

The Knowledge Bank at The Ohio State University
Ohio State Engineer

Title: Engineering Abstracts

Issue Date: Nov-1928

Publisher: Ohio State University, College of Engineering

Citation: Ohio State Engineer, vol. 12, no. 2 (November, 1928), 14.

URI: <http://hdl.handle.net/1811/34510>

Appears in Collections: [Ohio State Engineer: Volume 12, no. 2 \(November, 1928\)](#)

ENGINEERING ABSTRACTS

MOLTEN IRON CARRIED IN CARS

As the result of an agreement between the Hamilton Coke and Iron Company and the American Rolling Mill Co., molten iron is to be supplied by the former to the rolling mill at Middleport, Ohio. The molten iron will be transported in specially constructed cars over a 10-mile spur track of the Baltimore and Ohio railroad built expressly for that purpose. All bridges were consequently built nearly double the ordinary strength to take care of the additional load. The three cars, which are of the ladle type, will average about four trips every twenty-four hours. They are 56 feet in length, have four axles at each end, and when loaded weigh 340 tons. The cars are lined with fire brick and are provided with lids somewhat on the order of giant thermos bottles. At the rolling mill they are tilted on pivots allowing the molten metal to run out like water. The tilting is accomplished electrically, the mechanism being constructed in such a manner that the electrical attachments can be made only when the car is at a standstill, thereby adding materially to the factor of safety. Metal can be held in the cars for 48 hours. Their capacity is 150 tons.—*Scientific American*.

NEW NIGHT CONSTRUCTION LIGHT

A new lighting unit for night construction has been placed on the market by the Holophone Company, 342 Madison Avenue, New York. This new unit is of extremely rugged construction, made to withstand rough treatment. The housing is made of heavy malleable iron, but dipped galvanized. All screws and nuts are made of bronze or copper to prevent corrosion. The refractor globe is made of two pieces of heavy pressed glass arranged so that all redirecting prisms are sealed in a dust-tight chamber. The entire unit is dust-proof and water-proof. Lamps of 300- and 500-watt sizes can be used. This lamp will illuminate an area of 2,500 square feet when the unit is mounted 20 feet above the ground.—*Contractors' and Engineers' Monthly*.

BLUE GAS

The recent development of airship motors using oil gas as a fuel has started a revival of interest in this substance and also brought about some misunderstanding regarding it. In the first place it is not "blue" gas, but "blau" gas. It is called this because it was developed by a German chemist named Blau. The misunderstanding arises from the fact that "blau" in German means "blue."

It is also a mistaken idea that the gas is something new. This is not true, as its development dates back as far as 1815; in 1823 there were eleven English municipal plants which used gas of this type.

A number of oils may be used in making the gas; for example, mineral oil distillates, distillates from lignite tar or shale tar, and even vegetable oils, such as castor oil, have been employed.

The gas is obtained by spraying gas oil into highly heated retorts. This first vaporizes the oil and then breaks it up into oil gas, tar, and coke.

The gas is next purified and compressed to a pressure of 20 atmospheres in reciprocating pumps cooled by the injection of a water spray. This segregates the hydrocarbons, and the gas is then compressed to 100 atmospheres. Under this pressure it is liquefied or loses part of its very low-boiling gaseous compounds. It is stated that 100 lbs. of gas oil will produce from 30 to 40 lbs. of blau gas.—*Mechanical Engineering*.

THE CENTRIFUGAL FREQUENCY RECORDER

The old type of frequency recorders are not practical where a very small frequency change is to be registered. They give an average rather than an instantaneous value of the change. Errors arise from temperature coefficients in the impedance bridge type which involves reactors. They are very sensitive to a wave change or voltage fluctuation. If the instantaneous frequency change may be recorded, it is possible to balance the load distribution very easily. An instantaneous frequency recorder solves the above problem. Its construction is based on an old Physics principle—that of centrifugal force. The centrifugal force exerted upon a rotating mass is proportional to the square of the rotating speed. In a synchronous motor the speed is proportional to the frequency of the line from which its power is supplied. If a piece of apparatus similar to the common flyball governor is placed so it may be rotated by the synchronous motor, the centrifugal force exerted upon the balls will be proportional to the frequency squared of the motor. Any change in frequency will change the centrifugal force exerted upon the flyballs, thus changing the distance they fly apart. If these balls be connected to a pusher rod, the distance the rod moves will be proportional to the frequency squared. Through a series of levers a pencil is connected to the pusher rod and allowed to press upon a chart. By arranging the levers correctly a very large pencil movement may be had from a very small frequency change.—*The Electric Journal*.

A BUILDING ON THE FACE OF A CLIFF

Influenced somewhat by the architecture of houses that rim the Swiss and Italian lakes and the shores of the Mediterranean, a house has been designed by William Cameron Menzies for Douglas Fairbanks and his wife, Mary Pickford, at Solana Beach, California. This may best be described as a cantilever structure, supporting itself against the sheer face of a cliff by its own weight. Reversing the customary order of arrangement, the garage will occupy the top floor on a level with the highway, and the cars will drive directly into it from the road. Beneath it will be the living room, dining room, kitchen, and incidental rooms as pantry, and so forth, and on a still lower level is a floor of bedrooms. The house will have windows on three sides. Steps will lead from the beach to a patio, and surmounting the entire building will be an observation tower. At high tide boats will be able to moor on the beach.—*The American Architect*.