Imperviousness to water, unchangeability under the action of air and moisture, toughness, strength, elasticity, and the power of hardening quickly. These positive qualities are essential, and besides it ought not to smell so badly as some of the cataplasms which have been spread over some streets in this city and Brooklyn.

Now, neither coal tar nor pine tar in their natural state at all meet these requirements. That they may be made to do so, however, by chemical changes within reach of modern science, and admixture with suitable materials, we fully believe; and we also believe that notwithstanding the failures experienced in the use of these materials, they will yet be made the basis of a better road system than has yet been seen.

DESTRUCTIVE ACTION OF ILLUMINATING GAS ON VEGETATION.

In a suit brought by the city of Aix-la-Chapelle against the gas company of that town for damage done to the public trees by the leakage of gas from the street mains, the question arose what particular constituents of the illuminating gas was the most destructive. The subject was referred to Prof. Freytag, of Bonn, as an expert, and he at once instituted a series of experiments with various gases to decide the question. A system of lead tubes, perforated with small holes, was laid underneath a plot of ground, in which there was wheat, rye, rape-seed, and barley. As soon as this vegetation was well under way and flourishing, 100 liters of hydrogen, 100 liters of light carbureted hydrogen, and 100 liters of heavy carbureted hydrogen were uninterruptedly conducted through the pipes, under different parts of the beds for six days without the least effect being perceptible.

The same result was obtained when the city gas of Bonn, after being thoroughly purified, was passed through the tubes, but whenever the gas contained tarry matters, especially carbolic acid, the destructive action soon became apparent. The condensed particles of tar could easily be discovered in the earth and about the roots, which they coated and destroyed.

Prof. Freytag, as the result of his observations, expressed the opinion that the normal constituents of illuminating gas exercised no bad effects upon vegetation as long as air and oxygen can get access to the roots—that is, the various constituents of the gas had no worse effects than the nitrogen of the air; but, on the other hand, the gaseous vapors of tar, especially carbolic acid, in consequence of their condensation and accumulation about the roots, are highly destructive to trees.

As it is nearly impossible to free the gas of these foreign vapors it is safe to assume that illuminating gas is destructive to trees, and ought not be conducted in pipes near their roots. The experiments of Prof. Freytag also show that it is unsafe to use too much carbolic acid and other similar agents about trees for the destruction of insects, as there is danger of destroying the trees at the same time.

BOILER INCRUSTATIONS.

The loss entailed by the formation of incrustations in boilers has been the occasion of much scientific research, and efforts have been made to discover a remedy that would be applicable in all cases; and although not a year elapses in which there are not several new powders offered to the public as panaceas for the evil, it must still be admitted that we are far from having solved the difficulty.

Sometimes the agent proposed is too expensive, but more frequently it does not work; and practical men, after having been repeatedly deceived, have become very skeptical, and are slow to admit the value of any new claimant upon their favor. Numerous analyses of incrustations have been made, which show a considerable diversity of composition, but, in the main the deposit is found to consist of sulphate and carbonate of lime, and when the amount of carbonate of lime reaches 20 to 25 per cent, there is great difficulty in removing the incrustation.

It may be well to review some of the anti-incrustation remedies recently proposed and to leave engineers to decide upon the proper one to adopt to suit each particular water, for it is not probable that any one agent will be found applicable in all cases.

In Cassel, Germany, a small quantity of fine, white clay, added to the water, was found to remain suspended in it, and to carry off the other mineral matter in the form of scum, so as to effectually prevent incrustation, as it could be easily blown out with the steam. There are numerous deposits of of clay and kaolin in this country, and it may be worth while to try the efficacy of this simple remedy.

Popper has invented a mechanical contrivance, by means of which he not only economizes fuel in getting up steam, but also prevents the formation of incrustations. It consists of an apparatus with double walls and a canal for receiving all the bubbles of steam in the upper part of the boiler, and the current thus kept up carries all mineral particles into the still water of the appliance, where it settles down as a slimy mass, and can be easily removed. It is claimed that the invention can be applied to any form of a boiler, and that it is very efficient in its operation. It is very favorably mentioned by Fairbairn and other authorities. We have in this case the accomplishment of the result by mechanical, and not by chemical means.

Another mechanical contrivance, invented by Forster, in Augsburg consists of a cast iron cylinder, with wire netting, which is suspended in the boiler. From the bottom of the cylinder is a tube, communicating with the outer air, through which, when the stopcock is opened, the slimy deposit is blown by the steam. A diagram would be necessary to give an exact idea of the contrivance, which is said to answer a very good purpose.

E. Weiss, of Basel, Switzerland, offers a powder under the trade name of "Lithoreactive," which, it is claimed, decomposes old incrustations, prevents the formation of new ones, dissolves the oil and grease from the condensers, and neutralizes the acids that are apt to corrode the engine. It is composed of molasses or sirup, 5 parts; milk of lime, 15 parts; and caustic soda, of 34° B., 80 parts. The inventor says that it at once precipitates all of the carbonates and sulphates, and silica, saponifies the oil and fat, neutralizes all acids, removes, in a short time, all deposits, and does not in the least attack the iron or copper of the engine, and it operates as effectually in cold as in hot water, and can therefore be applied in the reservoirs. The object of adding the molasses is, that it unites with the lime liberated from the sulphuric acid, and forms a soluble saccharate. Two pounds of the lithoreactive is said to be sufficient for 1,800 gallons of hard water. The materials are expensive, but it may be worthy of a trial.

J. J. Allen, of Philadelphia, proposes the use of liquid hydrocarbons, to loosen old incrustations and to prevent the formation of new ones.

Crude petroleum can be used in the following way: Into the empty and cold boiler a certain quantity of petroleum is poured, and the water then slowly admitted. The oil rises gradually to the top and acts, in its passage, upon the incrustations.

In addition to the remedies named above, could be given numerous powders, sold under fancy names, all of which have have been analyzed, and found to contain some constituents that might serve a good purpose, associated with others that would be likely to do more harm than good; but to use these powders indiscriminately, without an acquaintance with their composition or a knowledge of the construction of the water to be acted upon, would be much like taking the same medicine for all diseases without so much as glancing at the label. Different waters require different treatment, and an intelligent engineer will, generally, have to invent a remedy to suit his own case. It is well, however, under all circumstances, to have an accurate analysis made of the water and of the incrustation, and to apply the preventive accordingly.

AS REGARDS PROTOPLASM.

When Professor Huxley delivered his famous lecture on the Physical Basis of Life, we doubt very much that he anticipated the sensation he was preparing for the scientific world. A general attack, all along the line, from the orthodox, reinforced by those who usually fight under the colors of materialism, has been the result. Professor Huxley, while laying no claim to orthodox belief, distinctly declares he is no materialist.

His claims for the substance called protoplasm are not, if we understand him, that it is the *sole* basis of life, but that it is the ultimate physical basis, that life first becomes obvious in this substance, and that it passes through various forms of vegetable life, each form appropriating it to itself, and that its characteristics are the same in each.

There can be no objection on the part of any to admit that matter plays its part in the concurrence of phenomena which is called life. The supposition that some combination of elements may be the one common physical basis of life is, however, more difficult to accept, and Professor Huxley's assertion, that in protoplasm is found this common basis, has, therefore, naturally met with discredit from men of high scientific character, as well as much senseless denunciation from those who supposed its acceptance would strike at the very root of orthodoxy.

Among those who have rejected Professor Huxley's views of protoplasm is Mr. James Hutchinson Stirling, of Edinburgh. A paper read by him at a *Conversazione* of the Royal College of Physicians of Edinburgh, in April, has been republished in this country,* in which Mr. Huxley's views are attacked from a scientific standpoint.

In an article, reviewing Mr. Huxley's essay, on its first appearance in the English journals, our readers will remember a statement of the composition of protoplasm, namely: Water, carbonic acid, and ammonia. It is the combination of these substances which is asserted to be, not the origin of all living things, as Mr. Stirling puts it, but the common *physical* origin of all living things. It is an unfair inference, in our opinion, to draw from Mr. Huxley's remarks, that he means anything more than this. We do not infer that he supposes that protoplasm accounts for all the phenomena of life, and in his broad assertion that materialism involves "grave philosophical error," he seems to anticipate the possibility of such an erroneous inference.

As for the conclusion of Mr. Stirling, derived from Mr Huxley's reasoning, that "he will lay out all our knowledge materially, and we may lay out all our ignorance immaterially—if we will," we are willing to accept it to the full. All our knowledge, in a scientific sense, is based upon materialism, and ignorance has, in all ages, found its expression in the blind faith of immaterialism.

But we pass to the real scientific objections to the assertion that there is a common universal matter of life. These are given in a very clear and concise manner by Mr. Huxley's reviewer. We can find space only for the following, among others worthy of note, and, as we cannot hope to condense more than Mr. Stirling has done, we shall quote the passage entire:

"Even should we grant in all protoplasm an identity of chemical ingredients, what is called *Allotropy* may still have introduced no inconsiderable variety. Ozone is not antozone nor is oxygen either, though in chemical constitution all are alike. In the second place, again, we say that, with varying proportions, the same component parts produce very various results. By way of illustration, it will suffice to refer to such different things as the proteides, gluten, albumen, fibrin, gelatin, etc., compared with the urinary products, urea and uric acid; or with the biliary products, glycocol, glycocolic acid, bili-rubin, bili-verdin, etc.; and yet, all these substances, varying so much, the one from the other, are, as protoplasm is, compounds of carbon, hydrogen, oxygen, and nitrogen. But, in the third place, we are not limited to a *may say;* we can assert the fact, that all protoplasm is not chemically identical. All the tissues of the organism are called protoplasm by Mr. Huxley; but can we predicate chemical identity of muscle and bone, for example? In such cases Mr. Huxley, it is true, may bring the word 'modified' into use; but the objection of modification we shall examine later. In the mean time, we are justified, by Mr. Huxley's very argument, in regarding all organized tissues whatever as protoplasm; for if these tissues are not to be identified in protoplasm, we must suppose denied what it was his one business to affirm. And it is against that affirmation that we point to the fact of much chemical difference obtaining among the tissues, not only in the proportions of their fundamental elements, but also in the addition (and proportions as well) of such others as chlorine, sulphur, phosphorus, potassa, soda, lime, magnesia, iron, etc. Vast differences vitally must be legitimately assumed for tissues that are so different chemically. But, in the fourth place, we have the authority of the Germans for asserting that the cells themselves—and they now, to the most advanced, are only protoplasm—do differ chemically, some being found to contain glycogen, some cholesterine, some protogon, and some myosin. Now such substances, let the chemical analogy be what it may, must still be allowed to introduce chemical difference. In the last place, Mr. Huxley's analysis is an analysis of dead protoplasm, and indecisive, consequently, for that which lives. Mr. Huxley betrays sensitiveness in advance to this objection; for he seeks to rise above the sensitiveness and the objection at once by styling the latter 'frivolous.' Nevertheless, the Germans say pointedly that it is unknown whether the same elements are to be referred to the cells after as before death. Kühne does not consider it proved that living muscle contains syntonin; yet Mr. Huxley tells us, in his Physiology, that 'syntonin is the chief constituent of muscle and flesh.' In general, we may say, according to Stricker, that all weight is put now on the examination of living tissue, and that the difference is fully allowed between that and dead tissue."

There is no doubt that these facts are such as will give Mr. Huxley much trouble, if he attempts to maintain the position he has assumed; and, notwithstanding his great skill in debate, we do not think he can sustain the views he has expressed upon protoplasm, or compel the scientific world to adopt them.

*As Regards Protoplasm, in relation to Prof. Huxley's Essay on the Physical Basis of Life. By James Hutchinson Stirling, F.R.C.S., and LL.D. Edin. New Haven, Conn.: Chas. C. Chatfield & Co., 1870.

MANUFACTURE OF KUMIS.

Dr. Adolph Oberstein gives an account of the preparation, properties, and uses of this favorite bevarage of the Tartars. It is an alcoholic liquor made of milk, and highly prized as a remedy in lung complaints and nervous diseases.

The best material for the preparation of kumis is mare's milk, but it can also be made of cow's milk. The milk of one day is mixed wtth one sixth water and one eighth sour milk, and left in a tolerably warm spot for twenty-four hours, by which time the whole of it will have become sour. It is then thoroughly agitated by a dasher and again left for a day and the stirring repeated until the liquid has assumed a perfectly homogenous character. It is then ready for use, but ought every time, before drinking, to be thoroughly shaken up. When a supply of old liquor is on hand it can be taken in preference to sour milk for the preparation of a new quantity.

The kumis can be preserved unchanged for several months in cellars. It is an alcoholic liquor, as some of the milk sugar undergoes fermentation, and when it is distilled it yields a brandy that the Tartars prize very highly.

As the people who drink kumis are said to be exempt from consumption, its use, as a beverage, has been highly recommended, and by many physicians it is preferred to the extract of malt.

All persons who propose to drink it must bear in mind that it is highly intoxicating, and can only be trusted in moderate quantities.

RAISING OF THE STEAMSHIP "SCOTLAND" OFF SANDY HOOK.

The steamship *Scotland*, sunk off Sandy Hook some five years since by the ship *Kate Dyer*, was then probably the largest steamer ever built, except the *Great Eastern*. She was constructed of iron wholly—masts, spars, rigging, etc., except covering for decks and joiner work. She was four hundred feet long, and forty feet beam.

Capt. T. A. Scott, formerly agent of the Neptune Submarine Company, has shown us his log-book containing details of the breaking up and removal of this vessel, which has greatly obstructed commerce, and has caused the destruction of several vessels and the loss of a number of lives.

This vessel was sunk in 22½ feet of water, embedding herself into the sand eight feet. She has now been cut off below her futtocks, and her bottom remains in the sand two feet below its surface.

A contract was made between the Government and the Neptune Submarine Co. to remove this vessel, we think, in 1868, but for some reason the work did not progress satisfac-

torily. Four men were killed, and other difficulties were encountered before the right way to do the work was discovered. Finally, the entire control of the job was given to Capt. Scott, March 4th, 1869, under whose able supervision the work has progressed rapidly and surely to a successful issue.

Capt. Scott himself is an expert diver, and adds to this accomplishment a full knowledge of the construction and navigation of vessels—in short, he is master of anything to be done on the water or under its surface. He has been almost daily under the water during the progress of this work, having been down an aggregate of two hundred and eighty-one hours. Thus even the minutest particulars of the work were performed under his special and immediate direction, and he himself personally blasted away and sent up over five hundred and forty-eight tuns of iron—over half of the entire weight, although six other divers were employed under him.

Eighty blasts were made, with charges varying from fifty to five hundred and seventy-five pounds of powder. In four of these blasts, pieces measuring four hundred square feet each were broken off from the sides of the vessel. The shaft, which was fourteen inches in diameter, was broken into seven pieces before it could be raised.

Finally the work was completed on the 17th July, 1870, one hundred and seventy working days in all having been expended since Capt. Scott took the job in hand, although on many of these days full work was not performed.

This vessel lay three miles out to sea from Sandy Hook, and the situation was exposed to the heavy swells and gales of wind common in that locality, rendering the work more difficult of accomplishment.

AMERICAN SUMAC.

BY PROF. H. E. COLTON.

Since the war, and in the reversal of fortune consequent thereto, many of the people of the South have turned their attention to other sources of revenue than the former staples of tobacco, corn, and cotton, and this necessity has developed new and heretofore neglected sources of revenue. For instance it is said that one county alone of the State of North Carolina shipped North last winter about $100,000 worth of quails (called partridges there), not to speak of the new industry of "*truck farming*," in which men are now making fortunes, who a few years ago would have thought it almost a disgrace to sell so apparently insignificant a thing as a strawberry.

Among these new industries, and rising rapidly into importance, are the gathering and manufacturing for market of sumac. This article is used as a dye stuff and for tanning morocco. Formerly all used was brought from Europe; now the Southern States supply a large quantity, already supplanting the low grades of the foreign article, and we hope some day ere long also to take the place of the finer grade.

The difference between

AMERICAN AND FOREIGN,

or, rather, American and Sicilian first grades, is probably due to the fact that the latter is cultivated; the former is as yet a wild product growing on those vast fields of so-called worn out land abundant through the South from their former wasteful system of farming. However, one of the largest dye manufacturers informs me that the tannin in the Southern sumac seems to be in a different form from the Sicilian, and hence the latter is still preferred by dyers, especially for fine work. Still this may be due merely to cultivation, as all know the changes that have been made from time immemorial in various grains, grasses, and fruits, by culture and care.

Tanners of morocco say that the Southern sumac, when carefully gathered, free from sticks and dirt, the leaves and leaf stem only, is equal in tannin strength to the best Sicilian; that with Sicilian at $175 per tun such sumac finely ground should bring $125 per tun. The usual price is $50 to $90, and it has sold at $110. It is like everything else; it pays to put it on the market in the best order possible.

GATHERING AND PREPARING.

In treating of the operation of gathering and preparing for market we shall first state something of the different varieties of sumac. There are six botanically different varieties of sumac in the United States; of these, three are of value, one is of little or no use, and two are poisonous. The first three resemble each other very much in leaf and size, growing from four to ten and fifteen feet high, chiefly on dry uplands, in old fields Of these three, two have hairy berries and one has a hairy down on the branch, like a deer's horn, in summer, the third has a perfectly smooth berry and branch. The leaves of all these are valuable, though we think if care were taken to keep them separate that the hairy or stag-horn sumac would be found most valuable for dyeing.

Of the other three the dwarf sumac, one or two feet high, is valueless; another grows only in swampy places, and while its juice is said to make a fine varnish, used largely in Japan, yet it is so poisonous to many persons that it is best let alone; the third is the well known poison oak.

In gathering the sumac, leaves and leaf stems should be carefully picked without any of the woody stem, then dried under cover on lattice-work shelves to give free access to air, frequently stirring or turning to prevent heating. When thoroughly dried, at the end of two or three weeks, it is sent to New York or to the nearest mill for sale. In this state it is worth from $1·25 to $1·75 per hundred lbs., but woody stems and dirt detract from its value very much. The buyer in the interior of Virginia, North Carolina, South Carolina, and Georgia can seldom afford to pay more than $1 per hundred.

At the mill it is ground very fine and screened. The mill is of the usual drug mill form: an upright wheel revolving on its edge in a circular trough, as the old-fashioned mill for grinding clay. It should be tightly inclosed; if not, a large quantity of the light, fine, powdered sumac will escape and be lost. On care and economy in this operation depend the miller's profit. After grinding, it is screened and packed in bags—162 lbs. to the bag—and thus sent to market. The bags to hold this quantity should be cut out 40x60 inches. Fourteen such bags will hold a tun. This is exactly the style and weight that Sicilian sumac is packed as sent to this country. To sell well it should be of a light green color.

The time of gathering is from July 1st to just before first frost, not later; in some parts it may commence earlier. It should be done when the flower is in full bloom, not before.

PRODUCT AND CONSUMPTION.

It is stated that the consumption of sumac in Great Britain is over 20,000 tuns per annum, and that it is yearly increasing. In this country we use 3,500 tuns of native and perhaps 3,000, or over, of foreigu; probably 500 tuns of native we export. As the demand and uses for leather never grow less it is not at all probable that all which the South can produce, if properly prepared, will ever fill the needed supply; and if it should create a plethora on the market it would only cause new uses to be found for it, or engender the production of a finer article.

There is no reason why we should not export at least 5,000 tuns to Europe, and supply all our own demands. The mill machinery is said to cost $2,500 without power. With the crude article at $1·50 per hundred even, $12 to $15 per tun for grinding and bags, $10 for loss, and $10 for freight to New York, there is certainly a fair margin of profit at $90 per tun at least, which price a good article will certainly always bring in New York. Our figures of cost, also, are rather high. There is plenty of room for at least ten more mills in the now unoccupied field of North Carolina, South Carolina, and Georgia. Any good business place in the upper or middle sections of these States will do as a site.

ITS CHEMICAL PRINCIPLE AND USES.

We have stated that sumac is used for tanning and dyeing. For these purposes the user generally makes his own decoctions, and uses them when fresh and warm. It is stated that the liquor injures by standing. For tanning it is valued, as it does not discolor the leather. It is used in the same manner as a decoction of bark. Best Sicilian contains, according to Muspratt, sixteen per cent of tannin and Virginia ten per cent. We have no doubt the vastly improved mode of gathering and preparing the American sumac will now increase its quantity of tannin.

In dyeing it is used to produce a fawn and a rich yellow, a black, a peculiar shade of green, and a red. The mordants are usually tin or aluminous substances. With Brazil wood and tin solution it produces a red. With copperas and logwood a rich permanent black. With a solution of chloride of tin alone, a rich yellow, and this with Prussian blue shades of green. It is used chiefly as a base, and has the quality of giving great permanency to the colors dyed with it. The leaves of the hairy species called staghorn are considered best to dye yellow.

THE SUMAC BERRIES

are of very little value, though we think in the progress of science a use will be found for them. They are said to contain large quantities of malic acid. They are now used in small quantities by the druggists, and when ripe make a very refreshing and cooling beverage. They should by all means be kept out of the gathered leaves, as they contain a red dye, hence would injure the quality of the sumac.

A New Omnibus.

A Melbourne correspondent, in giving an account of a new sort of street conveyance, says: The scheme has attracted considerable attention here. The great principle involved is the carriage of the load below the center of gravity. The new style of conveyance has been recently patented by Mr. Dyer. Instead of the passengers being inside the vehicle, as at present, they are all outside of it. There is no close box into which twelve human beings are stuffed to inhale each other's expirations and exhalations. There is no crushing up for a seat, or putting seven in a space intended for six, and not too large for five. All inconveniences are avoided by placing the passengers back to back, instead of face to face. The new omnibus has only one hind wheel, instead of two; and this one wheel, placed in the center of the vehicle, does the work of the two now used. A light and elegant roof covers the two rows of seats, and reaches down in front far enough to shelter the passengers from rain or sun, but not far enough to obstruct their view of the opposite side of the street in which they are going. There are aprons also which draw up from the foot-board, as a protection in wet weather. The vehicle is therefore much lower than the present omnibus, being only about eight feet in hight. A passenger steps in and out at one effort from the street into his or her own separate place or division. The large wheel at the back is quite concealed, and revolves in a closed case or sheath some twelve inches in width. The seats being on two sides and the end, and being comfortably padded at the back and cushioned, the vehicle will somewhat resemble that piece of furniture known as an ottoman, with arms to it and a roof overhead. There will be an immense economy in construction, as there are no doors, no glazing, no painting of sides, no internal paneling, and only three wheels, instead of four. The draft on the horses will be much lighter, as the friction will be diminished by one fourth at least. In addition to this it is known that a wheel of large diameter is much easier to draw than one of small, so that there is no doubt but that the draft will be very largely lessened. The weight of the vehicle will not be more than two thirds of the present one, and the cost also. The vehicle, nevertheless, is not adapted for bad weather.

An Imperishable Hothouse.

From the recently published list of English patents it appears that Mr. W. P. Ayres has secured "Improvements in the Construction and Arrangement of Horticultural and other Buildings or Erections or Structures, and in the means and appliances for heating the same." These consist of roofs formed without sashes, sash-bars, putty, or paint, or any woodwork outside, and consequently no painting will at any time be required. Secondly, Mr. Ayres forms his floors, plant stages, and side or partition walls in slabs of cement concrete, strengthened in a peculiar manner so as to bear any amount of pressure that may be placed upon them, and yet admit of being perforated for the air to circulate through them, paneled to hold water for evaporation, or the pots to stand in, or perforated and paneled. These slabs, it is said, can be manufactured of any required strength, and, consequently, are suitable for fire-proof floors, partition walls, tabling, or shelving for shop, office, or warehouse fittings or for any situations where slate or marble slabs have hitherto been used, with the advantage that they can be manufactured of any size, and in the place where they are required to be used, left rough for ordinary use, or be finished plain or in colors with the face of polished marble. Thirdly, Mr. Ayres introduces a new system of heating, dispensing with plunging or fermenting material for bottom heat, and substitutes a system by which a stream of air, moist or dry, is constantly passing through the center of the earth containing the roots of the plant as well as around the sides of the pot. For glazing, Mr. Ayres uses flat glass of great strength and quality, jointed with transparent cement, or he may use glass turned up at the sides, or any other form of bent glass that he may find necessary for the purposes of his invention. The alleged advantages are, economy in first construction, portability (when desired), and when manufactured in iron, galvanized, a house so imperishable as to wear for a lifetime without further cost.

The "Physical Basis" of Fighting.

The *Gazette de France* gives the following details with regard to the supply of food for the army of the Rhine:

MEAT.—The contract for fresh meat for the army of the Rhine has been given to the syndic of the cattle merchants at the price of 15 francs 58 centimes the kilogramme—about 50,000 francs a day; the performance of this contract to begin on the 5th of August. Salt meat for the fleet is supplied by the Americans. It is the best and wholesomest, say the exporters. The principal supplies of bacon come from Brittany. Morlaix is the great storehouse for this article.

BREAD.—A considerable quantity of flour also comes from America. It is with this flour chiefly that the bread is made which is baked in Paris for the troops. It seems to be decided that in future the bread shall be baked on the spot near each camp. It has been calculated that 1,000 journeymen bakers and 250 campaigning ovens are enough to supply the wants of 400,000 men. The campaigning oven, of thin iron, can be set up in three hours and used immediately. The bread for the troops in Paris will be baked at the Invalides and other supplementary buildings. Five hundred thousand rations of food leave Paris each day for the Eastern frontier—biscuit, rice, dry vegetables, sugar, roasted coffee, brandy, wine, etc.

FORAGE.—Switzerland sends it to Nancy in the forage, taken at the root, comes to fifty francs the thousand. The Hungarian hay, delivered at the Strasburg Railway station, will cost fifty-five francs the thousand. Experience will decide as to the quality of the forage from these two markets. It is well known that there is a scarcity in France as regards this article.

What Farms they have in Illinois.

The following highly interesting statistics of the immense farms of Mr. John T. Alexander, the great farmer and stock dealer of Morgan county, have been prepared with much care, and can be relied upon as substantially correct in every respect; Number of acres of improved lands on his farms, 34,000; number of acres unimproved lands, 300. Total number of acres of land, 34,300. Aggregate value of land, $1,685,000. Value of implements in use upon his farms, $50,000. Amount paid for wages during the past year to hands employed on his farms, $76,000. Number of live stock on his farms, 90 mules, 50 cows, 150 horses, 200 oxen, and 7,000 other cattle; hogs, 700. Total value of live stock, $536,900. Product of his farm in 1869—corn, 277,500 bushels; wheat, 7,000 bushels; oats, 8,000 bushels; rye, 2 000 bushels; potatoes, 1,000 bushels; hay, 3,000 tuns; value of animals sold on his farm during the past year. $493,400. Mr. Alexander has two farms—one of nearly 8,000 acres, in Morgan county, 12 miles east of Jacksonville, upon which he resides, and the other, of 27,000 acres, in Champaign county, Ill. In addition to this large business as a farmer, Mr. Alexander buys, ships, and sells, as dealer, over 50,000 head of cattle annually.

SOME idea may be formed of the luxurious character of New York Yachting, by reference to the cost of some of the boats belonging to the squadron. The Dauntless, owned by James G. Bennett, Jr., cost $70,000; Palmer, $50,000; Sappho, $50,000; Eva, $18,000; Vesta, $45,000; Magic, $33,000; Phantom, $42,000: Sylvie, $30,000; Rambler, $28,000; Widgeon, $38,000; Halcyon, $29,000; Fleetwing, $48,000; and the old Henrietta, $40,000.