

the annual report of the Smithsonian Institution by Theodore Dunham, Jr., of the Mt. Wilson Observatory.

The current estimate of the sun's age is on the order of a million times a million years. It is based on the assumption that the sun shines because matter is being burst asunder into pure energy. The opposite assumption, of matter in a light form being turned into matter in a denser form, would still call for some conversion of matter into energy, but not nearly so much. Hence the possible reduction of the sun's age by 99 per cent.

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BACTERIOLOGY

Radium Found Deadly To Germs of Disease

RADIUM has a devastating effect on disease-causing bacteria, Dr. Otto Mayer of Berlin has discovered. He prepared broth cultures of streptococci, which cause blood poisoning, of staphylococci, or pus-forming bacteria, and of colon bacilli. In each flask he immersed a small amount of highly radioactive material, encased in rubber. Similar flasks were left without the radiation, as controls. The control flasks produced teeming growths of bacteria, while the irradiated cultures after a few days were completely sterile. Dr. Mayer suggests radium treatments, such as are now used for cancer, for deep-seated massive bacterial infections.

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ENGINEERING

Largest Diesel Engine Built For Danish Power Plant

Engineers Will Watch Its Performance, Seeking Knowledge Of Coming Events in Possible Industrial Revolution

THE WORLD'S largest diesel engine has been built for the Copenhagen power station to drive a 15,000 kilowatt generator.

Considering that it is an internal combustion engine, it is a massive machine, having an overall length of almost 65 feet and a height of about 35 feet. Its eight cylinders are comparable in size with an automobile, each being nearly a yard in diameter with a piston travel of almost five feet.

This crude-oil burning engine is rated at 22,500 brake-horsepower and will be used as an auxiliary to help a steam power plant carry its peak load. Its builders claim that a large diesel-powered generator can be built more cheaply than a corresponding turbine and boiler plant and have put forward plans for the construction of a 30,000 kilowatt generator to be run by a 40,000 brake-horsepower diesel.

Crude oil is injected into Copenhagen's new engine at pressures as great as 6,000 pounds per square inch. Its speed is 115 revolutions per minute.

The proposed larger engine would turn 187 times a minute.

The installation of the 22,500 horsepower engine is being watched by engineers everywhere because it is the latest and one of the most important events in a possible industrial revolution. Its successful and economical operation will mean the wider use of crude oil as automobile and airplane fuel and as the source of energy for electricity.

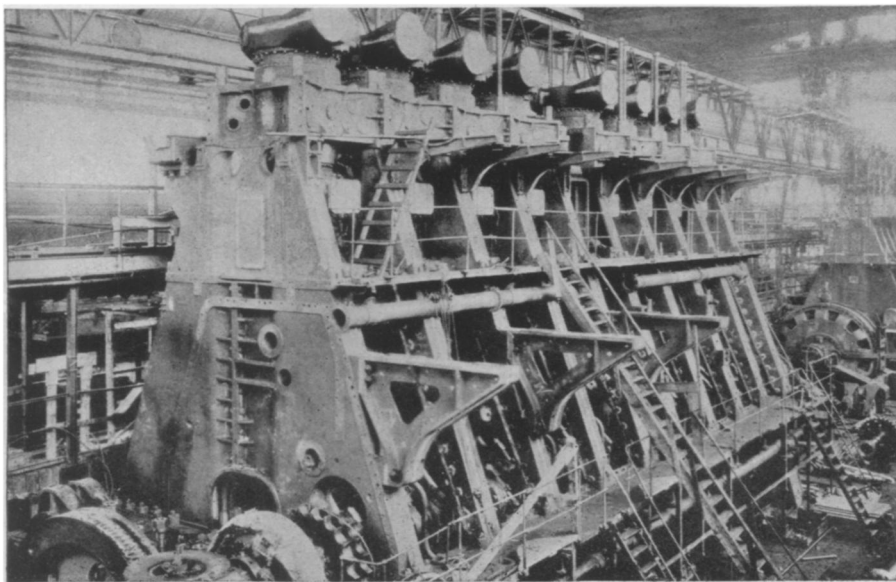
Rudolph Diesel's invention has many advantages to recommend it. Contrasted with the conventional automobile and airplane power plant, it lacks an ignition system and uses cheap, practically non-inflammable oil instead of gasoline.

In Europe, where gasoline is costly, the diesel engine is already used as the power plant for many trucks and busses, but in America, with gasoline cheaper, its application to the automotive field has not been so rapid.

America is also witnessing the development of the diesel airplane engine which has been largely fostered by the Packard Company. The weight per horsepower has been reduced to a figure comparable with that for gasoline and the advantage of non-inflammability of fuel was unfortunately illustrated by a fatal accident. Capt. L. M. Woolson, the Packard engine's designer, was killed in a crash during a fog in his diesel-powered plane, but the ship did not burn.

The diesel was initially a heavy engine, and its widest application is as a marine and stationary power plant. But research has consistently reduced its weight. Because of the diesel's small size and lightness compared with steam boilers and turbines, the new German "pocket battleships" are propelled by such engines, which were specially built much lighter than most marine diesels. Europe has a number of larger diesels in stationary power plants, one of which is a 15,000 brake-horsepower engine in the Hamburg power station. Seven thousand horsepower is America's largest, installed at Vernon, Calif.

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TOO BIG FOR AN AUTOMOBILE

This internal combustion engine, the world's largest Diesel, is shown nearing completion on the construction floor.