XIV, each in their time patrons of the arts. On the front of the weight tower are paintings of Urania, the Muse of Astronomy; Nicholas Copernicus, the famous astronomer; J. B. Schnilgue, the maker of the reconstructed Strasburg clock; three fates spinning, measuring and cutting the thread of life. A spiral staircase in the original leads to the mechanism in the central tower and to the church tower. In 1890, at the instigation of the Hon. Bruce Smith and Sir William McMillan, the New South Wales government decided to purchase Mr. Smith's model and appointed the Hon Bruce Smith, Q. C., minister for public works, and the Hon. J. H. Carruthers, minister for education, to make the purchase for the Sydney Technological Museum.

KAEMPER'S DISCOVERIES IN THE MAMMOTH CAVE.

(*Concluded from page 388.*)

Should the occasion arise for selling the Mammoth Cave estate, it would be to the advantage of the owners to possess this complete and exclusive survey made by Mr. Kaemper at their own expense. The fact that such a survey has been made is of interest to men of science. But by far the larger part of it will never be seen by any except "cave cranks"; and even now the average visitor sees only about the tenth part of what is found on the guide map.

Yet it ought to interest the general public that the new survey covers about fifty miles more than the hundred previously mapped; and that, not counting mere enlargements, there are now known and located 69 pits and 39 domes, or in all 120 vertical shafts, 35 of which are newly discovered. As yet few of them have been named. Mammoth Cave is really a congeries of hundreds of caves joined into one vast cavern by the breaking down of walls and floors through at least five distinct levels or tiers. This fact is only partly indicated on the standard guide map; but in the new survey the levels are shown by proper shading or colors. As an example, the combination known as Ganter Avenue, and which was accurately surveyed by myself some years ago, includes Black Snake Avenue, Indian Avenue, Welcome Avenue, etc., making a total of 8,500 feet of passageway from the Wooden Bowl Room to Serpent Hall. But to show all this on a portable map would make it unwieldy. Instead of attempting bulky details, let us limit ourselves to the description of the lately found "Violet City."

When Dr. R. E. Call and myself were preparing our manual in 1897, we were anxious to work a passage through a certain "tumbledown" in the Main Cave; but failing to do so, we named the spot "Ultima Thule." A massive wall of limestone blocks closed the avenue entirely, with the exception of an extremely narrow "crawlway," which we had found impracticable. Kaemper and Bishop attacked this crevice again, and at the risk of their lives. A broad slab pinned down Kaemper's neck to the floor, and another his back. With difficulty he extricated himself. But while there he heard the sound of falling water, which proved to him that the Main Cave continued beyond.

Nearly a month later, on the singular theory that there must be a connection between Ultima Thule and Sandstone Avenue at the end of the Long Route, where there is also a waterfall and a tumbledown, the explorers tried to force their way through from the latter, but in vain. Then they renewed their attack on Ultima Thule. By patiently removing many fragments of rock, they finally succeeded in worming their way through—not as was expected into Sandstone Avenue, but into a great oval hall 160 feet long, 120 wide, and 60 high, which now bears the appropriate name of "Kaemper's Hall." On the left they found a pit 90 feet deep, to which the name of "Bishop's Pit" has been given, in honor of the guide. Down into this profound abyss dashes the waterfall the music of which had led them on. Fifty steps to the right brought them to a short passage opening into a second hall, 75 feet in diameter and of about equal height, vaulted by symmetrical arches closing in a beautiful circle above. This they named "Elizabeth's Dome," for Mr. Kaemper's sister. On the left are several pits, making with others eleven pits in this general locality. One of them is named the Parrish Pit, for the cave explorer, Mr. Norman A. Parrish, of Buffalo, N. Y.; and the rest are as yet unnamed. It is supposed that they all open into an unexplored hall below. In the short avenue leading into Elizabeth's Dome, an iron gate is now fixed as a protection against spoliation of the brilliant formations beyond. The exit from the dome is by the Grand Portal, an arch 60 feet high by 50 wide, commanding one of the most impressive views in the underground world.

A steep hill of loose rocks forms the natural dividing line between two immense chambers. When I was there, last November, my companions, Kaemper and Bishop, requested me to seat myself at the top of a flight of steps, while they went forward, Bishop carrying an automobile searchlight brought in for the purpose, thus giving me my first view of the wonderful and fascinating region to which has been given the name of "Violet City," in honor of Mrs. Violet Blair Janin, the fair owner of two-thirds of the Mammoth Cave estate, whereof her husband, Judge Janin, is the principal trustee. The central portion of the so-called "city" is a massive formation named "Blair Castle," from its striking resemblance to a castle on the crest of a hill. The environs are styled "Walhalla," for the fabled realm above the clouds where dwell the heroes and gods of old German mythology.

Picking up our torches again, and carrying my bicycle acetylene lamp (to which a convenient handle had been affixed), we followed a natural pathway near the wall on the left that led us from place to place in Violet City. We found it an immense expanse, measuring by the tape line 250 feet in length and 125 feet in width, with an estimated height of about 100 feet—dimensions rivaled only by Wright's Rotunda and the Chief City. A great cave-in of sandstone rocks closes the end of the chamber, which seems to indicate the proximity to the Sandstone Avenue, or a similar locality. These rocks are cemented together by a wonderful profusion of onyx.

Stalactites and stalagmites abound throughout the Violet City, varying in color from the purest white alabaster through every imaginable shade. The upper central part of the hill is crowned by three masses of fluted white onyx, glistening with exquisite crystals, while from the roof hang in fine array stalactites eight or ten feet long. The right wall is decorated with pure white formations, and the left wall is coated with brown onyx. A row of beautiful stalactites of varying length emit musical notes when struck by the staff or the knuckles, and by skillful percussion simple airs can be played. Other attractions excite surprise. "The Beer Mug," a small stalagmite resembling a mug of foaming ale; the "Ripe Tomato," a rare bit of red onyx, and other odd specimens of natural mimicry are among these. One familiar with the brilliant formations found in the wonderful caverns of Luray might easily imagine himself in that Virginian fairyland, instead of in the Mammoth Cave of Kentucky. Thus far these marvelous treasures have been untouched by vandal fingers, such as have robbed or destroyed elsewhere what should have been most jealously guarded in the greatest cavern in the world.

In his zeal to open a passage from Violet City to the Sandstone Avenue, Mr. Kaemper obtained permission to use explosives, by means of which he made considerable progress. But indications appeared that he was likely to burst through to the surface, instead of into the Sandstone Avenue, and accordingly he desisted. In either event the result might have been of advantage. An opening into Sandstone Avenue would enable visitors to make the circuit through the Main Cave to the Maelstrom, and return by the Long Route without having to retrace their steps. And an opening to the surface would enable them to return by coach to the cave hotel, thus saving a tiresome tramp underground. To prove the proximity of the places mentioned, Kaemper and Bishop repaired, the one to Violet City and the other to Sandstone Avenue, agreeing on a fixed moment by the watch when they would fire revolvers, and likewise hammer on the rocks. The pistol shots were not audible; but the blows on the walls were faintly heard. By similar sound-tests it was determined that Wright's Rotunda is directly over the Serpent Hall, so that it would be possible to connect them by a stairway through a shaft. Incidentally, I may say that while we stood in the Chief City, we plainly heard the steam cars running overhead along the Mammoth Cave railroad.

It will be good news to all persons who have ever visited the Chief City and region beyond it, that a comfortable path has lately been cleared by removing the myriads of teetering slabs, over which so many have hitherto toiled slowly and in peril of sprained ankles or broken bones. It will also interest the public to know that, instead of the two long-established exhibition routes, four are now marked out for showing the most accessible and attractive features of the cavern. Three routes are shown in the accompanying sketches; while the fourth and longest one, to the Maelstrom and Hovey's Cathedral, follows lines indicated on the general guide map.

The facts now offered indicate that substantial progress has been made toward the solution of some of the mysteries of the greatest of all known caverns. Although the long-delayed instrumental survey is at present only in the hands of the trustees, it is sure to be an important factor when the cave is offered for sale; as it shortly must be, according to the terms of the will of the late Dr. John Croghan.

A happy suggestion has been made that, whenever the proper time arrives, this noble estate, and a number of adjacent caverns, along with the primeval forest by which they are yet environed, and including some of the mighty cliffs that flank Green River, should be reserved, either by the State of Kentucky or by the United States, and be known as the Mammoth Cave Park.

The Scientific American Fourth Dimension Contest, which closed April 1st, will be decided in June or July.

FEEDING THE AMERICAN ARMY.

BY B. R. WINSLOW.

Every great general who has maneuvered a large fighting force has discovered the truth of Napoleon's declaration that "an army travels on its stomach"; and to more than one has come the bitter realization that the best army is the army that has the best stomach. There is nothing which so completely withers patriotism and smothers courage as the gnawing pain of indigestion; therefore, the feeding of an army has been given as much study as its equipment as a destroying force.

In the superiority of food, based on the cost of the ration, the American army stands far ahead of the other armies of the world; in fact, there is no comparison whatever between the American ration and that of any other country on the globe. The cost of the American army ration is nearly one hundred per cent greater than the British army ration, and none of the other countries with big military establishments feeds its soldiers anywhere nearly as expensively as the English government does.

The American army ration is divided into three kinds: Garrison ration, field ration, and emergency ration. The garrison ration is that given soldiers at regularly established military posts; field ration, that issued to troops in the field in active campaign. The emergency ration is a condensed ration, in which the best and most valuable nutritive elements are combined in the smallest bulk. In composition the garrison and field ration are almost identical. Each ration, which is supposed to keep the soldier one day, furnishing breakfast, dinner, and supper, consists of 20 ounces of fresh beef or mutton, 12 ounces of bacon, 16 ounces of canned meat or canned fish, 14 ounces of dried fish or 18 ounces of pickled fish, 18 ounces of flour or 20 ounces of cornmeal, either 2 2/5 ounces of beans or peas or 1 3/5 ounces of rice or hominy, and either 16 ounces of potatoes or 12 4/5 ounces of potatoes together with 1 3/5 ounces of either onions or tomatoes, 1 3/5 ounces of dried fruit, 1 3/5 ounces of coffee, and 3 1/5 ounces of sugar. The ration also includes very small quantities of vinegar, salt, pepper, soap, and candles.

Nowhere except in the army can the food supply of 30,000 men be managed by 120 men. This can be done with the army on the march, changing station every day. The unit of administration is the corps, supposed to consist of 30,000 men. The unit of actual accountability, however, is the brigade. Ordinarily, an army corps will consist of three divisions, and each division will have three brigades. The chief commissary of the division issues his stores to each brigade in bulk. The brigade commissary in turn issues to each regimental commissary, also in bulk, and the regimental commissary issues to the companies. The rations are usually computed by the hundred, and are issued for ten days. A company of one hundred men would, therefore, be issued one thousand rations. In the field each soldier is supposed to carry one regular ration and one emergency ration all the time. The emergency ration is never eaten except in case of emergency, and the regular ration is issued every day.

The army ration, it will be seen, contains none of those things which are ordinarily considered luxuries. For instance, there is no milk included in the ration, and the soldier must take his coffee black unless he is able to purchase a can of condensed milk from the "sales store" with his "savings." Congress has authorized the commissary department to keep on hand other articles of food that are not included in the regular ration. These are kept in the "sales stores," and are issued to the mess steward in return for "savings" from the regular rations. Out of a company of a hundred men, there are a number who do not eat all of the articles in the ration. These would be wasted if drawn by the mess steward; therefore, when the thousand rations are issued to him, he returns to the commissary that part of the various components that he thinks will not be used. This, in the language of the army, is making a "saving" on the rations.

The value of the articles returned to the commissary is computed, and the mess steward is allowed to draw from the "sales stores" a sufficient quantity of luxuries that are not in the regular issue, equal to the value of his "saving." The government, however, will not allow a "saving" to be made on certain articles in the ration. Fresh meat, dried or preserved fish, potatoes, onions, tomatoes, prunes, apples, and peaches must be used; a "saving" cannot be made on these articles. They contain just the proper nutritive elements, and the quantities given are what the normal soldier should eat.

The company fund is another way in which the ration may be improved, especially at regular army posts. There are many sources of revenue for the company where there is plenty of ground at the post. Many of the companies have vegetable gardens, and keep pigs and cows. The pigs are fattened on the leavings from the kitchen, making their feed cost nothing. They are fattened and sold, the money go-

ing to the company fund, or they are killed and the meat turned over to the mess. Where cows are kept, a good sum is derived from the sale of milk to the officers at the post. This money, which all goes into the company fund, is used to buy the luxuries not obtained in the regular issue—to "improve the issue," as it is termed.

In the field, in maneuvers or in actual warfare, it is difficult, and sometimes impossible, to keep the cooking outfit with the company. The rations are then issued to the men individually, and they are left to their own devices as to the methods of preparing them for meals. Each soldier has a mess kit, consisting of two tin plates that fasten together, a knife and fork, and a tin cup holding a quart. While this kit is welcomed as a means of preparing his food, the trooper finds it an additional burden, not only in the extra weight, but in the labor that must be expended in keeping the outfit clean, for they must be kept bright.

At the post these hardships are removed. The soldiers' meals are cooked by the company cook, who draws the pay of a non-commissioned officer. Everything is in the hands of the mess steward, who is assisted in his work by a dining-room orderly, a private, and the kitchen police. The kitchen police is a detail of two or three privates for duty about the kitchen. The dining-room orderly has charge of the dining room, and cares for the dishes after they have been cleaned; he keeps the pantry in order, and sets the table. All of the mess force, from the steward to the kitchen police, are excused from guard and ordinary duty.

The Current Supplement.

The necessity of lightning protection arises from the consideration of the loss which might ensue from damage by lightning to buildings and other structures. This necessity has found expression in lightning arresters. In the current SUPPLEMENT, No. 1742, the fundamental principles of lightning arresters are ably discussed by David B. Rushmore in an article entitled "Recent Developments in Lightning Arresters." F. E. Drake describes "The First American Steam Turbine," which was none other than the "Bailey Jack." "Little Things in the Shop that Save Time, Money, and Labor" is the title of an article which describes some amateur mechanical appliances. Herbert Chatley contributes an interesting article on the "Difficulties in the Construction of Aeroplanes." For a number of years the German Orient Society has uninterruptedly carried on systematic excavations in two of the most important centers of the ancient Babylonian-Assyrian civilization. This work is interestingly explained, and the results summarized by Prof. Morris Jastrow. Prof. Edgar L. Larkin gives a clear description of what is known as "Doppler's Principle" in astronomy. In an article by O. Bechstein the subject of "Artificial Drying of Agricultural Products and Wastes and Its Economical Importance" is ably handled. Guenther Schmid traces the relation of chlorophyl to light.

Artificial Nitrogenous Fertilizers.

The infant industries of manufacturing cyanamide and nitrates by electrical processes are threatening to destroy each other by mutual competition. A French writer has conceived the idea of a hydro-electric establishment capable of producing simultaneously calcium nitrate, cyanamide, and ammonium sulphate. In Frank's cyanamide process, the nitrogen of the air is utilized and the oxygen is wasted. In the Birkeland-Eyde process of producing nitrates, on the contrary, it is very advantageous to direct upon the electric arc a current of air containing an abnormally large proportion of oxygen. Again, Sir William Ramsay has recently published experiments which indicate that the production of ammonia by direct combination of nitrogen and hydrogen may soon become commercially possible. The proposed factory, therefore, would include electric furnaces, apparatus for producing nitrogen and oxygen by means of liquid air, and apparatus for the electrolysis of water. The three gases, oxygen, nitrogen, and hydrogen, thus produced would be utilized as follows:

The oxygen would be mixed with the air blown into the Birkeland-Eyde electric furnaces for the production of nitrates, part of the nitrogen would go to form cyanamide with calcium carbide, and the rest of the nitrogen would be combined with the hydrogen to form ammonia, which could easily be converted into the commercially available ammonium sulphate.

The number of boiler explosions in the United States in 1908 was 470. This compares with 471 in 1907, 431 in 1906, 450 in 1905, and 391 in 1904. The number of persons killed by boiler explosions in 1908 was 281, against 300 in 1907, 235 in 1906, 383 in 1905, and 220 in 1904. The number of persons injured, not fatally, in 1908 was 531, against 420 in 1907, 467 in 1906, 585 in 1905, and 394 in 1904. The record of boiler explosions in the United States for 41 years and three months, since October 1st, 1867, shows a total of 10,051, in which 10,884 persons were killed, 15,634 injured.

Correspondence.

MAN'S GENEALOGICAL TREE.

To the Editor of the SCIENTIFIC AMERICAN:

Few people realize the innumerable number of links which bind each one of us with our forefathers. Starting from the fact that we each have four grandparents, eight great-grandparents, sixteen great-great-grandparents, and so on, ten generations back, or a little more than three hundred years, there were 1,024 direct progenitors of each family living. Twenty generations would give over a million; and thirty generations, or about one thousand years, say from the date of the death of Alfred the Great, increases the total to the amazing figure of more than 1,094 millions.

That is to say that each family represented on earth to-day had, thirty generations back, 1,094 millions of progenitors living at that time, that is contemporaries, or of the same generation; or about two-thirds of the total number of the computed inhabitants of the whole world to-day, which is estimated at about 1,500 millions.

The thirty-first generation would give 2,198 millions, and soon, doubling with each generation until a few generations further back, long before the 5,000 to 6,000 years of authentic history is reached, which after all is but a mere fraction of the time that man has lived upon the earth, would yield a number for which there would not be standing room upon the globe; and this for *one family only*.

Some would have to be canceled as being progenitors of more than one line of descent—ancestral duplicates, as they may be called; but this would not account for many, I imagine, unless people are very much more closely related by blood than is generally considered.

On second thought, however, it may be that herein lies the solution of the difficulty. If so, it would prove that mankind are truly brethren—much more closely inbred, in a sense much more real than has been supposed.

It should seem to be not an unreasonable assumption, in view of the figures given above, that the farther back we go, the more fully was the earth peopled, instead of the reverse.

And yet historical writers—Fisher, for instance—put the total population of England under the Tudors at less than two millions.

Can any of your readers throw any light upon this subject, or show where I have gone wrong in stating the problem, which fairly puzzles me?

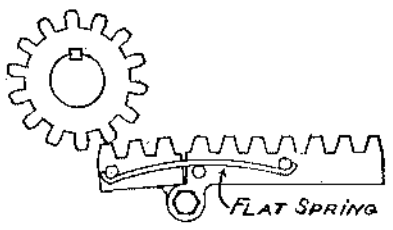
New York. A. K. VENNING.

A RACK AND PINION PROBLEM.

To the Editor of the SCIENTIFIC AMERICAN:

On page 279, issue of April 10th, 1909, Constantine Shuman asks the readers of the SCIENTIFIC AMERICAN to send in their solutions of his problem in mechanics.

I have found this problem very interesting, and have worked out a solution that I think will fill all the



requirements. In my solution I have the three teeth on the end of the rack hinged, so that if the top of one of the teeth on the gear wheel should happen to come in contact with the outer edge of the tooth on the end of the rack, instead of jamming the teeth the hinged part will swing downward, allowing the next tooth to engage with the rack. HERBERT STARR.

Malden, Mass.

SULPHATE OF COPPER AS A FUNGICIDE.

To the Editor of the SCIENTIFIC AMERICAN:

I notice in a recent number of the SCIENTIFIC AMERICAN a short article which says that the German government has failed in treating telegraph poles with sulphate of copper, and it seems they have abandoned that chemical as a fungicide.

This article leaves the reader under the false impression that sulphate of copper is not a good fungicide. The facts are this chemical stands second in the long list of germicides as to its effectiveness when used properly.

See volume i, p. 74, "Bacteriology," by I. F. Smith, published by the Carnegie Institution of Washington in 1905.

The writer treated telegraph and telephone poles over nine years ago with sulphate of copper. These poles were rotted in from one to two inches at the ground line. The decay was entirely stopped and the poles now are as good as when treated, and are still in use.

By our method, we dig around the pole at the ground line, and place a jacket around the same extending below the surface about sixteen inches. The space between the pole and the jacket is filled with a mixture of sulphate of copper or any of the well-known fungicides, with sand.

A reinforced cement is formed over the top. The natural moisture of the pole dissolves the chemicals slowly, and they are absorbed by the pole, and thus the delicate little fungus is killed.

These wood-destroying germs begin their ravages on the outside, and not from the inside of the pole. Hence by this method there is no need of deep penetration.

The difficult problem has always been to prevent outside germs from entering after those on the surface of the pole are killed. This the asbestos jacket accomplishes, and in addition prevents the strength of the chemicals from being wasted in the surrounding soil.

Canalboat builders on the Ohio Canal have been for years in the habit of placing dry salt between the ribs of their boats. It was taken up into the pores of the timber by capillary attraction and osmotic force, thus poisoning the food of the fungus. Most metal salts and the light coal-tar products have been discarded by pole preservers when the brush open and closed tank methods have been used. This was not because they were not good germicides, but because they would leach out into the surrounding soil as soon as placed in the ground.

The trouble with sulphate of copper is not that it is not a good fungicide, but it is too soluble when used by the brush or tank methods. One drop of a solution of sulphate of copper will kill all the algæ in a fish aquarium holding four gallons of water.

Circleville, Ohio. H. P. FOLSOM.

THE "NORTH DAKOTA'S" TURBINES.

To the Editor of the SCIENTIFIC AMERICAN:

In the unsigned article on the "North Dakota's" turbines in your issue of April 17th, the statement is made that in the Curtis type of turbine there is no tendency for leakage around the outside of the blades, and a comparison is made with the Parsons type, rather deprecating the latter. Leakage around the blading of any turbine is caused by a difference of pressure between the opposite sides of a given row of buckets, is it not? In the Curtis, a type of impulse turbine, the steam being expanded gradually throughout its entire course through the machine, it seems to me that there must be a difference in pressure between any two points in its course of travel, and hence a tendency for leakage. On the other hand, I have heard the same claims made for the Parsons type that this writer makes for the Curtis, i. e., the possibility of large clearances without leakage. Theoretically, the only way to prevent the tendency to leakage around the blades would be to expand the steam before striking the blades, as in the Rateau or De Laval, when there could be no difference in pressure on opposite sides of a bucket wheel, the action being due there to velocity alone. I know from my own observation that the smaller sizes of Curtis turbines are built with very small clearances, as low as 0.01 inch in some cases between rotor and stator.

In view of the unofficial reports of the coal and water consumption of the three new test scout cruisers as published, for instance, in Power for April 13th, where the Curtis turbine shows up rather poorly, are the commendatory remarks of your article referring to this type of turbine altogether justified?

I trust you will not think my remarks impertinent. I am not an engineer—yet; but only a young man seeking information and a zealous reader of your paper.

CHARLES H. ROE, U. S. N.

U. S. S. "New Hampshire," Guantanamo, Cuba.

[In the Curtis type the steam is expanded in a set of nozzles before it impinges on each set of blades, and its tendency is to pass across the face of the blades in a general direction parallel with the axis of the turbine. In the later turbines the clearance between blades and casing is large. In the Parsons type the expansion takes place within the turbine, and therefore the end clearances must be as small as possible. We shall publish the official reports of all trials as soon as they are available.—ED.]

Marble Deposits in California.

The principal deposits of marble in the United States are in Vermont, Georgia, Tennessee, and California. Extensive quarries are worked in Inyo County, California, and the existence of large bodies of marble in the desert of San Bernardino County has been known for some years; but until recently the deposits have remained untouched except at Colton, where marble is quarried in small quantities. At Cadiz, a station on the Santa Fé Railway, 240 miles to the east of Los Angeles, many varieties of marble of fine quality are found. Marble of twenty or more various colors is found in large quantity and there are smaller deposits of marble of many colors, ranging from black to pure white, with red, blue of several tints, Persian gray, and numerous other hues. The deposits also yield a beautiful black marble with figures of sea shells, named shell marble, and a black with lines of gold which is said to be found in no other region except on the banks of the river Nile. The deposits have been examined by Prof. Stephen Bowers, a geologist, and by a Tennessee quarryman, who declare that the marble is easily worked; being strong, it can be taken out in blocks of any size, sawed, and polished. Six miles from Cadiz and two miles to the west of Black Mountain is a great deposit of white marble, between 400 and 500 feet in height. The nearest point of the Cadiz quarries is only one mile, and the farthest is not more than six miles from the railroad. The country being level, the haul is an easy one. The great amount of building now going on in San Francisco, Los Angeles, and other Californian cities assures a good market for marble of high quality, which hitherto has had to be brought from the Eastern States, or from Italy, Belgium, Africa, or China.

The strength and flexibility of cotton yarn, used for weaving, can be increased by applying a dressing prepared as follows: 25 parts of white Java wax, 20 parts of cottonseed oil and 15 parts of Australian tallow are first saponified in such a manner as to produce 100 parts of soap. 30 parts of glucose, 15 parts of soda, 10 parts of manioc flour, 5 parts of zinc chloride, and 40 parts of water are mixed without heating. Equal parts of this solution and the soap are heated together, with continual stirring, to 176 deg. F. for two hours, and the mixture is then allowed to cool, the stirrer being kept in operation.

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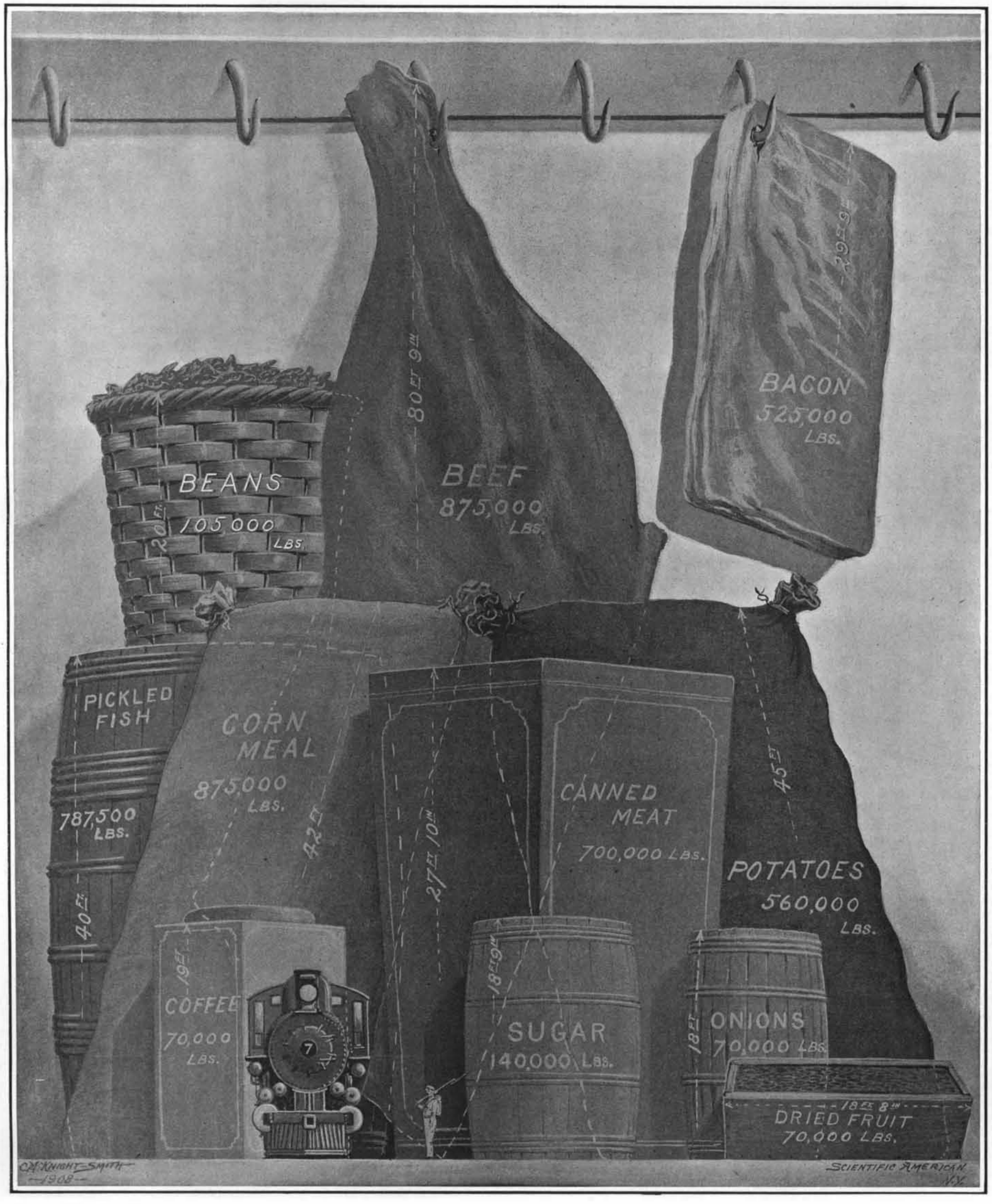

Ten days' rations of the American army graphically shown. For comparison a locomotive is shown in the foreground, also one of the 70,000 units that consume this enormous quantity of food.

FEEDING THE AMERICAN ARMY.—[See page 390.]