

## ENGINEERING

# Jet Oiling for Metal Cutting

Method for quintupling metal machining production developed. Fine jet of oil under high pressure squirted upon cutting point to give lubrication.

► A NEW way of jet oiling metal cutting that can quintuple metal machining production to speed defense and industry has been invented by R. J. S. Pigott, director of engineering research of the Gulf Research and Development Co. in Pittsburgh.

Faster cutting of difficult metals, more economical cutting of softer metals and cutting of the new metal, titanium, at any reasonable speed are all forecast by the new machining process announced by the Gulf Oil Corporation.

Squirting a fine jet of a specially-developed cutting oil under 400 pounds per square inch pressure from below and directly upon the cutting point, the new method lubricates as it cuts. This allows the machinist to cut faster at the same time that the oil cools the metal and lengthens the life of the cutting tool.

The new process, marketed under the name Hi-Jet, will be developed by Thompson Products, Inc., of Cleveland, Ohio. They will devise ways of applying the new process to hard, tough steels and

alloys, with a saving of time, power and scarce materials.

Wonder that direct lubrication of the cutting point in metal working had not been applied 50 years ago was expressed by Mr. Pigott. He is a mechanical engineer, a graduate of Columbia University and president this year of the American Society of Mechanical Engineers. Older processes used in cutting metals flood the piece of metal being cut with so-called cutting oil, according to Mr. Pigott, but the oil is deflected by the metal chip being pushed up by the tool as it cuts. The cut surface comes out dry, and the only effect of the oil is to carry away some of the heat developed by the friction of the tool.

In the Hi-Jet process, by installing a compression pump and from one to five jets under the cutting point on the machine, Mr. Pigott explains, lubrication reaches the exact point where this friction develops the heat. This allows faster cutting, longer wear for the machine tools, and the possibility of cutting metals too tough for pres-

ent practice. Additional cooling is provided in the design of the new apparatus by a thin curtain of the same oil dropped from above the tool, so that all cuts are made within a small volume of space surrounded by cooling oil. Hi-Jet oil can also be used on the same machine for lubrication and for a hydraulic fluid for moving parts, which allows re-use of the oil and fewer kinds of oil to be stocked by the shop.

Science News Letter, January 26, 1952

## MEDICINE

## Florida Rats Help Fight Disease in Britain

► A DOZEN swamp rice rats have been imported from Florida by a British veterinary scientist to help fight disease.

The scientist is Dr. J. S. Steward of the Imperial Chemical Industries Ltd., London. He believes that the rice rat should be ideal for testing the effectiveness of new drugs because they are considerably smaller than cotton rats and white rats now used for this purpose. He also recommends testing the rice rat for its susceptibility to infections which do not normally take well in other laboratory animals.

Dr. Steward has been able to keep and breed the imported rice rats in his laboratory in England on a diet of ordinary rat cubes supplemented with carrots.

He found the rice rat far from a docile animal by nature, as it will bite even before being handled. He thinks, however, that after several generations in captivity it may settle down to more gentle ways, as the cotton rat has done.

Dr. Steward's methods for successfully rearing rice rats as laboratory animals are reported to fellow scientists in the *JOURNAL OF HYGIENE*.

Science News Letter, January 26, 1952

## GEOPHYSICS

## Thunderstorms Intensify Earth's Electric Field

► THUNDERSTORMS as far as 100 miles away have been found to produce strong disturbances in the intensity measurements of the earth's electric field.

Two possible explanations are: 1. Such disturbances are caused by wind-blown electric space charges. 2. They are caused by a layer of increased conductivity about 12 miles above the earth's surface.

Dr. G. F. Schilling of the Institute of Geophysics at the University of California at Los Angeles, finds, through research in both his native Austria and in the United States, that thunderstorms act as generators which reverse the normal pattern of electrical currents flowing in the atmosphere. They are thus a principal factor in maintaining the earth's electric charge.

Dr. Schilling's experiments verify the importance of distant thunderstorm activity on the electric field of the earth.

Science News Letter, January 26, 1952



*JET OILING—Paul Busang, engineer, George Wright, machinist, and R. J. S. Pigott, inventor of the new Hi-Jet method of faster machine cutting for hard metals (left to right), are shown here discussing this process which can quintuple metal machining production.*