



GERM-FREE CAGE

Little Yehudi II peeps from her sanitary surroundings as the attendant waits on her from outside. How she is fed without contact with a germ-ridden world is shown in the illustration on the front cover of this week's Science News Letter.

the monkey is the logical next step. Since there is very little literature on monkeys, we want to raise this monkey for experience and records for future use in the laboratories.

"We also expect to extend our experiments to the dog, as a representative carnivorous animal."

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India is to have two museums for exhibits of scientific and industrial research, at Calcutta and Delhi.

As far back as 1934, says one economist, Germany began shifting *food habits*, gradually decreasing consumption of bread, meats, fats, milk, and fruit and increasing other food such as potatoes, with a view to meeting wartime food problems.

METALLURGY

Steel Famine Even In Defense Seen for the Next Few Years

This Year's Production of 90,000,000 Tons Will Be 8,000,000 Short; Shortage Next Year 27,000,000 Tons

A SHORTAGE of steel even for defense needs in 1941 and for the next few years is foreseen by Dr. Matthew A. Hunter, professor of metallurgy at Rensselaer Polytechnic Institute in Troy.

Even our scrap iron bin is practically empty, he declared. For years we sent large quantities of our scrap iron to a belligerent eastern nation. Now we have reason to regret this action.

This year, he continued, speaking on the General Electric Science Forum, the steel industry will produce about 90,000,000 tons of steel. But this is 8,000,000 tons short of our requirements.

Next year the shortage will be 27,000,000 tons.

By the construction of new plants, the steel industry expects to increase its capacity by 10,000,000 tons. But this still leaves a shortage of 17,000,000 tons which can only be made up by civilian conservation.

Already the Office of Production Management has indicated that a 50% cut in automobile manufacture in 1942 will be necessary in order to save some 4,500,000 tons for defense. Further restrictions will be necessary but cannot entirely make up the deficiency.

However, the situation is not altogether hopeless, Dr. Hunter thinks. He points out that some 14,000,000 tons of aluminum utensils have been contributed by American householders. He believes that every American household could contribute 20 pounds of scrap iron. They can do with fewer refrigerators, washing machines, ranges, and other articles containing iron.

Also there are untapped sources of scrap iron. He pointed to the automobile graveyards that dot the countryside. Iron fences, grills, and other useless structures can be removed. There is no substitute for steel, he said.

Science News Letter, October 18, 1941

CHEMISTRY

Mottled Enamel of Teeth Prevented by Water Treatment

FLUORIDES, cause of the disfiguring "mottled enamel" of teeth, can be removed from the drinking water by two simple methods designed for use in homes or small institutions having their own water supplies. The methods were devised and patented (numbers 2,207,725 and 2,257,111) by Dr. Elias Elvove, chemist of the U. S. Public Health Service, who assigned his patent rights to the United States Government.

How many American children have the ugly, irremovable brown spots on their teeth, result of drinking water and eating food cooked in water containing fluorides during the tooth calcification ages, is not definitely known. The condition, also called "black tooth," according to one estimate, afflicts 5,000,000 people in 31 states.

Community water supplies can be freed of fluorides by a relatively cheap method now commercially available.

The latest method for individual home

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or small institution use patented by Dr. Elvove is to shake up two gallons of water with half a pound of tricalcium phosphate, finely powdered, for half an hour; or for shorter periods totaling half an hour. The mixture is then allowed to settle and is filtered through a suitable filter. Ordinary commercial tricalcium phosphate is suitable.

Magnesium oxide is used instead of the tricalcium phosphate in the earlier method devised by Dr. Elvove. This has the advantage, he points out, of also ster-

ilizing the water and of being cheaper. Chief disadvantage is that it makes the water more alkaline, though this can be counteracted by adding a suitable amount of acid. For home use, vinegar might be used, he suggests.

Anyone planning to remove the fluorides from his home water supply, should, Dr. Elvove warns, seek the advice of the health department chemist in order to be sure of carrying out the procedure correctly.

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ASTRONOMY

Star Two Million Miles Away From Its Two Companions

26 Draconis May Take a Few Million Years To Make This Trip; Most Distant Companion of This Type

EVIDENCE that nature repeats itself, and that the laws of universal gravitation apply everywhere, was presented in papers before the American Astronomical Society.

In one case, a star is found which may take a few million years to revolve around its companions, and which is two million miles from them. Dr. Peter van de Kamp, director of Sproul Observatory, Swarthmore, Pa., and Dr. Dorrit Hoffleit, on leave from Harvard Observatory, determined that this stellar system,

known as number 26 in the constellation Draco, the Dragon, is remarkably similar to that of Alpha Centauri, the nearest star, which is really composed of three stars. In Centauri group two stars are comparatively close together, each about as large and bright as the sun, while the other, called Proxima Centauri, is 10,000 times as far away from the first pair as the earth is from the sun. In the case of 26 Draconis, however, the third star is about 25,000 times as far from the first pair as the earth is from the sun, making it the most distant companion of this type known. In the other new star group, reported by Dr. George Van Biesbroeck, of Yerkes Observatory, there is a pair of stars which revolve around each other in only 13 years, and at an average distance apart of only half a million miles, or about as far as Jupiter is from the sun.

Twenty-six Draconis has long been known as a close double star, of which each component is very similar in mass to the sun. The distant faint body, of the tenth magnitude, was discovered to be connected with 26 Draconis by Dr. Adriaan van Maanen, Mt. Wilson Observatory, and C. H. Gingrich, Goodsell Observatory, in 1921, even though it is 738 seconds of arc (12 minutes of arc, or one-fifth of a degree) distant.

Thirty-five plates taken at Sproul Observatory since 1913 were measured and reduced. The magnitude of the bright binary was cut down by means of a rotating sector, to approximate equality with the faint companion. The distance

of 26 Draconis from the earth was found to be about 30 light years, whereas that of Alpha Centauri, and its companion Proxima Centauri, is $4\frac{1}{4}$ light years. Dr. van de Kamp was careful to state that many uncertainties in the measurements existed, and that these results are only of a provisional nature, but that they show the star 26 Draconis deserves special attention on the part of other astronomers.

Proxima Centauri is estimated to take about a million years to revolve around its primary stars; the tremendous distance of the companion of 26 Draconis indicates that a few million years elapse while it completes a circuit around the two central stars. This is the longest period indicated for any gravitational system known. The period of the close pair is about 80 years, the same as for Alpha Centauri.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

OF SCIENCE NEWS LETTER published weekly at Washington, D. C., for Oct. 1, 1941.

Washington
District of Columbia

ss.
Before me, a Notary Public in and for the District of Columbia aforesaid, personally appeared Alvin C. Stewart, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the SCIENCE NEWS LETTER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Editor, Watson Davis, 1719 N St., N. W., Washington, D. C.

Business Manager, Alvin C. Stewart, 1719 N St., N. W., Washington, D. C.

2. That the owner is:
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Alvin C. Stewart,
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Sworn to and subscribed before me this 10th day of October, 1941.

[SEAL]

Kenneth O. Hulse

(My commission expires Feb. 1, 1942)

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