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Engineering Abstracts

ATLAS VALVELESS AIRCRAFT MOTOR

The Aircraft Holding Corp., Los Angeles, Cal., is producing a new type of radial air-cooled aircraft motor. The 120 hp. size known as the "Atlas" is a stationary radial having eight cylinders and weighs with its supercharger 260 lbs. The engine operates on the two stroke principle, each cylinder firing a power stroke to the propeller shaft every time the piston rises to the head of the cylinder. This makes a total of eight power strokes per revolution as against half this number for a valve motor having the same number of cylinders and working on the four stroke principle. Due to the absence of valves and extensive cylinder head mechanisms the motor has a 15 per cent smaller overall diameter than an equivalent radial motor having valves. The cylinder head is machined integral with the barrel, the only openings being the spark plug holes.

Automotive Industries.

GREAT BRITAIN WINS SCHNEIDER TROPHY

After a year's absence from competition for the Jacques Schneider Maritime Trophy, Great Britain scored a complete defeat over Italy in a dual race held off Lido Beach, Venice, Italy, on Sept. 26. Lieutenant S. N. Webster, R. A. F., flying a Supermarine-Napier monoplane covered the 350 km. (217.483 mi) course at an average speed of 281.488 m. p. h. to not only win first place, but in addition to establish a new world's seaplane speed mark. Flight Lieutenant O. E. Worsley, also of the Royal Air Force, piloted a sister plane to second place with an average speed of 272.912 m. p. h. The Schneider cup was first won by France in international competition in 1913 with a speed of 60 m. p. h. We can readily see the advance in aviation since that time by a comparison of the speed at that time and the latest world's record.

Aviation.

LARGE INDUSTRIAL DIESEL PLANT

One of the largest industrial Diesel installations for a number of years has recently been put into operation by the Commerce Mining and Royalty Co., whose headquarters are at Miami, Okla. Three 2250 hp., 28 by 44 in., Nordberg, 4-cylinder, 2-cycle, air injection Diesels, direct connected to Westinghouse 2000-kv. a., 2300 v., 3-phase, 25-cycle generators, will supply power to 15 mills and mines operated by this company as well as about 23 miles of electric railway.

The lubricating system of each engine requires approximately 25 bbl. of lubricating oil. Each engine is supplied with an individual lubricating oil tank of 370 gal. capacity, and a fuel tank of 275 gal. capacity. Both air intakes and exhaust silencers are provided, the air intake of each machine being equipped with 18 units of Reed air filters. Direct connected 14 kw., 125 v. exciters are supplied with each engine and all auxiliary pumps are motor driven.

Power Plant Engineering.

BERYLLIUM, NEW LIGHT METAL, PROMISES TO RIVAL ALUMINUM.

Beryllium is a metal about a third lighter than aluminum, but it is very much harder, scratching glass easily, like hard steel. It is over four times as elastic as aluminum and 25 per cent more elastic than steel. And while aluminum corrodes on contact with salt water, beryllium shows very high resistance to this as well as to other metal-destroying liquids and fumes. It is light gray in color and takes a polish like that of high grade steel.

It is chemically related to aluminum and easily forms alloys with it. One of these, consisting of 70 per cent beryllium and 30 per cent aluminum, is one-fifth lighter than aluminum, far more resistant to corrosion, and in tensile strength far exceeds duraluminum. It expands under the influence of heat at about the same rate as cast iron so that its use may eventually present fewer engineering difficulties if used as gas engine piston material than our present light weight piston.

Until recently beryllium has been merely a laboratory material because it is so refractory that the cost of getting it in pure form was prohibitive. But now that the cost of manufacture promises to be materially reduced by a new electrolytic process, it is probable that it will appear on the market in quantity within a few years.

Science Service.

AUTOMOBILE WITH ENGINE OF 66 CU. IN. DISPLACEMENT

Among British small cars of established reputation is the 9 hp. Riley with an overhead valve engine of 66 cu. in. displacement, the engine develops 32 b. hp. at 3800 r. p. m. with a compression ratio of 5½ to 1. This efficiency is promoted by the shape of the combustion chambers, each of which is a true hemisphere and is machined all over, including the valve ports in the detachable cylinder head. The valves are in two rows, exhausts on the left and inlets on the right set at 90 deg. to one another permitting practically a central location for the spark plugs. The wheelbase of the chassis is 106 inch and the track 48 inch. Production of cars of this type indicate the European tendency to produce lighter and more economical cars than we are familiar with in this country.

Automotive Industries.

AN IMPROVEMENT IN LADLE DESIGN

For many years it has been the practice in the iron and steel industry to transport molten metal from one location to another in open ladles. Recently a closed type ladle has been introduced that has a shape similar to that of a submarine and is mounted on trucks of standard railway construction. The only opening in this ladle is one at the top about three feet in diameter, so that the heat loss from the free surface is much less

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than from an open type ladle. These closed ladles are made in capacities up to 150 tons of metal. The Bureau of Standards recently conducted a test to determine the rate of cooling and the heat losses from such a 75-ton closed car ladle. It was found that the molten iron cooled only about 6 degrees, centigrade, per hour and with this rate of cooling it would be possible to hold a ladle of molten iron for 40 hours before pouring.
American Machinist.

DEVICE FOR DETECTING TRACES OF
MERCURY VAPOR

As small a proportion as one part of mercury in 20,000,000 parts of the atmosphere can now be measured accurately and one in 8,000,000 parts can be determined quickly. The principle of operation is based on a reaction between a solid substance, selenium sulphide, and the mercury vapor, with the reaction product a colored substance easily observable with the eye. The yellow selenium sulphide is applied as a coating on paper. The paper is blackened on exposure to air containing mercury vapor, the degree of blackening depending on the concentration of the mercury, the time of exposure, and various other factors which can be definitely controlled. There seems to be practically no lower limit to the concentration that can be detected by this method.

General Electric Review.