

## CHEMISTRY

**Fish May Detect Fluorine In Water for Drinking**

**S**MALL fish may in future be used to detect the presence of fluorine in drinking water instead of the tedious chemical tests now necessary, it appears from a report by Dr. Andrew Neff of the California Institute of Technology. (*Science*, Sept. 27)

Small amounts of fluorine in drinking water cause a condition known as mottled enamel in the teeth of children who drink such water. Dr. Neff now finds that the teeth of fish living in fluorine-containing water also are affected. If the degree to which the fish teeth are affected can be accurately correlated with the amount of fluorine in the water, the fish test may replace the lengthy chemical analyses now used to detect the very small amounts of fluorine which cause the condition.

In reporting his studies thus far, Dr. Neff states that he will appreciate receiving small fish, preserved in 10 per cent. formalin, from regions where mottled enamel is endemic.

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## ANIMAL HUSBANDRY

**Electric Brooder Keeps Little Pigs Warm Enough**

**L**ITTLE pigs can be kept warm by an electric brooder, a privilege hitherto monopolized by the incubator infants of the poultry yard. The device was invented by A. W. Oliver, C. J. Hurd and F. E. Price of the Oregon Experiment Station. They developed it as a means of preventing losses in brood pigs, caused by the expensively frequent awkwardness or carelessness of porcine mothers, which often lie down on their offspring and crush or smother them without ever knowing they are there.

The brooder is a simple device. About twenty-two feet of copper-sheathed heating cable was enclosed in a two-foot pan of metal and wood. This pan is connected by heavily insulated wire to an ordinary 120-volt lighting current.

The initial cost of the brooder is very low. A manufacturing firm is now contracting to make one that sells for less than \$6, and it can be operated continuously for ten days, at average farm current rates, for 72 cents.

Success in the tests is shown in records of a larger percentage of pigs raised to weaning age, as well as considerable reduction of the farmer's labor at farrowing. Once trained to go to the brood-

er when through nursing (and this proves an easy matter), no further attention need be given the pigs, as they readily accept the attractive warmth furnished them away from their mother's careless rollings and trappings. She ceases to be anything more than a meal ticket to them.

By placing the brooder, slightly raised from the floor to prevent too much dampness, in a corner of the farrowing pen and covering it with straw, it becomes a snug nest for the pigs. To conserve the warmth, a wooden frame was built over which burlap may be thrown as a covering.

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## CLIMATOLOGY

**You, Your Boy and Dog Live in Varying Climates**

**Y**OU, your small boy and your dog live in different climates as you walk down a hot city street together—especially if your dog is a dachshund. The closer to the pavement you are, the more uncomfortable the world is.

This fact, recognized in a general sort of way for a long time, has been reduced to a measured basis by temperature readings taken by Vienna weathermen during the recent warm weather. Their observations would be closely paralleled by similar readings taken in any large city.

With air temperatures in the nineties and upper eighties, pavement temperatures mounted well above the century mark. In a courtyard that was partly paved, partly sodded, the temperature at ground level on the grass was 103 degrees Fahrenheit. The corresponding temperature on a granite block pavement under full sunshine was 124 degrees, while a dark wood-block pavement fairly simmered at 153 degrees. A few yards away was a shaded alley; into this the observer carried his tortured thermometer and set it on the stone pavement. The mercury ran rapidly down again to 81 degrees.

Temperatures differed considerably in different parts of the city. On one warm noon, when the downtown temperature was 86 degrees Fahrenheit, the thermometer in a lower-lying semi-suburban quarter read 91. On the sunny side of a narrow street the temperature was 93 degrees, on its shady side only 86. The broad Ringstrasse in the middle of the city ran the thermometer up to 96, while a narrow business street nearby shot it up even higher, to 98 degrees.

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**IN SCIENCE**

## FORESTRY

**Seeds by Carload Produced By Southern Pine Trees**

**P**INE trees in the southern states are producing the most tremendous seed crop in years. Every five or ten years they bear a big crop of seed, but the present season's yield is huge even for a "big seed year." All four of the South's principal pine species—long-leaf, short-leaf, slash and loblolly—are thick with cones, and the winged seeds carpet the ground.

Forest interests are taking utmost advantage of the unusual harvest. C. C. C. men have gathered seed by the carload, for use in three nurseries, without visibly diminishing the supplies left on the ground. Foresters, both Federal and State, as well as progressive-minded lumber companies, are urging timberland owners to refrain from their usual practice of burning off the forest undergrowth and grass, and to exert every effort to keep accidental fires out of the woods. If the forest lands of the South can be kept fire-free for the next few years, it will be worth hundreds of millions of dollars in timberland eventually restored to normal productivity, they declare.

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## OCEANOGRAPHY

**Ship To Drift for Years In the Arctic Ice Fields**

**A**N EXTRA-STRONG wooden ship, whose ultimate duty will be to become frozen in Arctic ice and drift with the ice fields into high latitudes, will be completed early in 1937, Prof. Wiese, Soviet explorer, has announced in Leningrad.

In general the design of the ship will follow that of the "Fram," used for similar duty by the Nansen expedition to the Arctic in 1893-96.

The chief object of the expedition which will use the new ship will be a thorough study of the deep parts of the Arctic basin which are covered the year round with an ice crust so thick that the strongest ice-breaking steamers cannot pierce it.

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# E FIELDS

## ARCHAEOLOGY

### Indians Seek Market For Famed Birch-Bark Canoes

**B**IRCH-BARK canoes, one of the most famous of the old Indian products, are still being turned out by Indians at Golden Lake, Ontario.

Reporting existence of this primitive American industry (*Science*, Sept. 27) Harlan I. Smith of the National Museum of Canada at Ottawa states that the Indians sell their birch-bark canoes cheaper than factory-made canoes, but markets are hard to find. To aid the Indians, and also to aid museums that may not have known such canoes are available, Mr. Smith expressed willingness to help museums or individuals get in touch with Indian canoe makers whom he considers reliable.

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## PHYSIOLOGY

### Urge Five Meals a Day Instead of Three

**F**IVE meals a day instead of the customary three are now advocated by two Yale University scientists, Drs. Howard W. Haggard and Leon A. Greenberg. The how and why of their five-meal day plan appear in a book, *Diet and Physical Efficiency*, published by the Yale University Press.

Studies on "human guinea pigs" in the Yale laboratories and on workers in a nearby Connecticut shoe factory have convinced the scientists that this dietary régime reduces so-called industrial fatigue and increases the amount of work that can be done.

Most people these days are glad if they can achieve the usual "three squares" a day. The five-meal plan, however, does not put any extra burden on the pocket-book. No more food is to be eaten through the day, but the usual amount is to be divided into five meals. Each of these should be smaller than the ones customarily eaten on the three-meal plan.

The new scheme requires replanning of the day's meals. The problem is one in division, not in addition. In the Yale study, the extra meals were fitted in at

the end of the third hour of work in the morning and at the same time in the afternoon. They should not consist of candy, a sweet drink or similar between-meal snacks. A glass of milk and a salad vegetable are favored by Drs. Haggard and Greenberg. In their study of the factory workers, the extra meals consisted of a glass of milk and a piece of angel food cake—this last item a concession to the workers' tastes but not entirely in accordance with the scientists' ideals.

The industrial output of factory operatives can be increased by as much as ten per cent. when their daily diet is rearranged into five meals instead of three, the Yale scientists found. The usual drop in industrial output at the end of the morning and the afternoon work periods has generally been attributed to fatigue. Those who work in offices and stores instead of factories are probably also less efficient at these times of day, though it is harder to measure their productivity. At any rate, they as well as factory workers may feel tired, irritated and disinclined to work during the last hours of the morning and afternoon. Drs. Haggard and Greenberg maintain that they are not tired but hungry, and that food, not rest, is what they need.

The three-meal day came about as a matter of practical convenience, it is pointed out. Our very adaptable bodies have become so used to the arrangement that now we do not feel hungry even when our stomachs are empty.

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## METEOROLOGY

### First Frost Comes Early, But Does Little Damage

**F**ROST'S first coming this autumn was a few days early, the U. S. Weather Bureau's weekly survey disclosed. Killing temperatures occurred during the week ending Wednesday, Oct. 2, as far south as the northern parts of Iowa, Nebraska and Colorado. The average date for the first killing frost at this latitude is about Oct. 1; this year's first sharp freeze came three or four days earlier.

Little damage was done to crops, however, for practically all important field products are now matured safely beyond the reach of frost. Four-fifths of the Iowa corn crop has won its annual race with the cold, and similar satisfactory conditions prevail in other major agricultural states. Late vegetables were about the only sufferers in the frosted areas.

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## CHEMISTRY

### Many Odd Methods Used in "Improving" Tea

**T**EA HAS not always been simply steeped in hot water to make a beverage. Many and weird have been the efforts of tea-users to "improve" it. William H. Ukers, of New York, has gathered information on many of these strange practices, which he presents in a new book, "All About Tea."

One of the earliest recipes for making tea brought back to Europe is for a kind of tea-nogg, long popular in China. Père Couplet, a Jesuit missionary who went to China in 1659, describes the addition to a pint of tea of the yolks of two fresh eggs and a quantity of fine sugar. This discriminating cleric was an early advocate of moderation in tea-steeping: "The water must remain no longer upon the tea than while you can chant the Miserere psalm in leisurely fashion."

The earliest recorded Chinese method of making tea was not so moderate as this: as described by Kuo P'o about 350 A.D., it consisted in actually boiling the green leaves of the tea plant.

Improvement came soon, however, according to Lu Yu, who wrote in the year 780. Quoting from an earlier work, he directed: "To make tea as a drink, roast the teacake until reddish in color, pound it into tiny pieces, put them in a china-ware pot, pour boiling water over them and add onion, ginger and orange."

Some forms of early Chinese tea evidently were prepared in cakes or bricks, as tea is still marketed in certain parts of the world.

Tea becomes a solid food rather than a mere beverage in some Oriental regions. The Shans of northern Siam, Mr. Ukers states, steamed or boiled the leaves of the wild tea tree and molded them into balls to be eaten with salt, oil, garlic, pig fat and dried fish.

"Vestiges of the old Shan custom are detected in the making and eating of Burmese 'leptet,' or tea salad," Mr. Ukers continues. "This is a pickled tea which the Pelaungs long have had a custom of preparing by boiling and kneading jungle tea leaves, and then wrapping them in papers or stuffing them into internodes of bamboo, which they bury in underground silos for several months to ferment. Eventually the product is dug up and eaten as a great luxury at marriage feasts and similar festive occasions."

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