

New and Interesting Facts from Science and Life

HOW FRENCH SCIENTISTS SOLVED WAR PROBLEM OF FOOD

WE have had our meatless days, and wheatless days we still have with us, to remind every one that the war is really a serious question. How serious it is the Europeans have had to learn from severe trials of four years past. As a result careful studies have been made of rations and substitutes, and the latest results obtained by French scientists are presented in this article from *La Nature*.

In France they formerly slaughtered 52,000 head of cattle per month, but now hardly 30,000 are killed, and it is not known how long this rate of consumption will be allowed. Before the war the per capita consumption of meat in France was 166 pounds per annum; the English 144 pounds, and the Germans 120 pounds for each inhabitant during a year. It is known that, with two or three meatless days each week, the German meat ration has been reduced from 166 grams per day to 450 grams per week, and with no apparent diminution of strength or fighting power.

The consumption of meat can be studied and regulated, if all the facts are made known generally. When we buy meat at least 20 per cent. is waste, bone and tendons, 50 per cent. water and the remaining 30 per cent. the really nutritive part, has an average of 15 per cent. lean and 15 per cent. fat. A kilogram (2 pounds) of meat will give:

100 grams bone and tendon, nutritive value, 0.
100 grams water, nutritive value, 0.
100 grams nitrogenous matter, nutritive value, 100 equals 100.

100 grams fat, nutritive value, 9x150 equals 1350. This is a total of approximately 1500 calories or heat-producing units to two pounds of meat.

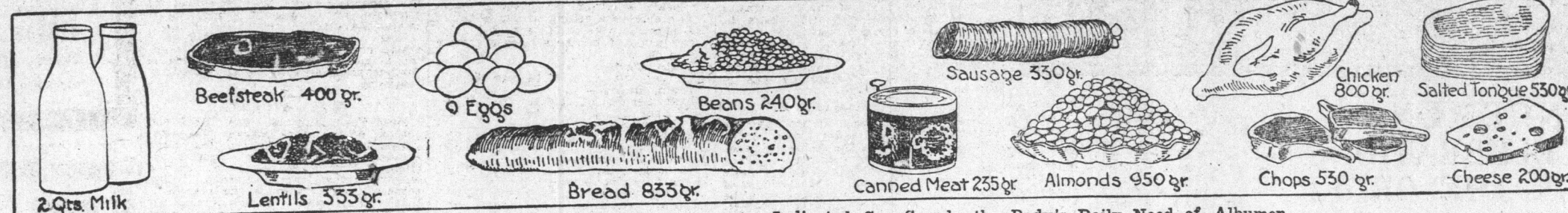
There are other foods containing 100 grams of albumen in two pounds of food furnishing more than 2000 calories, as will be shown.

Of course, meats differ according to the animal and the cut.

Why do we eat meat at all? Chiefly for the albuminous matter required by our organism and also because it is an agreeable food easily digested and assimilated.

We know that food is intended to nourish our bodies with plastic substances, the albumens and energy-substances, the fats and carbohydrates. The need of albumens has been measured by various scientists. Pettenkofer and Voit say that a man requires 120 grams a day. Hirschfeld, Kumagawa and Ruebner say this is too much. Lapicque and Rugeley say this is too little. We can live on 87 grams and that the Malays consume 60 and the Abyssinians only 50. It is figured as an

Careful STUDY of RATIONS and Their SUBSTITUTES That POINTS the WAY to GREAT LIMITATIONS to DAILY FARE Without DANGER of STARVATION or LOSS of VIGOR



Each One of These Thirteen Foods in the Quantity Indicated Can Supply the Body's Daily Need of Albumen.

average that if we allow one gram per two pounds of our own weight per day (except for young children and adolescents) we are safe. If in normal times we eat more meat it is only to give ourselves pleasure for the taste of this succulent, easily digested food. We can live easily on from 60 to 80 grams of albumen a day, but even this is not necessarily derived from meat. Bread contains 6 to 7 per cent. milk 3 to 4 per cent., eggs 11 per cent., beans 25 per cent., peas and lentils 18 per cent., etc., so the cutting down of the meat ration is really not a hardship.

There have been many difficulties surrounding the meatless days in Europe. Some try to avoid the regulation by buying meat in advance, thus raising prices, and others buy fancy pastries costing more than meat. It has proved more practical to issue cards showing meat values, so that individuals may get the best values and not expend money needlessly or unwisely. We may be certain of the necessary amount of albumen by securing fish, eggs, milk, cheese, bread, vegetables and fruit, affording a mixed as well as a nutritious diet.

Fish contain from 8 to 10 per cent. of albumen, eggs have 11 per cent., almost as much as meat. As an egg weighs about 60 grams it is easy to calculate how much albumen is furnished by each. If one eaten, eggs and milk will entirely replace meat. It is difficult to get fresh milk, condensed milk may be used, though it is more expensive. Cheese contains all of the albumen of the milk in concentrated form, is easy to keep, and not expensive.

The nitrogenous foods required by the human system are not, however, limited to animal sources, for vegetables furnish just as much or

more. The gluten of the bread gives us albumen, 6 to 7 per cent. of the bread, so that two pounds of bread alone would give as much albumen as needed, though not in the most digestible form, when taken exclusively.

Dried vegetables are very rich in albumens: lentils, peas, beans containing from 20 to 25 per cent. of this necessary element; 200 grams of these vegetables are the equivalent of 500 grams of meat, and, of course, much cheaper.

Almonds and other nuts have from 10 to 15 per cent. of albumen, and, in fact, everything we eat except sugars and fats has some proportion of nitrogenous matter.

We can, therefore, accept very graciously any limitation placed upon the consumption of meats by food commissioners, without danger of starvation or loss of vigor.

The Germans have devised a meat substitute which is based upon nothing but yeast. The dried yeast of beer contains 50 per cent. of albumen and costs about 40 cents for two pounds, and it can be produced in unlimited quantities. It has, however, quite a bitter taste, making it unpleasant to eat. The skilful chemists of Germany have secured another yeast from a combination of molasses and ammonia sulphate, securing a powder with 46 per cent. of albumen, 8 per cent. of fat and 26 per cent. of carbohydrates. Huge quantities of this is made as a by-product of starch, which is used by the ton on meatless days throughout Germany. Ten grams of this material are mixed with various foods used on other days, thus making them far more nutritious. While it is not as digestible as meat,

still 86 per cent. is absorbed by the human body. Important as the nitrogenous elements in the food are for the repair of the body, the sugars and starches grouped as carbohydrates are essential as generators of energy, being consumed by muscular labor and in the production of heat, and the fats which seem to supplement both the albumens and the carbohydrates in many important functions.

There are also certain salts which the organism requires, in many foods, especially vegetables. These are also the mineral substances such as sulphur, potassium, calcium, phosphorus, iron, manganese, etc., which are indispensable for our bodies and are secured when the digestion acts properly upon a diet of food mixed in the right proportions.

OWES HER LIFE TO "FRUIT-A-TIVES"

The Wonderful Medicine, Made From Fruit Juices and Valuable Tonics.



MADAME ROSINA FOISIZ.

25 St. Rose Street, Montreal.
"I am writing you to tell you that I owe my life to 'Fruit-a-tives'. This medicine relieved me when I had given up hope of ever being well."

"I was a terrible sufferer from Dyspepsia—had suffered for years; and nothing I took did me any good. 'Fruit-a-tives' relieved me, and I am now entirely well. You have my permission to publish this letter, as I hope it will persuade other sufferers from Dyspepsia to take 'Fruit-a-tives' and get well."

"MADAME ROSINA FOISIZ."

"Fruit-a-tives" is the only medicine in the world made from fruit.

Fifty cents a box, 6 for \$2.50; trial size, 25c. At all druggists, or sent postpaid on receipt of price by Fruit-a-tives, Limited, Ottawa.

WHY SOME WOMEN LOVE WORTHLESS MEN

By MARIE LEIGHTON

WHEN people boldly ask me why women love worthless men I get something of a shock. I ask myself three questions:

1. Unless there is something very wrong about the woman, how can anybody suppose for a moment that womanhood does waste its affections on the less deserving members of the opposite sex?

2. And is it true? Do we really love doubtful men?

3. And am I to suppose that they think women—including myself—love bad men better than good men as personal friends, or only that we love them better to talk about and to observe from a distance?

Of course, this last point makes a lot of difference.

It takes any little sting out of the suggestion that I, for instance, have a natural yearning toward the wicked among men. When it comes to talking about saintly people, or writing about them, or watching their doings, one finds them rather unsatisfying. Perfection leaves one with nothing to do.

If you were yourself a professional saint and moral reformer, like Patrick or Augustine, you would feel distinctly mortified, and even a little disgusted, if on arriving in a strange country where you had imagined yourself to be needed, you found it full already of people living on herbs and wearing hair-shirts and grieving over their sins all day. In the same way, if you were burning with a desire to help the sick and suffering, you would hate to go to a place that you had thought was a hospital and find it full of hale and sound men. Again, for the same reason, ever so many good and sweet women let good men pass by unnoticed. They admire the good men and would trust them completely, but they turn their active attention to the men with a few smudges from an erratic past left upon them.

The sweet woman doesn't like the smudges. Oh, dear, no! She often cries over them. But they make a job for her and her love to do, and she hugs the idea that nobody else could do it.

So we women bow the knee to it because we really do admire it immensely, and then we call out for a man who will do the work of a good man along and do something startling against the background of the white, in order that we may be kept from slipping into boredom and may feel that we have something to live for. Besides, bad men never preach to us.

These are the reasons why we have a weak spot in our hearts for what is called a worthless man. He isn't stagnant. He's an active force, all alive from the top of his head to the ends of his toes. He does things. What is more, he often has the luck to take considerable risks in doing them; and, when he's very bad, he wakes up our faculties in order to fight him and to counter his tricky moves. We sharpen the edge of our cleverness upon him. He does us a world of good by saving us from sloth. If there were no dangers about us, compelling us to be constantly on guard, we should all become limp-muscled, slow and placid.

So, for our own selfish sakes, some of us take the worthless men to our hearts. It is not because we prefer evil to good. We never really do that. Even those of us who are fond of bad men have

a quite fierce hatred for the badness in itself. But they are alive, they hop about, they charm us in spite of their wrongdoing, and they make us active in order that we may thwart them and cure them. The black tracings of their wickedness stand out grippingly against the shining white background of sainthood, and we start scurrying round to rub out the dirty lines. They are our driving force, giving us the energy to keep goodness always glowing. In fact, there wouldn't be so much of the white light of goodness about us without them. We can imagine villains being in the world without saints, but we can't imagine saints being in the world without villains; because it is only by fighting against villainy that saints are made.

And these worthless men often look very nice and have captivating manners, and we women do love the pictures. Yet we never actually lose our heads over even the nicest bad lots. We know they're bad and we don't let them angels. We see them exactly for what they are. This makes us all the prouder when they begin to improve under our scorings.

Even the rashest woman of us all knows that there are scoundrels and scoundrels. There are some of them that we don't appreciate at all, not even in our capacity of reformers and cleaners-up. If we do fancy a few of them—"love" is too strong a word—we are only won over, as I have said, by our hunger for change and color in life. I don't call black a beautiful color in itself, and yet I glory in touches of it in pictures to show up pink and cherry-red and gold and primrose-yellow and other colors that really are beautiful. Well, it's the same thing that makes me smile upon the black sheep among men. I do it—and we all do it—for the sake of variety.

I can't help adding, though with a deep sigh, that bad men are not as charming as they used to be. They've lost their dark, rolling eyes and their elegant figures and their good manners and their chattering ways. They don't shave as smoothly as they did, or choose their neckties as well—not to speak of the way they tie them—or look as carefully after the cut of their clothes. They haven't got now the manners that made the old-time highwayman offer his arm to ladies with the most delicate politeness. Their voices, too, are losing their softness, and they don't know any longer how to smile with their eyes, to push their hair back from their brows with a woman-subduing gesture. In short, they are losing ground all round.

So, if by chance any worthless man should read this, let him take warning by these last remarks and make himself as charming as possible, test his power, and that of the rest of his kind, over us women should become a thing of the past.

What Would Happen IF the SUN EXPLODED

Is the sun in danger of blowing up? We may reason, not because we have never seen one explode. On the other hand, we must remember that suns are not made in a hurry, and that they take their own time about what they do, and that while man's knowledge of suns covers only a few thousand years, their ages could not be expressed in any manner intelligible to the human mind. Still we must draw the line somewhere, and although our sun may have weathered the celestial storms of an eternity, that very fact may prove that the time for some variation may soon arrive. Our sun is said to be a veritable star and variables of a certain class are those stars which are due to explode!

When our sun explodes what else will happen? If a little ripple among the superficial layers of the sun, known as a sun-spot, 93,000,000 miles away, upsets the operation of electrical utilities

on earth how much of a jolt will we get when the gas composed of stone, iron and other substances even heavier and harder, but so hot that they are reduced to vapor, and so elastic that from their sudden release they expand to the limits of the solar system, a region 556,000,000,000 miles in diameter.

"In such a maelstrom I apprehend that the earth and the other planets and satellites would each flash once like the firefly, and be lost in nebula," says Benjamin O. Baxter in *Popular Astronomy*. "We are told that our sun is of advanced age, as ages are reckoned among suns. All other things in creation, suns are brought into existence and pass away, we pass out of the class of celestial objects known as suns, or stars."

"Man has learned to distinguish age among stars by the color of their light. A white star is a young star; perhaps only a few hundred million years of age since it gathered from clouds of hot gases into globular form and started out as an independent sun. Yellowish light denotes middle age, and red or crimson indicates mature age which, as viewed by humanity, would look like several thousand eternities."

"We are also told that all stars, which are merely distant suns, are shrinking in size as the cool off and contract, and the theory was advanced by George Henry Lepper, that while the volume of the star diminishes through contraction, the heat of the core increases with the pressure brought to bear on it and that when this pressure reaches the limit the pent-up materials explode and the star, or sun, is reduced to a cloud, or puff of fog, called nebula."

Here's a BATHTUB for the EYES

UPON consulting an eye-specialist some time ago, Friedrich Maier of Elizabeth, N. J., was advised to bathe his eyes frequently in cold water. He soon found that these baths were very effective, but the primitive way of doing them did not appeal to him. So he made a pair of miniature bathtubs for his eyes, fitting them to the curve of both tubs and equipping them with inlet and outlet passages so that with the aid of a small rubber tube he was able to conduct the water direct from the faucet to his eyes and back to the drain without the inconvenience of putting his head in the water. After using his eyewash cups for some time with the best results the inventor put a pair in the hands of the director at the local eye clinic.

who found them of excellent service. When foreign substances such as lime, acids or poisonous gases enter the eyes, and continuous washing with fresh water is essential, some such device as this affords the best means of meeting the situation. This eye-washing device, as described in *The Scientific American*, is made of good, acid-proof



How the Eyes Are Given a Medicated Bath in Individual Bathtubs of Their Own.

material. The cups are provided with glass fronts so that the doctor or the patient can observe the action of the washing liquid; and especially advantageous is the fact that application may be made in any position whatever, and with one or both cups at a time. The water can be led direct from the faucet, or, if a special solution is to be used, from an elevated reservoir as shown in the illustration.

Health Hazards of the Stone Cutting Industry

IN Public Health Reports, Dr. J. P. Leake, past assistant surgeon, and Dr. D. L. Edsall, consultant in industrial hygiene, United States public health service, report on their investigation of the extensive quarrying and stone-cutting industry at Bedford, Ind., relative to the extent to which it affects the health of the workers. The chief attention was given to tuberculosis and the effect on the nervous system of stone cutting, which is done chiefly by compressed air tools.

Conditions surrounding the industry were found to be good, the cutting sheds being well constructed and lighted, and conditions for eliminating dust being admirable. Some of the work is done under water spray and some of it dry. The inhalation of dust was found not to be excessive, and the tuberculosis rate in the community among women equalled that among the men; therefore dust was not an important factor in the promotion of this disease.

The cutters are men of a superior class, make good wages, work short hours and live well, many in their own homes. The pulmonary hazard is said to be less than in the stone industry in general. In some mills sanitary conveniences and guards against the spread of intestinal infection are satisfactory. But in studies made in the work shops in the hands of stonecutters who use pneumatic hammers, a hypertonicity of the blood vessels was found, appearing as an exaggerated reaction to low temperatures. This is not serious as to life or function and can be overcome to an extent by proper management.

LEARN to PLAY the CORNET and STRENGTHEN Your LUNGS

INVESTIGATIONS made recently by a well known doctor lead him to conclude that musicians who play wind instruments are exceptionally long lived.

Cornet players are credited by him with an average life of 69.1 years. Clarinet players are next with 64.4, while the average oboe and bassoon player lives to be about 63 years old. The lowest duration of life by these players of wind instruments is in men who handle the flute. Because of the formation of their instruments, they do not have opportunity for full exercise of their

THE FIRST MUNICIPAL MUSEUM

THE establishment in New York city of the first municipal museum in the United States, through the efforts of the College of the City of New York, co-operating with the various city departments, is an example of civic progressiveness that, doubtless, will soon be followed by scores of the leading American cities, as soon as the value of the plan becomes generally known.

The municipal museum is intended to act somewhat as an academic clearing house—through popular in tone and those who govern it, supplying statistical data and general information to municipal employees, civic workers and co-operating with real estate boards of trade, merchants' associations, bureaus of city inquiry, municipal research societies, welfare leagues, always aiming for "more light," in Goethe's phrase, on municipal matters, advocating and prosecuting a pitiless publicity campaign for the guidance and protection of all citizens.

New York city has "monkey houses," "botanical gardens" and "lion houses," but this is the first "house" to be built for Father Knickerbocker in which to "tell his story."

Budget exhibitions have come and gone, leaving their light or heavy impress on the public mind. Usually they have been payers for a larger appropriation from department heads. But there is growing a larger appreciation of municipal exhibits which is taking them away from the spasmodic budget exhibition and bringing them nearer to a more stable and thorough educational plane.

The need for such an open confessional in matters relating to city government lies close to the public welfare of every citizen and has long been felt by those acquainted with the constantly increasing "cost of living" of Father Knickerbocker, whose expense account for next year will be something not less, and maybe more, than two hundred and forty millions, and this is exclusive of all initial improvements in the city, such as building new subways, bridges, aqueducts, boulevards, etc.

The board of estimate, the executive branch of the city government, does its best to arrange for an equitable distribution of the city funds.

Models of new subways, ferry terminals, schoolhouses, playgrounds, municipal baths, etc., are shown. Five contrasting groups of beautiful models, which through novel lighting effects and a high degree of artistic merit, show new and old conditions on Randall's Island—the municipal lodging house as against a night scene in a public park—children's clearing bureau contrasted by the old-time orphanage, etc.

The fire department exhibits a model of one of

DANDRUFF MAKES HAIR FALL OUT

A Small Bottle of "Danderine" keeps hair thick, strong, beautiful.

Girl! Try this! Doubles beauty of your hair in a few moments.



Within ten minutes after an application of Danderine you cannot find a single trace of dandruff or falling hair, and your scalp will not itch, but what will please you most will be after a few weeks' use, when you see new hair, fine and downy at first—but really new hair—growing all over the scalp. A little Danderine immediately doubles the beauty of your hair. No difference how dull, faded, brittle and scraggy, just moisten a cloth with Danderine and carefully draw it through your hair, taking one small strand at a time. The effect is amazing—your hair will be light, fluffy and wavy, and have an appearance of abundance; an incomparable lustre, softness and luxuriance. Get a small bottle of Danderine for a few cents at any drug store or toilet counter, and prove that your hair is as pretty and soft as any—that it has been neglected or injured by careless treatment—that's all you surely can have beautiful hair and lots of it if you will just try a little Danderine.

HORLICK'S

Malted Milk for the Home
A nourishing food-drink for All Ages. Anywhere at anytime. Delicious, sustaining. No cooking.