

that of a cross-bow, actuated by special muscles. These organs are often accumulated in certain regions of the tentacle, on the surface of small longitudinal papillæ, where they are arranged as "urticating batteries" as in the *Porpita* (Fig. 5). When all these batteries are in position, they are capable of darting millions of projectiles at the enemy.

The arrow of the polyps, a perfect weapon of defense and attack, has still another function. It is widely distributed in the folds of the stomach where the venom serves to digest the prey and is almost its sole use in a large number of the *Corallidæ*. One of the best known types of these is the red coral (*Corallium rubrum*). It is formed of a ramified calcareous skeleton the surface of which contains a large number of pits in which at the least danger the members of the colony seek safety.

They have the form of a tubular corolla of which the fine white petals detach themselves sharply from the red of the stem. When the water is calm, they expand like so many flowers. Attracted by the brilliancy of the corollas, the pygmies of the sea approach the immovable flower without suspicion, when the petals immediately close upon the audacious animal that has touched them. The carnivorous flower after seizing its victim retreats within its calyx to digest at leisure, and it is then that the venomous capsules accumulated in the folds of the stomach come into play. —Translated from *La Nature* for the SCIENTIFIC AMERICAN SUPPLEMENT.

FOOD IN ITS RELATION TO TEETH, THEIR SOCKETS AND ADJACENT STRUCTURES.*

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THE food question and the dietary question have received, during the past few years, a great impetus through the experiments of the United States government in feeding preserved foods † to a certain number of volunteers, and the additional experiments conducted at Yale College by Prof. Chittenden, with a detachment of United States soldiers, for a period of six months, a squad of Yale athletic students, and several of the professors and teachers, including Prof. Chittenden himself.

These experiments were not conducted to prove anything more than to determine how the equilibrium of the body might be maintained on a much smaller diet than that called for by the generally accepted figures upon this subject. With the exception of the teachers, most, if not all, of the men were under thirty years of age. They were under constant supervision and the food was all accurately weighed, analyzed, and then eaten with absolute regularity. The excretions were all collected separately, analyzed and accounted for. This great care disclosed that a smaller quantity of protein was needed and consumed than the tables of Voit, Duckworth, and others say is necessary. None of these men did much manual labor during the experiments, save the work in the gymnasium, and the care of their rooms, with one hour of enforced exercise. At first nearly all of them lost in weight, but after a few weeks the reduced weight was maintained with great regularity. None of the men were ill, and they did not complain of lack of variety in their food, nor did they seem to miss the larger quantity of food formerly consumed.

These experiments proved that it is not necessary to consume so much food, especially of the proteids. It did not prove, however, that vegetables or a vegetarian diet is best for man. These experiments have no direct bearing upon the question before us because we are arguing for use of the teeth upon food that requires for its thorough digestion and assimilation perfect mastication. Accompanying this paper will be found tables of food values.

A man's food, if he expects to accomplish much mentally or physically, must be chosen for definite purposes—to repair waste and maintain his muscles, nerves, bones, and blood in the best possible condition to enable him to think and act to his fullest brain capacity. In consequence of the needs of the matured physical organism, that food is best for man which will not distress him in his mind nor be revolting to his taste. It must be chosen for bodily repair as well as exercise of the jaws and teeth, and the muscles concerned in the masticatory and digestive acts. Foods or foodstuffs that are liquid or semi-liquid are not intended for any persons except infants and invalids, and edentulous persons unable to wear artificial teeth, and even then only for limited periods.

"Nature produces no food that should be swallowed without mastication, when eaten in its elementary state. She produces no soup trees, gravy vines, mush plants nor cook stoves. Elementary food must be masticated." (This does not refer to milk.)—Christian.

Milk even is not the ideal diet for a child above two years—most children need food that can be chewed and ground into a pulp.

"Nearly all foods (not milk or grape juice) thrust into the stomach without mastication do not excite a sufficient flow of gastric juice."—Pawlow.

"It is estimated, and perhaps within the limits of truth, that 500,000 infants die in this country every year through consumption of adulterated or unfit foods. Much spoiled grain, it is said, enters into the composition of many of the cereal foods, and the temptation to perpetrate fraud is as great here as in any other field of business activity."—Spach.

The question of food, and pure food for the many, is one of such importance that the daily press, legisla-

tures, and Congress itself are all becoming active in search of it. Even the chefs of hotels and restaurants are discussing this question, and laws against food adulteration have been passed in many, if not all the States; and there is also a general law for the whole country now in effect, which is being enforced where malefactors can be detected and convicted. The rich and poor alike need good food, properly prepared, so that the whole nation will be improved both mentally and physically by the use of proper food.

This profession cannot neglect such a vital question,

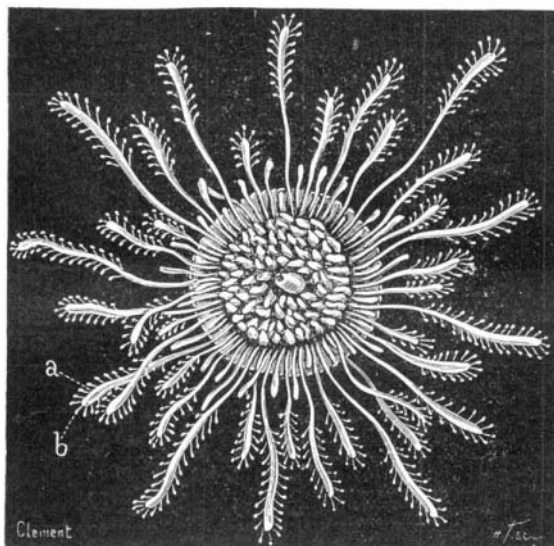


FIG. 5.—PORPITA MEDITERRANEA SEEN FROM BENEATH.

a. Tentacles carrying batteries of urticating buttons.

and the forty thousand dentists who come in contact with two or three hundred thousand people daily must be the teachers of dietetics and everything connected therewith. The physician sees the infant from birth to three or four years of age much oftener than the dentist, but after that age is reached the dentist has nearly supreme control of the organs of mastication, and he would be neglecting his opportunities who did not sufficiently impress parents and children with the necessity—the absolute necessity for use of the teeth, and guide them in the selection of food that must be chewed and ground between the teeth before it is swallowed.

From the initial moment when man enters the world he is in need of food. For a few months mother's milk or cow's milk suffices, but a time soon comes when there are teeth in the jaws, and the nature of the food is changed to give them exercise and thereby aid digestion.

"Soft, mushy foods are responsible for the woeful decay of teeth, which is such a conspicuous mark of civilized man. Nature will not keep alive nor produce, generation after generation, any part of the anatomy

ple subsist upon soft, cooked, mushy foods, they cannot expect to have good teeth. This is one of the greatest arguments against the baneful habit of cooking and in favor of elementary foods."—Christian.

All young animals as well as children are fed upon milk, but as soon as they erupt teeth the diet should be changed to give exercise to the teeth and furnish masticatory exercise for the muscles of the stomach, as well as those of the alimentary tract.*

Man in his primitive state subsisted on flesh, fish, and foods which he found in roots, grains, and fruits. See history of the inhabitants of Polynesia, the Ladrões, Carolines, Friendly, Tongalese, New Guinea, Hawaii, Fiji, Gilbert, Marshall, Iceland, Greenland, etc. Even the monkey in a natural state eats first, animal food, then nuts, roots, and vegetables, according to the productiveness of the country of his habitation.

"When food is taken into the mouth the digestive process has its beginning in the mastication, or grinding and crushing, of the food by the teeth. To this end it is essential, first of all, that the teeth should be competent to perform their office, or we shall find that the subsequent offices will be interfered with. *Teeth must be sound, free from decay and from decomposing matter.*"—Hoy.

Perfect mastication is the surest means of avoiding the habit of over-eating, which is so disastrous to the health and so common among civilized people.

"If physicians could be got to realize the importance of providing the jaws, teeth, and the muscular coats of the digestive tract with adequate work, an untold amount of disease and suffering would be averted."—Campbell.

"Food must contain a certain and considerable amount of indigestible, innutritious, and unabsorbable matter."—Wallace.

In other words, fodder or husk to clear out the intestinal tract.

"Before primeval man had learned to cook he subsisted largely on raw grains, seeds, and roots containing starch. The jaws and teeth were highly developed, and mastication and insalivation were very important functions in food absorption. The mouth was then a veritable mill for grinding and comminuting these substances, and in a certain sense the action of the saliva with its diastase took the place of cooking, the raw starch being changed to soluble starch, dextrin, and certain forms of sugar. At the present day, however, the digestion of starch begins in the kitchen, for the greater portion of starchy food is cooked when served, and is thereby rendered so soft that mastication and insalivation are much less needed. It would, however, be a great mistake to neglect to chew these foods, for deliberation in eating is a great advantage."—Pattee.

Starch is of great practical use, for it is more digestible than fat, and when combined with protein it appears to aid the digestibility of the latter; the starch which escapes digestion in the stomach ferments in the intestines, forming certain acids. This acid fermentation is known to check the putrefaction of the undigested protein and *vice versa*. This is the true reason of the utility of a mixed diet and the supposed needs of the organism.

"On entering the mouth the food, if solid, comes

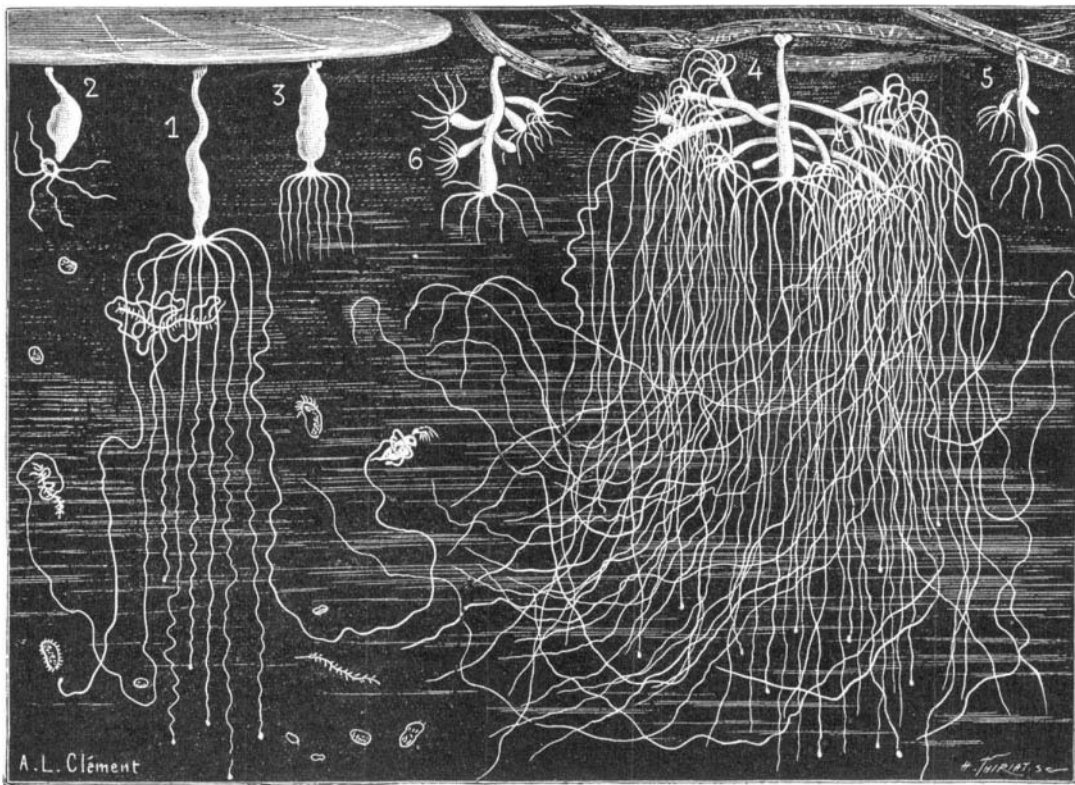


FIG. 4.—FRESH-WATER HYDRAS FIXED TO THE UNDER SURFACE OF AQUATIC PLANTS.

1. Brown hydra which has seized two Naides and a Daphnia. 2. Another half contracted and gorged with food. 3. Gray hydra digesting. 4. Gray hydra which was abundantly fed in captivity and which has produced a colony of nineteen buds. 5. Hydra budding. 6. Hydra which was taken in water very rich in infusoria and small crustaceans, and which has reached a maximum of fecundity.

that is not used. Her system of economy is perfect."—Christian.

Dr. E. A. Bogue says: "Civilization indulges in soft food, cooked until it is softer."

"Nature is a perfect economist. If the teeth are not used, she will refuse to keep them in repair; she will allow them to decay. She presumes that you do not need them because you have refused to put them to that use for which they were created. So long as peo-

under the action of the teeth, by which it is cut, torn, bruised, and ground by a finely mechanical action until the complete insalivation."—Smith.

It is not necessary to chew olive oil or butter fat, as there is no mouth or stomach digestion, such substances being emulsified so that they can enter the circulation with little or no change.

Some governments in constituting dietaries for sol-

* Read before the New Jersey State Dental Society.

† Preserved with borax or boric acid.

* Animals are weaned by force if necessary.

diers in times of peace make them only barely sufficient to sustain life, forgetting that when the soldier goes into the field he needs teeth, eyes, nails, bowels, and, in fact, all the strength for necessitous endurance. Managers of prisons are guilty in this respect also. Sailors and marines do not fare so badly, as there is always a small surplus of tissue builders in their diet.

Dietaries must be based upon the theory that all organs of the body must be used. The cost of medical attendance, medicines, and nursing, and the loss of time of soldiers and prisoners, when ill from too little food, more than offsets the extra cost of additions to a correct dietary. Many times more care and attention is given to the feet than the teeth, stomach, and bowels. The teeth must have something to exercise upon, and the whole alimentary tract must receive cellulose and other indigestible fiber to produce regular and rhythmic movement of the bowels. Children above two years of age must have something innutritious to masticate to permit of symmetrical growth.

To say that a certain amount of food, properly masticated, will sustain life, is not enough. There must be a surplus to allow for miscalculation in quantity, change in labor, or climatic changes.

PROFESSIONAL MAN.	THE SOLDIER.	THE ATHLETE.
Grams.	Grams.	Grams.
Coffee 175	Banana 141	Banana 94
Cream 22	Butter 55	Cream 150
Sugar 44	Sugar 80	Sugar 56
Iced tea 250	Cream 155	Coffee 450
Boiled potato 90	Bread 60	Wheat roll 53
Wheat gems 47	Coffee 450	Butter 28
Butter 29	Bread 21	Soup 150
Roast lamb 9	Soup 247	Farina croquette 100
Vanilla eclaire 47	Fried potato 222	Fried sweet potato 117
Lamb chop 32	Fried beans 65	String beans 75
Asparagus 49	Consommé 150	Syrup 50
Creamed potato 107	Bread 45	Bread 36
Bread 35	Spinach 200	Hamburg steak 53
Lettuce and orange salad 150	Potato 150	Potato 250
Cream cheese 12	Pie 103	Spinach 100
Crullers 21	(Three meals daily.)	Bread 55
		Apple Pie 142
Fuel value of food (in large calories) 1,454 2,676 2,696

	Molechot	Rank.	Forster.	Haltzen & Lungen.	Grams.	Shuckard.	Schmidt.	Vuit.	Gautier.
Proteid 130	100	131	134	125	114	105	145	135	135
Carbohydrates 550	240	494	523	400	551	541	500	750	750
Fats 40	100	68	79	125	54	63	100	100	100
Fuel value (Calories) 3,160	2,324	3,195	3,436	3,315	3,229	3,235	3,574	3,876	3,876

It will be seen at a glance that these are from one-half to three-fifths larger than Chittenden's.

The feeding of an army is to-day a solved problem. As proof of this let me read: "The problem of feeding the Japanese forces is rendered very much easier by the composition of the rations, which do not include bread. The rations in 1900 were made up as follows—they are the same to-day, with a slight increase of meat: Rice, 900 grammes (100 grammes equals 3.2 ounces); fresh meat, 400 grammes, or 200 grammes of salt fish, or 300 grammes of dried fish (these quantities were increased by 70 grammes per day when the troops were on the march); fresh cabbage, 400 grammes, or 150 grammes of dried cabbage; tea, 15 grammes; vegetable sauce for seasoning the rice, 10 grammes; arrac, 20 centiliters. The commanding officer can order as extras 20 grammes of sugar per day and ten cigarettes and five eggs per week."—The Mail, London.

Other questions come into consideration of the methods of preparing foods.

Striking evidence was given before the Royal Commission on the Care of the Feeble-Minded by Sir James Crichton Browne, the Lord Chancellor's Visitor in Lunacy.

Sir James said that there was reason to believe that 30 per cent of the population were still living in poverty and were ill-housed, ill-clothed, and under-fed—conditions which favored mental degeneration.

He felt that a large amount of mental defect was due to insufficient and improper feeding in infancy and childhood. Natural nursing had gone out of fashion, and many of the condensed milks and proprietary foods were quite unsuitable and harmful. Babies fed on them might look plump, but they were pale and flabby, and often suffered from rickets.

He believed that the effects of alcohol in the production of mental defects had been exaggerated, and did not believe that in the causation of more than 15 per cent of cases of "idiocy and feeble-mindedness had alcohol taken any part."

The witness added that the late Prof. Laycock, of Edinburgh University, used to divide idiots into two classes—poverty idiots and luxury idiots. In the case of the latter the causes of mental degeneracy were indolence and self-indulgence through many generations with "in and in" breeding.

The persons thus afflicted were called by Prof. Laycock "spoonbill" idiots, and he used to point out that they were the type represented in Punch as "aristocratic noodles."

In this connection read what Prof. Maxwell said in Asbury Park on July 5: "When I look upon the anæmic faces and undeveloped bodies that mark so many of the children of the tenements, when I read of the terrible ravages of tuberculosis in the same quarters, I cannot but think that the city should provide wholesome food at the lowest possible cost in public school kitchens. To lay the legal burden of learning upon children whose blood is impoverished and whose di-

gestion is impaired by insufficient or unwholesome feeding is not in accord with the boasted altruism of an advanced civilization or with the divine command:

FOOD VALUES WITH TABLES.

THE UNDERMENTIONED TABLES WERE COMPILED FROM ANALYSES IN THE AGRICULTURAL DEPARTMENT AT WASHINGTON, D. C.

Flesh Foods.	Refuse.	Water.	Protein.	Fat.	Carbo-hydrates.	Ash or Min-eral Salt.	Fuel Value per lb.
Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Calories.
Loin of beef, edible portion.....	70.8	24.6	3.7	1.3	615		
Loin of beef, total.....	23.0	54.6	18.8	3.0	9	475	
Porterhouse steak, edible portion.....	60.0	21.9	20.4	1.0	1,270		
Porterhouse steak, total.....	12.7	52.4	19.1	17.9	8	1,110	
Round steak cuts, edible portion.....	70.0	31.3	7.9	1.1	730		
Round steak cuts, total.....	9.1	64.4	19.5	7.3	1.0	670	
Loin of veal, edible portion.....	73.3	20.4	5.6	1.2	615		
Loin of veal, total.....	22.0	57.1	15.9	4.4	9	480	
Shoulder of veal, edible portion.....	73.4	20.7	4.6	1.3	580		
Shoulder of veal, total.....	18.3	59.9	16.9	3.9	1.0	480	
Leg of lamb, edible portion.....	63.9	19.2	16.5	1.1	1,055		
Leg of lamb, total.....	17.4	52.9	15.9	13.6	9	870	
Leg of mutton, edible portion.....	67.4	19.8	12.4	1.1	890		
Leg of mutton, total.....	16.8	56.1	16.5	10.3	9	740	
Pork ham, edible portion.....	60.0	25.0	14.4	1.3	1,075		
Pork ham, total.....	9	59.4	24.8	14.2	1.3	1,060	
Pork head, edible portion.....	45.3	13.4	41.3	7	1,990		
Pork head, total.....	68.4	13.8	4.1	13.8	2	660	
Pork loin (chops), edible portion.....	52.0	16.6	30.1	1.0	1,580		
Pork loin (chops), total.....	19.7	41.8	13.4	24.2	8	1,270	
Pork sides, edible portion.....	34.4	9.1	55.3	5	2,505		
Pork sides, total.....	11.5	30.4	8.0	49.0	5	2,215	

Chicken, broilers, edible portion.....	74.8	21.5	2.5	1.1	505		
Chicken, broilers, total.....	41.6	43.7	12.8	1.4	7	295	
Turkey, edible portion.....	55.5	21.1	22.9	1.0	1,360		
Turkey, total.....	22.7	42.4	16.1	18.4	8	1,075	
Black bass, edible portion.....	76.7	20.6	1.7	1.2	455		
Black bass, total.....	54.8	34.6	9.3	8	5	205	
Blue fish, edible portion.....	78.5	19.4	1.2	1.3	410		
Blue fish, total.....	48.6	40.3	10.0	6	7	210	
Flounder, edible portion.....	84.2	14.2	6	1.3	290		
Flounder, total.....	61.5	32.6	5.4	3	5	115	
Lobsters.....	77.8	18.1	1.1	5	2.5	390	
Oysters.....	83.4	8.8	2.4	3.9	1.5	335	

Green Vegetables.	Water.	Protein.	Fat.	Carbo-hydrates.	Ash or Min-eral Salt.	Fuel Value per lb.
Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Calories.
Cabbage.....	91.5	1.6	3	5.6	1.0	145
Celery.....	94.5	1.1	.1	3.3	1.0	85
Sun-cooked corn.....	15.5	12.5	5.0	66.0	1.0	1,150
Cucumbers.....	95.4	.8	.8	3.1	5	80
Lettuce.....	94.7	1.2	.3	2.9	9	90
Onions, fresh.....	87.6	1.6	.3	9.9	6	225
Potatoes, fresh.....	78.3	2.2	1	18.4	1.0	385
Potatoes, sweet.....	69.0	1.8	.7	27.4	1.1	570
Radishes.....	91.8	1.3	.1	5.8	1.0	135
Spinach.....	92.3	2.1	.3	3.2	2.1	110
Tomatoes.....	94.3	.9	.4	3.9	5	105
Turnips.....	89.6	1.3	.2	8.1	8	185
Artichokes.....	79.5	2.6	.2	16.7	1.0	365
Olives, green.....	58.0	1.1	27.6	11.6	1.7	1,400
Olives, ripe.....	64.7	1.7	25.9	4.3	3.4	1,205

Dried Fruits.	Water.	Protein.	Fat.	Carbo-hydrates.	Ash or Min-eral Salt.	Fuel Value per lb.
Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Calories.
Dates.....	15.4	2.1	2.8	78.4	1.3	1,615
Figs.....	18.8	4.3	.3	74.2	2.4	1,475
Prunes.....	22.3	2.1	.3	73.3	2.3	1,400
Raisins.....	14.6	2.6	3.3	76.1	3.4	1,605
Apples.....	28.1	1.6	2.2	66.1	2.0	1,350
Apricots.....	29.4	4.7	1.0	62.5	2.4	1,280

Dairy Products.	Water.	Protein.	Fat.	Carbo-hydrates.	Ash or Min-eral Salt.	Fuel Value per lb.
Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Calories.
Eggs.....	73.7	13.4	10.5	1.0	720	
Butter.....	11.0	1.0	85.0	3.0	3,605	
Buttermilk.....	91.0	3.0	.5	4.8	7	165
Cheese, American.....	31.6	28.8	35.9	3	3.4	2,055
Cheese, cottage.....	72.0	20.9	1.0	4.3	1.8	510
Cheese, cream.....	34.2	25.9	33.7	2.4	3.8	1,950
Cream.....	74.0	2.5	18.5	4.5	5	910
Milk, skimmed.....	90.5	3.4	.3	5.1	7	170
Milk, whole.....	87.0	3.3	4.0	5.0	7	325

Fresh Fruits and Berries.	Water.	Protein.	Fat.	Carbo-hydrates.	Ash or Min-eral Salt.	Fuel Value per lb.
Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Calories.
Apples.....	84.6	.4	.5	14.2	3	200
Apricots.....	85.0	1.1	.6	13.4	5	270
Bananas, yellow.....	75.3	1.3	.6	22.0	8	460
Blackberries.....	86.3	1.3	10	10.9	5	270
Cherries.....	80.9	1.0	.8	16.7	6	365
Currants.....	85.0	1.5	.1	12.8	7	265
Figs.....	79.1	1.5	.1	18.8	6	380
Grapes.....	77.4	1.3	1.6	19.2	5	450
Huckleberries.....	81.9	.6	.6	16.6	3	345
Lemons.....	89.3	1.0	.7	8.5	5	205
Muskmelons.....	89.5	.6	.1	9.3	6	185
Nectarines.....	82.9	.6	.1	15.9	6	305
Oranges.....	86.9	.8	.2	11.6	5	240
Pears.....	84.4	.6	.5	14.1	4	295
Persimmons.....	66.1	.8	.7	31.5	9	630
Pineapple.....	89.3	.4	.3	9.7	3	200
Plums.....	78.4	1.0	.1	20.1	5	395
Prunes.....	79.6	.9	.1	18.9	6	370
Raspberries.....	84.1	1.7	1.0	12.6	6	310
Strawberries.....	90.4	1.0	.6	7.4	6	180
Watermelons.....	92.4	.4	.2	6.7	3	140

Nuts, Shelled.	Water.	Protein.	Fat.	Carbo-hydrates.	Ash or Min-eral Salt.	Fuel Value per lb.
Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Calories.
Almonds.....	49.8	21.0	54.9	17.3	2.0	3,030
Brazil nuts.....	5.3	17.0	66.8	7.0	3.9	3,265
Butternuts.....	4.4	27.9	61.2	3.5	2.9	3,165
Chestnuts, fresh.....	45.0	6.2	5.4	42.1	1.3	1,125
Cocoanuts.....	14.1	5.7	50.6	27.9	1.7	2,760
Filberts.....	3.7	15.6	65.3	13.0	2.4	3,290
Hickory nuts.....	3.7	15.4	67.4	11.4	2.1	3,345
Peanuts.....	9.2	25.8	38.6	24.4	2.0	2,560
Pecans.....	2.7	9.6	70.5	15.3	1.9	3,435
Pignolias.....	6.4	33.9	49.4	6.9	3.4	2,845
Pistachios.....	4.2	22.3	54.0	16.3	3.2	2,995
Walnuts, English.....	2.5	18.4	64.4	13.0	1.7	3,300
Walnuts, black.....	2.5	27.6	56.3	11.7	1.9	3,105

Feed the hungry. Is this not also a subject for investigation by our national council?"

"Proprietary foods are the apparent cause in nearly all cases of infantile scurvy. The (real) cause is a destruction of the chemical composition of the blood."—Fruitnight.

"In small diets it is said that thorough mastication and insalivation aid in the more complete utilization of the food, and render possible greater economy, so that body weight and nitrogen equilibrium are both maintained on an exceptionally small amount of food. This principle was worked out by Mr. Horace Fletcher on himself, in an attempt to restore his health to a normal condition. Deliberation in eating, necessitated by the habit of thorough insalivation, results in the occurrence of satiety on the ingestion of small quantities of food; hence all excess of food is avoided."—Chittenden.

Many of the experimental diets previously referred to, extending over periods of seven days to twenty-one days, are of little value. Many of these experiments were conducted upon men of thirty years of age and under, and did not extend to all classes of workers.

In the work of Prof. Chittenden there is no evidence as to the quantity of water taken daily, whether the subject smoked or chewed tobacco, and nothing about beer or alcoholics.

"Many writers on food and nutrition are in the habit of speaking of the oils and fats as hydrocarbons. This term can be applied properly only to compounds which contain nothing but the two elements—hydrogen and carbon. Without exception every kind of oil, fat, or wax, whether natural or vegetable, contains oxygen as well as the two elements just named. This incorrect usage of the term hydrocarbon is, moreover, peculiarly unfortunate since of the innumerable true hydrocarbons not a single one can be ranked as a nutrient, or as capable of being oxidized in the human body."—Church.

"A mixed meat diet is natural and most suitable to man, because vegetable foods are more bulky, more irritating and less assimilable; moreover, animal food-stuffs produce more heat. To achieve a favorable result in absorption a reasonable combination of animal and vegetable foodstuffs is essential. For all healthy and for most sick persons a mixed diet is to be recommended."—L. Kuttner.

"What to take at breakfast? If you eat toast, chew it slowly. Do not dip it into coffee, tea, or milk. Bread and milk, oatmeal porridge? No! Why not? Because, first, they are slippery foods; they slide down into the stomach before the saliva contained in the mouth has had time to digest them. It then requires a strong stomach to tolerate such food until it is passed on to the 'intestines.'—Alderson.

Bread poultices are not suited to a weak stomach internally!

"Efficient cooking is very necessary for efficient digestion. Is any indigestion due to mechanical faults in the mouth—that is, to faulty mastication? It is necessary for food to be divided into small pieces for the purpose of entering the mouth comfortably, and to supplement mastication, it being necessary for particles of food to be finely divided in order that the secretions of the mouth, stomach, etc., may be better able to act on the substances swallowed (chemical action). Are your teeth in good order? If not, go to a dentist and have them attended to. Having your teeth in good order, be very careful not to bolt your food; use your teeth for the object for which they have been provided. Masticate well and slowly, thus finely dividing the articles of food, allowing the saliva in your mouth the time and the chance of acting chemically on the food."—Alderson.

The beginning of ill-health dates from the use of semi-solid and liquid foods by the adult. If teeth are not exercised their sockets become more or less useless and the teeth begin to loosen. The stomach having nothing to do begins to fail in its duty, the secretion of gastric juice is not sufficient and the whole line of symptoms, weak stomach, intestinal troubles, faulty digestion, from mouth to elimination, begin. The first duty, the first lesson in the doctrine of health, is to teach your patient the proper method of feeding; the hygiene of the mouth as well as that of the whole body. Caries is largely a question of environment, and teeth are not immune when surrounded by filth added to failure in their proper exercise. The consequences of using improper foods—foods not suitable for mastication—are loose teeth, carious teeth, suppuration of the gums, atrophy of the muscles of the stomach and bowels, and a train of digestive disorders which induce neurasthenia, dimness of vision and loss of ability to excrete through the skin, kidneys, and other emunctories.

In conclusion, living is a dangerous occupation any way we look at it. All sorts of things to eat which we buy at the stores are adulterated; the meat at the butchers' contains formaldehyde or ptomaines, the vegetables at the market are stale and suggest colic. "Now we read that our own tomatoes are liable to poison us if pickled too green, and if we salt them we are told that people are poisoned with sodium chloride! Maybe, after all, it is better to be a beast, or bird, or a fish, and not know about such things."

New Composition for Tinning and Soldering.—A patent recently taken out by Herr Kuppers in Germany covers a compound formed of zinc chloride and ammonium chloride, which are mixed with zinc oxide, in the proportion of one part of the zinc salt with two parts of the ammonium salt, although the proportions are not absolute. The zinc oxide acts as a flux, though it participates in the chemical reaction at the time of its application. By heating, a substance is obtained having the appearance of fused colophony. The temperature used is 140 deg. to 300 deg. C. The product is left to solidify. If it is brought in contact with water, it acquires an unctuous consistency.

* Soldier on active service.
† Workman—eight to ten hours per day.
‡ May 26.