

## Correspondence.

## Our Washington Correspondence.

To the Editor of the Scientific American:

Under the call of the Secretary of the Interior for plans for remodeling or repairing the burnt portions of the Patent Office, fifteen were submitted by architects from different portions of the country. A committee of experts appointed by the Secretary to consider the various plans has reported in favor of that of Mr. Vrydagh, of Terre Haute, Ind., and it is now under consideration by the Secretary. The main feature is the proposed addition of another story, some thirty feet high, for the storage of models, above the present model halls, and the latter are to be cut up into smaller rooms for office purposes. Under this plan, if finally adopted, the additional wing through the center of the present court, that was proposed some time since, would not be necessary. Whether or not another story could be made to harmonize with the building is a question that seems to require consideration, as well as the necessity for any addition at all if the building was surrendered to the sole use of the Patent Office, as it ought and was designed to be, instead of having some of its best rooms taken up by the Interior Department, while the business of the Patent Office has to be transacted in inconvenient holes and corners, and some of it in other buildings outside, thus running the risk of the loss of valuable records that if lost could never be replaced. Had the Interior Department never been allowed in the building, there would have been room for the storage of the rejected models in fireproof rooms in the basement, and the late fire would never have occurred.

The plan of Mr. Vrydagh is now being put in shape for publication in one of the architectural journals, so as to draw forward the criticism of architects and others before the final adoption of the plan. After it has been published by the architects' organ it is proposed to furnish plates for publication in other illustrated journals, the object being to obtain the fullest criticism on the plan, and to obtain and use such suggestions as may be of value in altering or modifying the plan before the change in the building is begun.

There seems to be an opinion among many that the proposed addition of another story is unnecessary, because if the system of compelling models to be furnished in all cases is done away with, requiring models in such cases only as may absolutely necessitate their use to understand the inventions, it is believed that the present building, if provided with a fireproof roof, would be amply sufficient for the use of the Patent Office authorities, as there is no doubt but that a new Post Office will have to be built to give room for the ever-increasing business of that department, which will leave the present Post Office building for the use of all the other bureaus of the Interior now in the Patent Office building.

## THE BURNT MODELS.

The work of restoring the burnt models has been closed, as no further funds are available for the purpose, and the restored models are now being stored in the room over the south portico. Of a little over 80,000 patented models damaged by the fire, 18,544 have been cleaned, repaired, and painted, making them as serviceable for all the purposes of the Patent Office as they were before the fire. Many of them, which were warped, bent and crushed by the falling debris and heat, have been straightened out, put in shape, and, where necessary, wooden bases supplied, and the models thus restored make a very creditable display, many of them looking much better than they did before the fire. There is no doubt that hundreds of models, if not thousands, could yet be identified if sufficient funds could be obtained to pay for the necessary labor, but it is doubtful if Congress will be asked to vote any more for this purpose, as it is very hard to obtain money for matters that are much more needed.

## PATENT OFFICE DECISION.

There has of late grown up a practice among some of the examiners of condemning claims for combinations of elements "arranged," "combined" or "adapted" to perform some function for which the combinations were especially made, on the ground that such claims were "vague" and covered more than the original invention warranted; arguing that such combination claims should be limited to the particular arrangement shown, and not allowed to be issued so as to cover any like combination under a different arrangement that would perform the same function. In a recent case of this kind (John Bigelow, sewing machines) the examiner refused such claims without the insertion of limiting clauses, because, as he asserted, if such claims were allowed there would be an end of the American patent system, as it would prevent patents being granted for subsequent improvements in the same line. In view of this there was nothing else for the applicant to do to obtain his rightful claims but to appeal to the Commissioner in person, who fully sustained the applicant's right to the desired claims, notwithstanding two prior decisions which apparently bore out the examiner's opinion as to the use of claims of this kind.

Washington, D. C.

R.

## Little Mothers.

To the Editor of the Scientific American:

Will you permit me to make one or two corrections in a paragraph headed "Little Mothers," that appeared in the SCIENTIFIC AMERICAN of August 24? The article referred

to says: "Had the first been properly treated her life also might have been saved; but her physician would not destroy the child without the mother's consent," etc. Now, any person acquainted with the details of the case is aware that "to destroy the child" was unnecessary, as the infant was already dead; and also, that the great size of the child (5 lbs. 10 ozs.), compared with the mother's weight, and its very peculiar presentation, necessitated the performance of the operation of craniotomy before the body could be removed, and then the process of delivery occupied one hour. This was one of the most remarkable cases on record. Experienced physicians were in attendance, and the friends and relatives are satisfied that all was done that could possibly be done, and as it should have been done.

Again, the paragraph referred to says: "Minnie was married to Major Newell . . . at the same time that her diminutive sister was married to Gen. Tom Thumb." If this is so, the little lady must have entered the matrimonial state at the age of 14 years—15 years ago. But I am inclined to think this is not correct, for the reason just mentioned, and also from the fact that Newell is now only about 23 years old. Major Newell and Miss Minnie were married about one year ago last July, but where, and on what date, is nobody's business, all parties interested keeping their own counsel.

NEMO.

[The statements referred to in the paragraph mentioned above were drawn from newspaper reports of the circumstances attending Minnie Warren's death, the accuracy of which reports we had no reason to doubt. We are much obliged to our correspondent for the correction.—ED. SCI. AM.]

## The Population of Asia.

Behm and Wagner's tables for 1878 give the population of Asia as 831,000,000, distributed as follows:

Siberia, 1873	3,440,362	Japan, 1874	33,623,373
Russian Central Asia	4,505,876	British India within British Burma, 1872	168,421,264
Turcoman Region	175,000	Native States	48,110,200
Khiva	700,000	Himalaya States	3,300,000
Bokhara	2,030,000	French settlements, 1875	271,460
Karategin	100,000	Portuguese do.	444,617
Caucasia, 1876	5,391,744	Ceylon, 1875	2,459,542
Asiatic Turkey	17,880,000	Laccadives & Maldives	156,800
Samos, 1877	35,878	British Burma, 1871	2,747,148
Arabia (independent)	3,700,000	Manipur	126,000
Aden, 1872	22,707	Burma	4,000,000
Persia	6,000,000	Siam	5,750,000
Afghanistan	4,000,000	Annam	21,000,000
Kaffiristan	300,000	French Cochinchina, 1875	1,600,000
Beloohistan	350,000	Cambodia	890,000
China proper	405,000,000	Malacca (independent)	209,000
Chinese border lands, including Eastern Turkestan and Djungaria	29,580,000	Straits Settlements	308,097
Hongkong, 1876	139,144	East Indian Islands	34,051,900
Macao, 1871	71,834		

An old resident of China disputes, in a letter to the *London Times*, the reputed population of that empire. He says: "Twenty or thirty years ago, when China was less known than it is at present, and when the inland provinces had not been traversed in all directions by foreigners, it was only natural that the vague guesses of missionary and other writers, based chiefly on the misty calculations of native authorities who counted their own people by myriads and myriads, should be accepted as fact and received without much misgiving. There were no other data to go upon. China was known but to few people; and if these few assured us that the population numbered 400 to 500 millions of souls, we could only accept and wonder.

"Now, however, all this is changed. The interior of China is almost as well known at present as the interior of Russia; and if strict accuracy cannot be attained in the absence of any reliable statistics, still a fair approximation is certainly possible in estimating the population of the country.

"Those who are best informed on such matters in China at the present day do not set the figures at much over 220 millions of people, or an average of between 12 and 13 millions for each of the 18 provinces. I have frequently heard 200 millions mentioned as a fair estimate for China proper; but the most generally received opinion would limit the population to about 250,000,000. Any material addition to this estimate requires a basis of fact and figures not at present obtainable, either from native or foreign sources in China. With the exception of Sze-chuen and Quang-tong, there are not many provinces the population of which can with confidence be calculated at 15,000,000, while there are several, like Yun-nan, Quei-choo, Kan-soo, Shen-see, etc., which are considerably under ten millions each. The populations of the outlying dependencies of the Chinese Empire are not very numerous, and would not add materially to the sum total of the figures here given."

## The Egyptian Lotus in Connecticut.

Mr. Charles Holmes of Hadlyme lately left at this office several blossoms of the rare and beautiful Egyptian lotus. They were gathered in Selden's Cove, an indentation of the Connecticut river, not far from Long Island Sound, famous alike for its shad and its lotus flowers.

The blossoms bear a general resemblance to the yellow pond lily, but are much larger and of a delicate pale buff color, and their texture and general make up are free from the coarseness of their little American imitations. They grow in about four feet of water, and are consequently mounted on long stems, while the leaves are like great elephants' ears. How these lotus plants happened to take root and manage to flourish where they are is one of the mysteries of Connecticut. Every sort of effort has been made to transplant them, but all fail. Even in Hamburg Cove, just below on the same river, though the plants have been set out there at all seasons of the year, in the hope that some

time might prove the proper time, it has been impossible to persuade the plants to take root at all. An attempt to plant them in Bushnell Park, in this city, failed like the rest, and so did one at Cedar Hill Cemetery. New York persons have carried off the plants often, but only to see them die.

The blossoms are much sought after, a dozen boats being out at the same time after them, and as high as two dollars has been paid for a single flower, while rumor has it that the Lorillards from New York have put in there in their yacht, and bid ten dollars for them. There is no explanation of how the plants happened to start in Selden's Cove, though it is tradition that the seeds of the Egyptian lotus fell there or blew there from some shipload of Egyptian rags that was bound up the river, and that from this little beginning the rest came. Except at one spot on the North Carolina coast the plant does not grow anywhere else in this country.—*Hartford Courant*.

## A Gold Mine in New York City.

When the Appleton building in Bond street was burned last year, the watches, jewelry, and silverware destroyed amounted to about a million dollars. The ruins were carefully worked over by the insurance companies, and all the larger masses of metal were taken out. Then the owners of the property subjected what was left to a thorough washing and secured a handsome sum for their labor. For months after a number of juvenile miners worked at the rubbish, and one enterprising little fellow, it is said, secured enough to set himself up in business, with a stand and newspaper route. Last spring the attention of two Western miners was attracted to the "mine," and after testing a bag of the dirt made a liberal bid for the privilege of working over the refuse scientifically. The offer was accepted, and for the next two or three months their operations afforded much entertainment if not instruction to crowds of curious spectators. A real working gold mine in the heart of a great city was something of a novelty. The miners, Messrs. Pier and Roberts, have finished their work at last, and declare that the "find" was one of the richest they ever worked; that they secured over \$60,000 worth of precious metal, clearing some \$20,000 above expenses and the cost of their privilege. The average yield was over \$1,000 a day, one day's work bringing \$1,700.

## New Engineering Inventions.

Mr. Daniel C. Lyons, of Chelsea, Mass., is the inventor of an improved Gauge Cock, which consists in a perforated tube which slides through a stuffing box connected with the boiler, so as to bring the perforation in the tube into communication with the space within the stuffing box, and permit the escape of steam or water through the tube. The perforated tube is provided with a handle for operating it, and with a head upon its inner end for preventing its withdrawal from the stuffing box.

Mr. James R. Lamb, of St. James, Minn., has patented an improved Car Coupling. This invention relates to improvements in the car coupling for which letters patent were granted to the same inventor heretofore, dated September 18, 1877, and numbered 195,290, by which the construction of the same is simplified and the working made more reliable.

Mr. Edward L. Newell, of Butte City, Montana Ter., has patented an improved Amalgamating Pan made of wood, to be used in the reduction of silver ore. The pans may also be used in gold mills as settlers.

## American Trade with Italy.

A scheme is on foot to establish a society for the promotion of American trade with Italy. It is claimed by the projectors that many of the native products of the United States, which are now comparatively unknown in Italy, could be sold in that country at a profit to American sellers and at a saving to the Italian buyers. It is claimed also that many of the products of Italy could be imported into America much cheaper than they are now imported from other countries of Europe. This is said to be especially true, on the one hand, of American cottons, and, on the other, of Italian silks, gloves, and laces. Mr. G. Fontana, who recently visited Italy in the interest of this scheme, said lately to a *World* reporter: "The Americans can send cottons, bleached and unbleached, to Italy and undersell the English cottons and surpass them in quality. At present the American goods are almost unknown in Italy. The Italians can send to America direct their Como silks, which are now sent to Lyons first and then sold to America for Lyons silk. They can send also the finest velvets, cheaper than the velvets now imported from France, and they can furnish the hand-somest Venetian laces, for the lace industry of Italy is now reviving. The same thing is true of kid gloves, which are made as good as in France. Mr. Fontana added that a large number of the gloves sold in New York for French gloves are really Italian goods sent out here without being stamped, and stamped here with the names of French manufacturers. He mentioned one New York house which last year sold 80,000 dozen of these goods, and another which sold 30,000 dozen. The goods can be brought from Italy, duty paid, for \$6 a dozen, and they sell here wholesale at \$9 and \$10 a dozen."

## Temple's Comet.

The Smithsonian Institution reports that the Academy of Vienna announces the observation of Temple's comet at 9 o'clock on the 19th of July, 1878, in 15h. 17m. right ascension, 4° 15' south declination.

Natural History Notes.

**Why Flowers Open at Different Hours.**—Sir John Lubbock alludes to the fact that flowers have certain particular hours for closing. This habit is a very curious one, and different flowers have different hours for repose. The reason, perhaps, is as follows: Flowers which are fertilized by nocturnal lepidoptera and other night flying insects would possess no advantage in remaining open during the daytime, and those which are fecundated by bees would gain nothing by remaining open at night. The closing of flowers, then, is connected with the habits of insects. Besides, it should be remembered that the opening and closing of flowers are gradual, and that the hours vary much according to circumstances.

**A Colossal Tortoise.**—*Les Mondes* notes the arrival at Paris of a sea turtle weighing 180 kilogrammes (400 lbs.). The monster was installed in a tank along with the sea lions at the Zoölogical Gardens, but the amphibians, terrified at the presence of the new comer, dared not take their bath, and refused all food. The tank being very deep it became very difficult to catch the turtle, which displayed as much intelligence as vigor in eluding pursuit. It now occupies a shallower tank, where it is attracting great attention from visitors.

A leather turtle (*Spargis coriacea*) caught by Samuel Coon, one of the branch pilots of New York, on board the Young Pilot, by way of Sandy Hook, on the 27th of September, 1811, weighed 900 lbs., and measured 7 feet 6 inches in length. This specimen was purchased by John Scudder, proprietor of the American Museum, then at 21 Chatham street. The leather turtle, inhabiting the Atlantic and Mediterranean, is said by naturalists to attain sometimes the weight of twelve hundred to two thousand pounds.

**The South American Manatee.**—For the second time, a living specimen of that singular animal, the manatee, or sea cow (*Manatus Americanus*), has been brought to England, and may be seen disporting itself in a large glass tank at the Westminster Aquarium. The manatees, or, as they are popularly termed, "sea cows," inhabit estuaries and shallow parts of the shore in the intertropical regions on the Atlantic coasts of South America and Africa. In structure they resemble the dugongs, being placed with them in the order *Sirenia*. The name *Sirenia* is derived from the fact that these animals have a habit of sitting in a semi-erect position in the water, suggesting by their appearance the old travelers' tales of "sirens" and "mermaids," the illusion being heightened by their ability to flex their flippers over the chest, and fold their young in this way (so it is said) to the breast. These animals are said to be related to the whales on the one hand and to the hoofed quadrupeds on the other. They are as truly mammals as are whales, seals, and walruses, having warm blood, breathing by lungs, and bringing forth young alive and suckling them. They have a hairy covering, too, although it is but slightly developed. No outer ears exist, and the eyes are very small. The mouth is a very singular one, having on either side a pad or side lip covered with stiff bristles projecting inward, with which its food (purely vegetable) is seized and conveyed to the mouth. The fore lips, both upper and under, are comparatively small. The teeth are absent from the fore part of the jaws, their place being occupied, as in the upper jaw of a ruminant, by horny pads. The mode of feeding has been compared by Professor Garrod to that of a silkworm or other caterpillar, in which the jaws move horizontally instead of vertically. The respiratory organs are no less remarkable; the nostrils are circular openings with valves, which are closed when the creature is below the surface of the water. The lungs are of unusual size and great length, enabling the animal, after once taking in air at the surface, to remain submerged for a considerable time. As might be inferred from its structure the manatee is purely aquatic in its habits. By drawing off the water from its tank, it was ascertained that the animal is perfectly helpless on land, its only movement being a roll by the aid of its flippers and tail.

**The Sparrow Question.**—The question as to what shall be done to abate the English sparrow pest is rapidly becoming one of national importance. Our able zoölogist, Dr. Elliott Coues, expresses himself on this subject in very decided terms in the *American Naturalist*. He says the sparrow is a nuisance in a variety of ways; that it does no appreciable good; that it does a very obvious amount of damage; that it harasses, drives off and sometimes destroys useful native birds; that it has no place in the natural economy of this country, and that the complement of our bird fauna is made up without the interloper. There is no room for these birds, and "if there is any work for them, time has shown that they slight it, or neglect it altogether. The only way to make these sparrows eat the worms they were imported to destroy, and which they seem specially to dislike, would be to starve them into such unpalatable fare. Instead of this, we sedulously feed them from our tables till they are grown too fat and lazy to think of worms. And if we did not do so, it would be useless to expect them to take to a diet they do not relish, when the streets are full of manure, of which they are specially fond, and the trees of our orchards and lawns are full of fruit and blossoms, and the gardens are full of small fruits, and the fields are waving with grain—all these things being the natural food of birds of the sparrow tribe, to whom an insectivorous diet is only an occasional and temporary variation." These birds have, at present, practically no natural enemies, nor any check whatever upon a limitless increase, a fact that would be undesirable even in

the case of desirable birds. Dr. Coues believes that if the limitless multiplication of "these pestilent famine breeders" is allowed to go on unchecked, "we may have, before long, people knocking at the Congressional gates for an appropriation for a Sparrow Commission, like the Grasshopper Commission now sitting, to consider if there be any available relief from the scourge." He believes the numbers might be kept down, if not diminished, without any unnecessary cruelty, by: (1) Letting the birds shift for themselves; turning them loose and putting them on a footing with other birds—that is, taking down the boxes and all other contrivances for sheltering them; stop petting and feeding them; stop supplying them with building materials; let them look out for themselves. (2) Abolish the legal penalties for killing them. Let boys kill them if they wish; or let them be trapped and used as pigeons or glass balls are now used, in shooting matches among sportsmen. Vast numbers of pigeons are destroyed in this way; there are even "sparrow clubs" in various cities, which make a business of practicing on various of our small native birds, for which the European sparrows would be an admirable substitute, answering all the conditions these marksmen could desire. In this way the birds might be even made a source of some little revenue, instead of a burden and pest, as they could be sold by the city to such persons as might desire them for sporting purposes." English papers long ago warned us that the introduction of these sparrows would prove a great mistake, and we are now beginning to find it out.

**The Bayberry, or Wax Myrtle.**—The *Revue Agricole de Provence* directs the attention of its readers to a shrub, the culture of which, it states, might prove useful in certain conditions of soil and climate. The shrub referred to is no other than our American bayberry, or wax myrtle (*Myrica cerifera*), which, according to our French authority, has the property of improving the air in the neighborhood of marshes, and consequently of rendering a residence near such places less unhealthy. Its fruit is covered with a waxy substance, from which candles may be made that burn with a very agreeable odor. This shrub, says the *Chronique d'Acclimatation*, grows naturally in marshy places, on the banks of water courses, and in meadows which are sufficiently irrigated. It is easily propagated from the seeds that it produces in great abundance, as well as from layers.

**Bees and their Labor Saving Ideas.**—It will be remembered that Mr. Thomas Meehan, a few years ago, covered patches of clover with wire gauze to exclude bees from the flowers and thus prevent cross fertilization, and found that every plant nevertheless perfected its seeds—a result different from that reached by Mr. Darwin. Having been taken to task because he recently referred to the fact that a species of flax (*Linum*) brought from the Rocky Mountains perfects its seeds in his garden and can only use its own pollen, although Mr. Darwin states that "one might as well sprinkle *Linum perenne* with inorganic dust as its own pollen," Mr. Meehan is led to explain his position in *Nature*. He says that nothing is further from his mind than to oppose facts in opposition to Mr. Darwin; his point has been to show that plants or insects do not always behave in the same manner, on all occasions, and under all circumstances. Early last March, while only the three early plants, chickweed, shepherd's purse and *Droba verna*, were in flower, he observed honey bees at work on chickweed exclusively, passing the other two plants by. Now chickweed is one of those plants which has been given up to self-fertilization, and he had never seen bees nor other insects visit it, nor does he know of any one who has. He observed a similar instance last autumn, long after all flowers but *Salvia splendens* had gone. On warm days these flowers were thronged with honey bees, although he is positive these plants were never visited when other flowers were to be had. The corolla tube is too long for the bees, so they had to bore from the outside, which is easy work for large humble bees. Almost all our flowers which offer the least obstruction to mouth entrance are robbed of their sweets in this way. Even red clover is tapped in this manner. But it was very hard work for the honey bees, and Mr. Meehan is sure that but for the absence of other and easier worked flowers he should not yet be able to say that he had seen the honey bee bore from the outside of a flower, as the humble bee usually does. He believes that bees are not attracted to flowers by color or fragrance merely, but that they are influenced rather by labor saving ideas. They are taught by a little experience how to work at any species of flower to the best advantage, and will do it in this manner, of course, till all are done. White varieties or scarlet varieties are all one to them; they distinguish the species by other means than that of color. And they learn, too, where to work with the best prospect of a harvest, and only glean in poor fields after the better ones are reaped. As in the case, too, of their behavior with the chickweed and *Salvia*, they seem to go on the principle that a crust is better than no loaf at all. These considerations will naturally lead to different behavior in different climates of both flowers and insects.

**JABORANDI IN BRIGHT'S DISEASE AND OEDEMA.**—In a report from Bellevue Hospital, in the *New York Medical Journal*, it is stated that a woman, aged thirty, entered the hospital suffering from acute nephritis, with general oedema and symptoms of uræmic poisoning. The value of the remedy was very decided. Within three days the dropsy had in great part disappeared. In cases of oedema of the lungs decided benefit resulted from the use of the drug, and a sufficient number of cases were observed to test its value.

New Agricultural Inventions.

Albert Denison, of Stillwater, N. Y., has patented a novel Machine for Sweeping or Removing Vermin or Bugs from Plants, more especially from potato vines, and gathering them into a suitable receptacle from which they can be removed and destroyed at will.

Mr. David A. Smith, of Greencastle, Pa., has patented a combined Cider Mill and Press, in which the improvement consists in the arrangement of a partition disk which separates the cylinder from the rigid gear connected therewith, so as to permit the mill to set in vertical position with the cylinder and ring on horizontal axes. It has an adjustable cheek plate, and a frame or case of novel construction. The means for driving the ring and cylinder are also new.

An improved Churn has been patented by Andrew Beck, of Waverly, Minn. This churning apparatus is simple in construction, convenient, easily operated, and will bring the butter very quickly.

An improved Check Row Attachment for Seed Planters has been patented by Mr. George W. Rogers, of Frankford, Mo. The object of the invention is to provide a more convenient means of operating the dropper slide, and at the same time checking off the ground for succeeding rows of corn.

Mr. Julius A. Platt, of Warren, Ill., is the inventor of an improved Harrow, which is so constructed that the tooth bars may each be free to move up and down independently, while at the same time they are held firmly in their proper relative positions.

Mr. Thomas Muir, of Andes, N. Y., has devised an improved Butter Worker, in which the butter is operated upon by a hand lever on a rotating table, the object being to so improve the construction of the working lever and the supporting table that the grain of the butter will be good and uniform, without tendency to become oily.

Mr. George L. Johnson, of Octagon, Ind., has patented a Derrick for rapidly Loading or Stacking Hay and similar substances; and it consists in a grooved wheel carrying a fork, and mounted on a shaft that is journaled in adjustable standards; and in the combination with the said wheel of a weight to return it after it has been moved in the operation of loading or stacking.

Mr. Jacob Schweickhard, of Kekoskee, Wis., has patented an improved Rotary Churn that represents and combines the advantages of the common plunger and revolving paddle churn, so as to make the butter with the same efficacy as the former, and with the same rapidity as by the latter churn.

Amianthine Coal.

The name amianthine coal has been given to an artificial fuel, invented by M. E. L. J. Rocher, of Toulouse, and especially adapted for heating public conveyances or for use in workshops or laboratories where an open fire without a chimney is required. M. Rocher desired to produce a fuel in the combustion of which the least possible quantity of carbonic acid is disengaged, while a pleasant and healthy odor is evolved. His amianthine coal is of a cheap nature, and, being dense, affords with a small volume a considerable and constant heat, burning freely, but slowly, producing no smoke, and requiring no special apparatus for effecting its combustion. The essential ingredient is green, white, or blue amianthus, or flexible asbestos, which is capable of subdivision into small particles in water, and which, when intimately mixed with other substances, forms a sort of fibrous paste, possessing when dry great elasticity, whereby it is enabled to stand considerable transport without breakage, and the ashes of which after combustion retain the original conglomerate form of the fuel. Moreover, the amianthus fibers in each fuel block, while it is burning, remain unconsumed, and serve to transmit the heat to the surface of the block. As regards the development of carbonic acid, the green amianthus in particular is of great value, being composed of silicate of lime, silicate of magnesia, and protoxide of iron, which by its combustion is further oxidized, as shown by the change of color of the fibers from green to rusty brown, and thus its effect is much the same as that of the pieces of iron sometimes placed in brasiers for neutralizing the carbonic acid. In order further to neutralize the carbonic acid as much as possible, with the amianthus is mixed fat lime, which, when formed into a paste therewith, also acts as agglutinating material, imparting great solidity to the fuel. In place of the lime may be employed other known agglutinating materials, preferably those capable of absorbing carbonic acid. To the above ingredients are added charcoal and acetate of lead, or nitrate of soda or of lime, or substances having analogous properties. Thus, for one description of the fuel, 1,000 parts of charcoal, 100 parts of amianthus, 25 parts of gum, 1,500 parts of water, and 100 parts of acetate of lead are mixed; for another description, 1,000 parts of charcoal, 130 parts of amianthus, 60 parts of lime, 55 parts of nitrate of lime or of soda, and 1,500 parts of water. The above proportions may be modified according to the purposes for which the fuel is to be employed. The charcoal and amianthus are reduced to a fine state of subdivision, and are then mixed together; the nitrate of lime or analogous substance is also pulverized, and then mixed with the other two substances, and to this compound is then added the water in which the agglutinating material, gum, or lime has previously been dissolved or suspended. The compound being then stirred so as to incorporate all the ingredients as thoroughly as possible, forms a pliable paste. This paste is placed in moulds to form briquettes or blocks, which are dried either in the open air or in stoves.