

CHEMISTRY

Sulfuric Acid's Future

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► THE SULFURIC acid industry of the United States, now producing at a rate of over 10,000,000 tons a year, does not face as severe a cut-back in production after the war as many other industries because much of the acid used in the production of war essentials is not consumed in the process and is recovered and remarketed, being suitable for use in other industries. In postwar days it will go directly to these present secondary users.

"Of the sulfuric acid value supplied the TNT manufacturer, approximately 95% is returned to the market as a recovered spent acid," states Alonzo White III, of the War Production Board, in *Chemical and Engineering News* (July), "and may be used to fulfill requirements in the steel, petroleum, heavy chemical, and superphosphate fertilizer industries." The publication is an official organ of the American Chemical Society.

Sulfuric acid, he points out, is not a one-purpose product. It finds applications as a dehydrating agent, catalyst, active reactant in chemical processes, solvent and absorbent. Acids produced are of different strengths and degrees of purity. Sulfuric acid is produced by several different processes. The user must select the acid with the specifications required for his particular use.

Aviation fuel production requires large quantities of sulfuric acid for its alkylation process which results in an "alkylation spent" acid. This, Mr. White says, may be hydrolyzed to remove hydrocarbons present, or processed "as is" in a sulfuric acid decomposition unit and converted to clean acid. The recovery may range as high as 90% of the acidity value supplied, depending on the equipment available and the method of handling at the refinery.

Smokeless powder production also uses large quantities of sulfuric acid in the manufacture of the nitrocellulose for the powder. Recovery of the acid from this process is not as great as in the manufacture of TNT. In making nitrocellulose for smokeless powder, there is a loss, he states, of about half a pound of the acid for each pound of the nitrocellulose produced.

"Indications are," Mr. White concludes, "that there will be a gradual conversion of some industries to peacetime activities from now until VJ Day, at which time extensive changes are anticipated. Some of the conversions will result in slight increases in sulfuric acid usage."

Steel will consume more for pickling purposes, and the superphosphate fertilizer industry is capable of consumption of considerably more acid than is now being consumed.

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ASTRONOMY

Very Red Stars Are Easily Detected

► VERY RED STARS whose spectra show an abundance of titanium oxide and carbon compounds show a special distribution in our part of the galaxy, report Dr. Oliver J. Lee, director, and Thomas J. Bartlett of the Dearborn Observatory of Northwestern University.

The titanium oxide stars, known to astronomers as types M5 to M8, are more easily detected and classified on plates made at the observatory than any other stars, so if others had been present in the regions studied, they undoubtedly would have been identified during the Dearborn survey of faint red stars.

The second of three parts of the survey has just been announced in the *Annals of Dearborn Observatory*. So far nearly one-third of the total area of the sky, or about 14,000 square degrees, has been studied.

M-type dwarf stars of absolute magnitude 9.7, which means stars only about 1/100 as bright as the sun, have been observed to a distance of about 123 light years, or 722,000,000,000 miles away. Ordinary giants and supergiants located hundred of times farther away were also studied. Thus these giants have been hunted far and wide, and if they are well distributed in our galaxy, considerable numbers should have been recorded on the photographic plates as faint stars.

Among the 22,680 stars which have been catalogued thus far at the observa-

tory only 1,499 were of the advanced titanium oxide type.

Because of the foregoing considerations, and because of the relatively high concentration of carbon stars in the anti-centric regions of the Milky Way, several questions which would bear further investigation have occurred to the Dearborn astronomers:

Does our branch of the Milky Way have an unusually abundant supply of carbon and its compounds? Is this true also of the titanium oxide molecule in stars of advanced M type?

If so, is this due to quite irregular distribution of those cosmic materials or does our part of galactic space have properties which tend to make them more favorable materials for building stars?

Is our branch of our galaxy a somewhat recently developed subdivision, or possibly a very old one, in which a carbon cycle and perhaps a titanium cycle have gone berserk and rule the destinies of stars for a brief period with complete abandon?

Science News Letter, August 11, 1945

PUBLIC HEALTH

Polio Cases Are Less Than This Time Last Year

► ALTHOUGH the number of infantile paralysis cases reported to the U. S. Public Health Service is still increasing, fewer cases have been reported for each of the last six weeks than for the corresponding period last year. This would seem to indicate that the number of cases throughout the country may not reach epidemic proportions.

A total of 963 more cases were reported last year than this year for the six weeks from June 16 to July 28. Up to June 7, more cases were reported for this year than last. There will probably continue to be an increase in the number of cases reported until September, but the increase is expected to be slight in comparison with those of last year. To date this year, 2,048 cases have been reported for the country as a whole as compared with 3,060 for the same period last year.

For the week ending July 28, 391 cases were reported for the country as a whole, compared with 369 for the preceding week. This increase of only 22 cases compares most favorably with an increase of 172 for the same week last year. In New York state 72 cases were reported for the week ending July 28, 25 of these being for New York City alone.

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