ZOOLOGY

Planting Fish By Billions

By Lewis Radcliffe
U. S. Deputy Fish Commissioner

We have become accustomed to billion dollar Congresses and we are beginning to discuss billionaires. Difficult as it may seem of achievement, we are now stocking our waters annually with billions of fry, fingerling, and adult fish. These are the output of Federal, State and private hatcheries. Nearly every state has at least one hatchery, and the Federal government has 70 stations and substations all the way from Afognak, Alaska, to Boothbay Harbor, Maine; from Duluth, Minn., to San Marcos, Texas.

In 1926 the output of the U. S. Bureau of Fisheries fish-cultural stations and of the rescue fields bordering the Mississippi aggregated 5,232,000,000 fish and eggs, according to a recent report by Glen C. Leach. The forty-four species propagated include nearly every important food and game fish in our waters. Because of the increased demand for fish of the fingerling sizes, the output was increased more than 100 per cent., totaling nearly 300,000,000. Another important phase of the Bureau's work included the salvaging of about 150,000,000 fishes which had become stranded in land-locked pools along the upper Mississippi.

Fish-culture is becoming more and more an exact science. The modern fish-culturist talks in terms of pond fertilization, the use of forage fish for food for the game fishes, use of foods rich in vitamins, and the free use of the thermometer to prevent his brood from being subjected to too sudden changes in temperature.

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BIOLOGY

Ultra-Violet Bad For Yeast

The old adage, "What is one man's meat is another's poison," has been well illustrated by the effects of ultra-violet rays on the sugar solutions in which yeast cultures are grown. Experiments performed by Drs. J. W. Woodrow, A. C. Bailey and E. I. Fulmer of Iowa State College show that if the flasks of nutrient liquid in which the minute plants are subsequently to be grown are exposed for a number of hours to the invisible radiations, they become definitely poisonous to the yeast cells, markedly decreasing their rate of growth. This is completely contrary to the results obtained by irradiating the food of animals, which have been shown to generate beneficial vitamins under such treatment.

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ANTHROPOLOGY

Rime of the Races

Behold, my child, the Nordic man,
And be as like him as you can:
His legs are long, his mind is slow,
His hair is lank and made of tow.

And here we have the Alpine race:
Oh, what a broad and brutal face!
His skin is of a dirty yellow.
He is a most unpleasant fellow.

The most degraded of them all
Mediterranean we call.
His hair is crisp, and even curls,
And he is saucy with the girls.

—*Hilaire Belloc.*

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ASTRONOMY

Smaller Domes Now Possible

The great dome, 100 feet in diameter, which covers the world's largest telescope at Mt. Wilson in California, could be made less than 40 feet in diameter, if the instrument were made according to new plans of Dr. G. W. Ritchey. Dr. Ritchey was formerly at the Mt. Wilson Observatory and designed the big telescope there. He has been working for several years at the Paris Observatory.

At a recent meeting of the French Academy of Sciences he presented the first model of what he terms an "aplanatic telescope" Like the great California telescope this is a reflector, where a mirror takes the place of the the solution of the problem of conlens of more familiar instruments. A concave mirror reflects the star light back towards the star to a smaller mirror, from which it travels back again, through a hole in the big one, to the eye of the observer.

Dr. Ritchey and Henri Chretien. with whom he has been working, have discovered a new method of making the mirrors, by means of which the telescope can be made much shorter than by older methods. In the model, the mirror is about 16½ inches in diameter, though the entire telescope is less than 4 feet long.

It is expected that the new system will greatly reduce the cost and simplify the construction of still larger telescopes that are planned. F. G. Pease, who was associated with Dr. Ritchey at Mt. Wilson, has made preliminary plans for one with a 300-inch mirror, to cost possibly $12,000,000, while Dr. Ritchey himself has been interested in a big one to be placed in the Alps.

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BACTERIOLOGY

T. B. Vaccine To Be Tested

The preventive tuberculosis vaccine that has been developed by Dr. Albert Calmette, director of the Pasteur Institute at Paris, is about to be tried out on herds of dairy cattle in England, through the cooperation of the British veterinary ministry of health.

The vaccine is known as BCG, from the names of its discoverers, Dr. Calmette and Dr. M. Guerin of the Pasteur Institute at Lille. It consists of an attenuated strain of bovine tubercle bacilli that have, after years of cultivation on beef bile medium, somewhere in the succeeding generations lost their virulence, though they still apparently retain their power to confer immunity.

The vaccine will be used in selected herds in which tuberculosis is known to be present. All calves will be vaccinated within two weeks after they are born. The operation will be repeated every twelve months, over a period of five years. By that time most of the older and tuberculous cows will have been worked out of the herds. At the end of this period the herds will, it is expected, consist largely of adults that have been kept free from infection by vaccination.

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HYGIENE

Arsenic in Tobacco

A hitherto unsuspected source of arsenic is pipe tobacco. Dr. Roe E. Remington of the North Dakota Agricultural College in a report to the American Chemical Society, told of a man who was excreting from three to four-tenths of a milligram of arsenic per day—a very large amount. He tried to find its source, and ultimately discovered that the man was an inveterate pipe-smoker. The analysis of pipe tobacco showed that various samples contained as much as a grain or a grain and a half per pound. If taken in one dose, that is enough arsenic to kill a man.

Since a large number of pipe smokers seem to be thriving, Dr. Remington's discovery does not appear particularly alarming, although further work may show that continued small doses of arsenic are harmful. He does not know the source of the arsenic in tobacco. It might come from the soil or from arsenic sprays.

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Spiders are fond of eating butterfly eggs.