

ENGINEERING

# Henry Ford Gets Patent For Improved Type Of "Liners"

## New Inner Surfaces for Motor Cylinders Can Be Removed With a Screw Driver; Of Thinner Stock

**H**ENRY FORD has been granted a patent (No. 2,170,015) by the U. S. Patent Office for an improved easily removable "liner" for automobile cylinders. Liners are the hardened inner surfaces of cylinders in which the pistons move and which serve to conduct the excess heat of the explosion of fuel to the engine block.

The new Ford liners can be removed with a screw-driver, in contrast to the powerful presses formerly employed to free them from the engine block. They are also made of thinner stock and thus have better heat conductivity, states the patent.

Liners in the past, Mr. Ford indicates, have been made of special steel tubing either pressed or screwed into the cylinder bore. The latter method is most expensive and but little used in medium priced motor cars.

Inserting a tubular liner has been accomplished by "freezing" it to the temperature of liquid air (thus making it contract) and then placing it in the cylinder bore where it expanded to give a tight fit.

Getting the lining out for replacement was something else, however, and powerful presses have been employed. Even then the lining was apt to break, jam within the cylinder and score it.

Ford's new linings are made of flat thin sheet steel of 20 to 22 gauge curved into a cylindrical shape. Beveled edges on the ends of the sheet meet to form a groove. Spot welding of this groove is made at three points, near each end and in the middle.

The embryo liners are then heat treated, made to absorb considerable amounts of carbon on their surface which—on cooling—gives a hardened surface comparable with that of expensive alloy steels.

The liners are next placed in the cylinder bore by the chilling, liquid air method. The trick of getting them out is accomplished by merely putting a small screw-driver down the groove and breaking the tiny weld. Next the middle weld is ruptured and finally the third.

Then you reach in and lift out the liner.

Cheap replacement for what has previously been a costly difficult operation is one claim of the patent. Others are less costly initial materials and better heat conductivity of the finished liners.

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University told anthropologists attending the meeting. Ruins at Mapungubwe in South Africa, he said, show that a high culture existed in this part of the world in late Stone Age times, before the coming of the Bantu-speaking Negroes who now dominate most of the continent.

Skeletons associated with the Mapungubwe finds indicate that this ancient civilization was the work of a race intermediate between (and possibly a hybrid of) the Crô-Magnon and Neanderthal types, which are quite distinct in Europe.

An effort to unscramble the puzzling near-human ape remains found in South Africa was made by Dr. Robert Broom of the Transvaal Museum, Pretoria. Perhaps the best known of these are the Australopithecus skulls, which are quite definitely ape-like, except that their teeth are much more like those of man than they are like the teeth of gorilla or chimpanzee. Dr. Broom regards Australopithecus not as ancestral to man (he came too late in time for that) but as a survivor of a possible ape-like ancestral stock that existed before Ice Age times.

## Moroccan Doctors' Secrets

**E**XHIBITING to the anthropologists 65 native Moroccan charms and sickness remedies, Walter Fogg of the University of Wales told of overcoming Moslem doctors' aversion to revealing their secrets, and reported that the majority of the 65 items deal definitely with witchcraft and evil spirits. Prescriptions in Morocco include wearing a piece of camel's windpipe for hiccups, and wearing the body of a holy bird, the hoopoe, as "a charm against almost anything."

Even British botanical laboratories at Kew have been unable to determine all plant ingredients in some of the mixtures, Mr. Fogg reported. Some of the remedies come from ancient Egyptians and Greeks.

## Life Largely Surfaces

**S**KIN-DEEP is not merely beauty, but life itself, it was suggested in the address of Prof. Eric K. Rideal, of Cambridge University, president of the B. A. A. S. chemical section. The thinnest of skins hold the secret of life—layers only one molecule deep, at the interfaces where two cell-constituents meet, for example, a fatty substance in contact with a watery solution.

The very shape and arrangement of the molecules in these thin layers are of vital importance, Prof. Rideal explained. The larger molecules, especially those of the proteins, are long affairs, with definite "head" and "tail" ends, bearing opposite electrical charges. Their arrangement in the surface films determines the way in which they absorb food substances, resist or succumb to poisons, permit wastes to leave the cell, etc.

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ASTRONOMY

## Omicron Andromedae Varies More Than Half Magnitude

**L**AATEST fickleness in the heavens: The relatively bright star, Omicron Andromedae, visible with naked eye, varies more than half a magnitude from its third magnitude brilliance. Evidence found by Dr. Richard M. Emberson in observations made with a thermoelectric photometer attached to a Harvard telescope at Oak Ridge, Mass. Astronomers will conduct an investigation into the cause of this new-found variability. The larger the figure for the magnitude of a star the fainter the star. Stars more than sixth magnitude are invisible to the unaided eye; often it is hard to see the fifth and sixth magnitudes.

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## ● RADIO ●

Dr. F. Alton Wade, geologist and senior field scientist of the U. S. Antarctic expedition, will be the guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Monday, September 18, 4:30 p.m., EDST, 3:30 EST, 2:30 CST, 1:30 MST, 12:30 PST. Listen in on your local station. Listen in each Monday.