existing diesels. A 3500-hp marine unit, arranged to reverse by means of hydraulic couplings in the reduction gearing, is under construction by the various companies united for gas-turbine development under the name *Pametrada* (Parsons and Marine Engineering Turbine Research and Development Association). Further reports have it that John Brown and Co. is working on a closed-cycle plant for a Channel steamer. It is understood to be a twin-screw plant, 6000 hp on each.

Drilling contractors in the oil fields of the Southwest now turn to a mobile laboratory for water-treatment service. Making the rounds of the rigs, the truck crew analyzes boiler-water conditions on the spot, to arrive at a tailor-made treatment, or to check the results of previously prescribed dosage. The same truck delivers treating chemicals ready for use.

Reader John S. Kernachan says, "This I gotta see," about a statement in a used-machinery ad in the January Searchlight section of *Powr*. It read "1000-kw Westinghouse 250-volt 514-rpm generator direct-connected to 3600-rpm Westinghouse bleeder condensing turbine." We'd like to see it, too.

Although we usually think of insulation as keeping the heat from leaking into a refrigerator, it's a good idea sometimes to remember that it works both ways. For example, refrigerator cars bound East from the Coast could profit from the cold air in the mountains, which the insulation nicely shuts out. Operating regulations are being relaxed to make it possible to take advantage of this "free cold."

Graduate engineers in the Detroit area are to have their own "university" staffed by practicing members of the profession, and it is expected that this pilot operation will be followed by others in key cities of the country.

The Engineers Council for Professional Development is sponsor of the plan, which has been devised as a much-needed help to the young engi-

neer in the early days of his career. Many authorities feel that it is the first few years after leaving technical school that the engineer makes or loses his future.

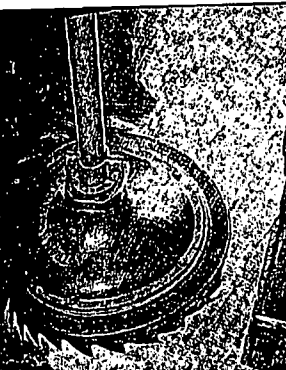
ECPD, under its chairman, James W. Parker, president of Detroit Edison Co., will work with Detroit's local engineering society and its affiliates, which comprise some 30 local sections of national engineering societies. The "university" will sponsor courses, lectures and guidance consultations for engineer graduates. "Regents" of the university will be past presidents of the society, and outstanding engineers of the community will serve on its faculty.

Use of high-temperature high-pressure water instead of steam for process heating has been advocated for a variety of reasons and tried out in a number of plants in this country and abroad. Right now, fuel-short Americans are enthusiastic about the saving possibilities. A complete high-temperature high-pressure water plant has been installed in the new textile plant of James Miller & Co., at Warrington, Victoria, and a similar plant is in operation in a knitting mill at Richmond, Victoria. Temperatures as high as 350 F at 120 psi are used. In addition to making it possible to transmit more heat per unit volume than with steam, fuel savings as high as 30% are claimed.

THIS MONTH'S COVER

As atomic scientists launch a research program to learn more of the mysterious forces that keep particles in the nucleus from flying apart, Dr. William E. Shoup, directing the project at Westinghouse Research Laboratories, checks up on the "atom smasher." In the cover photo, he is using a mass-spectrometer detector to make sure there are no leaks in the 40-ft vacuum tube down which the atomic bullets travel before they smash into the target.

Helium is sprayed from a hose along every inch of the quarter-mile of surface joint in the vacuum tube. If there is a leak, helium enters the vacuum system and activates a special electronic tube, which is preset to "sniff out" helium. The detector can reveal a leak of air so tiny it would take more than 3000 years to deflate an automobile tire.



OPERATION. Looking down, from above, on waterwheel when water is discharging from its buckets.

PLANT SITE. Two 100-year old turbines are installed in flour mill owned by a farmer. Building is about six miles from Trollhattan, Sweden.

Waterwheels Operate 100 Years

By GEORGE WILLOCK, Trollhattan, Sweden

ONE HUNDRED YEARS of service to industry is a noteworthy record for any company. But it assumes even more significance when the first two waterwheels it constructed are still in service, as with Nydqvist & Holm, of Trollhattan, Sweden.

In 1848 a farmer installed these turbines to drive a flour mill. Compared with a modern installation, the waterwheels are of unusual design. Photo above, at left, shows one of them in operation, and photo at right shows the mill on one side of the stream.

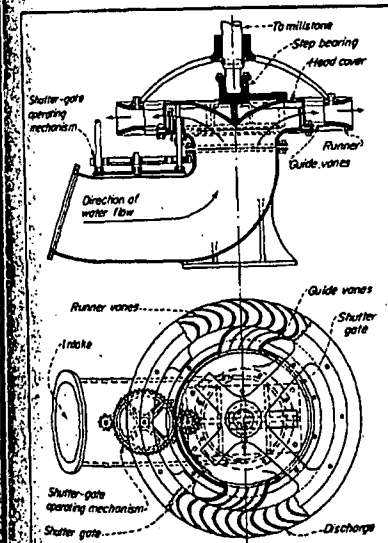
These turbine parts are arranged in reverse to the parts of a modern unit; that is, the outer part is the runner, and the inner, the stationary guide vanes and gate mechanism.

As the drawing shows, the runner connects to a vertical shaft that drives the millstone. Lower end of this shaft runs in a lignum-vitae step bearing, supported on the head cover. There are five stationary guide vanes, in each of two openings on opposite sides of the fixed element. Size of openings is controlled by shutter gates, positioned from a hand-wheel on the operating floor.

Vane Operations. When the shutters are open water passes through, between the stationary guide vanes, then to the runner, causing it to revolve. Turbine output depends on the number of openings between the stationary vanes uncovered by the shutter gates.

When the gates are fully open, eight jets, four on each side, flow into the runner, which then develops 20 hp at 150 rpm under a 9-ft head. The well-formed vanes of the waterwheels look more like those of a modern steam turbine than a 100-yr-old waterwheel.

In celebrating its hundredth anniversary Nydqvist & Holm presented medals to 464 employees with more than 25 years service. Seven had 57 years of unbroken service, and eleven had 50 years. Of the 2000 employees nearly 25% have been employed 25 years or more.



TURBINE CROSS SECTIONS. Water enters this turbine from underneath. It passes through the shutter gates and the guide vanes, then discharges horizontally through the runner buckets.