

## METALLURGY

# New Steel-Making Materials Aid U. S. Defense Plans

**C**HEAPER substitutes for ferromanganese, necessary for removing oxygen in the final step in making steels, have been developed through several years of cooperative research at the Carnegie Institute of Technology.

In case of war the steel industry could run on a fifth to a third of its present imported ferromanganese which must now be added at the rate of about fourteen pounds to every ton of the steel produced. This important step toward America's military self-sufficiency is a by-product of the research conducted by Dr. C. H. Herty, Jr., and just reported to the Carnegie Institute's Metallurgical Advisory Board.

An alloy of iron with manganese, known as ferromanganese, is conventionally used to deoxidize the steel. The manganese is fond of oxygen, takes it away from the iron and abducts it into the slag.

Dr. Herty first made a twin combina-

tion of manganese and silicon that did the work of ferromanganese cheaper and better. For over a year these manganese-silicon alloys have been tested commercially with success in open-hearth steel making at a few large steel plants.

Now Dr. Herty is ready to present to the steel industry a triplet deoxidizer, an alloy of manganese, silicon and aluminum. Aluminum has an even greater avidity for oxygen than silicon or manganese. This triplet deoxidizing alloy can be made from American iron ore that runs from 5 to 35 per cent. manganese, sand that contains silicon, and bauxite which is the ore of aluminum. All of these are American products, the supply of which would not be interrupted by a war.

The new manganese-silicon-aluminum alloy will be given its first commercial test within a month, Dr. Herty announced. So far its use has been lim-

ited to test runs in the laboratory.

In making steel from pig iron oxygen is first introduced into the molten mass to remove impurities that will combine with oxygen and pass off in the slag. Then the oxygen must itself be removed and that is the function of ferromanganese and Dr. Herty's new twin and triplet deoxidizers.

The largest American supplies of manganese-carrying iron ores are in the Cuyuna range of Minnesota. If the highest manganese contents of these ores are held as war reserves and not wasted in making ordinary pig iron, Dr. Herty explained, they will be a valuable mineral resource for the future.

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## ASTRONOMY

## Most Observers Expected To Watch Meteor Shower

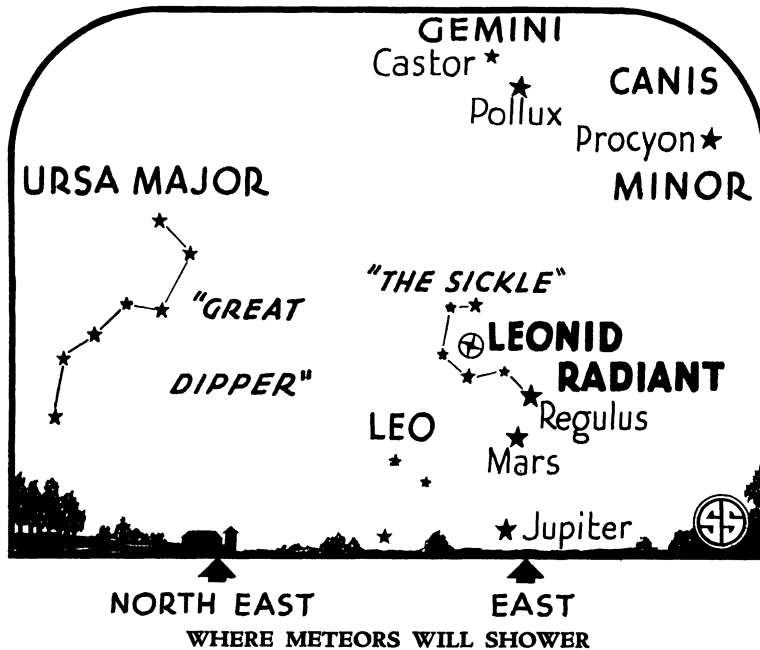
**I**NCREASING interest in the scientific observation of meteors, or shooting stars, by amateurs throughout the country indicates that the coming shower of Leonid meteors (*SNL, Nov. 5, '32, p. 290*) in the middle of this month will be more extensively watched than any previous meteor shower.

Dr. Charles P. Olivier, who as president of the American Meteor Society assembles reports from observers throughout the country, told Science Service that the Perseid meteors in August (*SNL, Aug. 6, '32, p. 83*) were more widely observed than any shower in recorded history. Hence astronomers expect the coming Leonids, which give promise of being much greater than the August Perseids, to be watched even more extensively.

For the Perseid shower nearly 40,000 meteors have been reported to the American Meteor Society from all sources and more reports will undoubtedly be received, Dr. Olivier said. (*SNL, Aug. 27, '32, p. 131*) Thirty-eight members of the Society and 327 non-members have sent in counts of their observations. Most of the non-members made counts of meteors according to instructions given by Dr. Olivier while the members actually mapped the courses of many meteors.

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It is believed that the life span of diamond-back terrapin may be much longer than the 40 years tentatively set since 21-year-old specimens at a government fisheries station still have young-looking shells.



This diagram shows the most conspicuous stars in portions of the eastern and northeastern sky as it will appear in the United States during the early morning of Wednesday, Nov. 16, when the greatest display of Leonid meteors is expected. The familiar Great Dipper will be readily located and, east of this constellation, in the cradle of the Sickle is the point from which the meteors will radiate. At this time of the morning the two bright planets, Mars and Jupiter, can be seen almost in line below the radiant. The moon, two days past full, will be high over the radiant and a short distance above Pollux. This map may be used several days before and after Nov. 16.