

trend to combine the name of the manufacturer with "cillin" he points out that there are almost 30 manufacturers, which offers almost 30 possible names for penicillin.

And here's our tip to anyone wanting to take up the five-to-one offer on P. O. B.: It should pay off on penicillin in oil and beeswax.

Science News Letter, July 31, 1948

METALLURGY

Ceramics in Jet Nozzles

High temperature metals are undergoing investigation in order to develop ceramic coatings which will enable them to resist the high heat of jets and rockets.

► MORE dependable ram jet, pulse jet, turbo-jet and rocket engines will result from investigations under way to develop ceramic coatings for high-temperature metals to protect them from the excessive heat in these devices used in high-speed planes, guided missiles and rockets.

The studies are being conducted by the National Bureau of Standards under the sponsorship and with the financial aid of the National Advisory Committee for Aeronautics. The first of them was with ceramic-coated molybdenum, and results now announced indicate that the oxidation of this metal is greatly retarded by some of the coatings tried.

Molybdenum is a logical metal for use in these high-temperature applications because it is available commercially in substantial quantities and it has the extremely high melting point of 4,750 degrees Fahrenheit. In order to use it at high temperatures in the presence of oxygen it must be protected against what otherwise would be a rapid oxidation.

Many high-temperature alloys have been developed during the past few years, but most of them begin to melt within the temperature range of 2,400 to 2,600 degrees Fahrenheit and, while suitable for some applications, are not for others. Of the metals having melting points greatly exceeding this temperature range, only platinum and iridium, melting at 3,180 and 4,260 degrees respectively, withstand oxidation at high temperatures without protection. Their cost, however, is prohibitive.

Other metals that have high melting points, but do not have good oxidation resistance, include titanium, thorium, zirconium, boron, molybdenum, tantalum and tungsten. The last three are of special interest from the standpoint of potential application in very high-temperature service. The first four have high melting points but below that of molybdenum, tantalum and tungsten have higher melting points, 5,160 and 6,100 degrees Fahrenheit respectively.

Preliminary tests have indicated that both tungsten and tantalum may be coated to protect against oxidation; however, the more complete tests have been made on molybdenum, not only because this metal is available in substantial quantities but

because there are comparatively large ore deposits in the United States. The coatings, which contain various combinations of such compounds as zirconium oxide, Florida kaolin, calcined kaolin and sodium nitrite, and methods of application to the metal, are described in a recent report of the National Advisory Committee for Aeronautics.

Science News Letter, July 31, 1948

MEDICINE

Neutrons Disappointing In Cancer Treatment

► NEUTRONS, the fundamental atomic particles which are so important in fission, have turned out to be less effective in the treatment of cancer than was once hoped.

Rather discouraging results from the only series of cancer patients treated with fast neutrons are reported by Dr. Robert S. Stone, of the University of California Medical School, San Francisco, in the *American Journal of Roentgenology and Radium Therapy* (June).

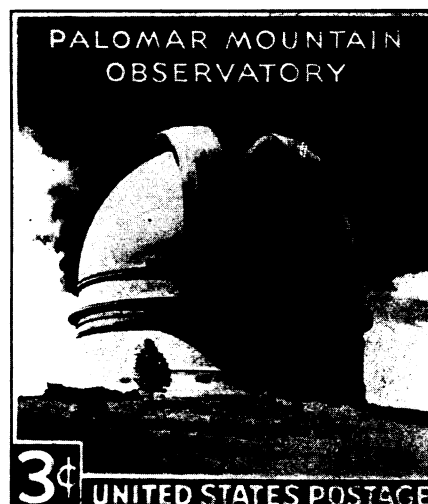
The radiologist said that the 249 incurable cancer patients in the series were treated after animal experiments showed the neutron beam from the cyclotron was highly destructive of cancer tissue, indicating that neutrons might help cancer victims who otherwise had no hope of survival.

A lack of any appreciable differentiation by neutrons on cancer and healthy tissue is given by Dr. Stone as the reason for the disappointing results.

Neutrons were effective in destroying cancer tissue, but Dr. Stone said that serious damaging after-effects also showed up some time after treatment. These after-effects were more severe than expected, there being no basis in either X-ray therapy or animal experimentation with neutrons to expect such after-effects.

The five-year survival rate of the incurable patients treated with neutrons was 7.5%. If left untreated, the rate would have been somewhat less than 5%.

Eighteen patients were kept alive for more than five years. All of these patients had severe late reactions, some of them so



PALOMAR COMMEMORATIVE STAMP—The central motif is an exterior view of the Palomar Mountain Observatory. It goes on first-day sale at Palomar Mountain, Calif., on Aug. 30. An initial printing order of 50,000,000 stamps has been authorized.

severe that the patients were partially incapacitated.

However, Dr. Stone added that experimental work should be continued to determine if there is some way the cancer-destroying power of neutrons can be eventually applied.

Science News Letter, July 31, 1948

CHEMISTRY

Plastic Containing Rubber Has Unique Qualities

► A LIGHT, hard, somewhat brittle resin, to which rubber has been added, has unique properties that make it suitable for use in football helmets, bowling balls and many industrial applications.

The new plastic, called tuf-lite and developed by the Goodyear Tire and Rubber Company, was announced to the American Chemical Society in Los Angeles, by H. R. Thies of the company's chemical division.

The raw materials for the new plastic are butadiene-styrene resins. These are plasticized with synthetic or natural rubber. The final product is at first soft and pliable, flowing readily. It molds cleanly, with little trimming necessary, and handles easily as long as it is kept warm.

The tuf-lite product is one of the toughest of the high-hardness rubbers, or plastics. It has high-impact resistance, low water-absorption, good tensile strength and excellent electrical properties. It is also readily machinable.

Science News Letter, July 31, 1948