over the inner, larger bone of the leg below the knee. This bone is the tibia, from which the disease gets its name, pretibial fever.

As soon as the fever went down, the men got well rapidly, with no complications, weakness or depression.

A commission of experts assigned by the Surgeon General of the Army to investigate the disease was unable to find any germ cause or any method by which the men might have gotten it. Members of the commission were: Dr. John R. Paul, of Yale University Medical School; Dr. Norman H. Topping, U. S. Public Health Service, and Major Cornelius Philip of the Army.

An outbreak of what may have been the same disease occurred in August, 1940, in Wrens, Ga.

Science News Letter, June 12, 1943

ASTRONOMY

Quadruplets in Sky

Far-off star, 59D Serpentis, which looks like one to naked eye, now believed to be really three or four circling in complicated dance.

By CHARLES A. FEDERER, Jr.
Harvard College Observatory

➤ QUADRUPLETS and quintuplets in the sky may not be as rare as they are on the earth, but astronomers get nearly as excited about them. At the meeting of the American Astronomical Society several papers dealt with multiple stars, among them a discussion by Mrs. Elizabeth Cornwall Tilley, of the University of Michigan, concerning the plain-seeming star known as 59D Serpentis.

Should 59D Serpentis be called single, as it appears to the naked eye? Or double, as it appears in a four-inch telescope? Or triple, as the spectroscope reveals one of its components to be? Or quadruple, as the sum of its parts would make it? But if quadruple is correct, the quads are not as nearly alike as they usually are among humans.

The star 59D Serpentis is also unusual in that two of its triplet stars are hot, white twins, while one is a cooler yellow star like our sun, only much larger.

One of the standard means for discovering doubleness among stars is to observe their spectra. If two stars are revolving around each other, some of their motion is probably toward and away from us, producing the well-known Doppler shift in their spectra. As one star approaches us along one side of the orbit, its spectrum is shifted toward the violet, while its companion's is shifted toward the red as that star recedes. Thus, two spectra are really being seen, and the lines in the combined spectra appear double. These double lines gradually blend as the stars proceed along their orbits, then separate again. This is repeated twice for each revolution they make.

Sometimes one star is so much brighter than the other that the second star's spectrum is suppressed and only one set of lines is seen. However, the regular oscillation of these lines around a mean position proves the star to be a spectroscopic double in any case. In only two or three cases, including 59D Serpentis, are three spectra visible, and only for 59D have the details of the system been determined. The white twins revolve around each other once every 1.85 days, at a distance apart of only four million miles. Together, they revolve around the large yellow star, about 180 million miles distant, or the distance across the earth's orbit, in 386 days. These three form the triplet, around which the distant visual companion, also a white star, may require several thousand years to revolve.

The triple spectrum of 59D Serpentis was discovered independently in 1938 by McLaughlin at the University of Michigan and Tremblot in Paris, and in some cases they took spectrum photographs of the star on the same nights.

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***SEWING MACHINE** — Radio-frequency current instead of needle and thread is used by this "sewing" machine to join plastic materials. Dr. George H. Brown, RCA scientist under whose direction the electronic machine was developed, shows a worker how to "stitch" a thermoplastic fabric. Although still in the development stage, the machine has possible applications to war production as well as postwar uses.*

"Rex-steel" is proposed as a name to replace "stainless steel" which indicates only its noncorrosive properties.

The new 199-mile oil *pipeline* across Florida will soon carry 30,000 barrels a day; Texas barges will unload gasoline at Carabelle, and Atlantic coast barges will load up with it at Jacksonville.