the equivalent of hay at $5 per ton of 2,000 lbs., and where it can be had at that rate the cost of wintering the animal will range from $7 to $10, according to coldness and length of the foddering season. But hay as a rule costs at least $10 per ton, and frequently much more. Hence the estimated saving by meal feeding is placed at from $5 to $20 per animal, according to the respective prices of corn and hay.

THE FORTUNES OF THE OBELISKS.

The Egyptian obelisk, whose launch we discussed last week, narrowly escaped total loss while on its voyage to England. So severe a storm was encountered off Cape Finisterre that the towing steamer Olga was obliged to cast off from the obelisk craft, and, after removing the crew from the latter, to leave it to its fate. Six men were lost during the transhipment. The deserted needle drifted seaward, and finally was discovered by the English steamer Fitzmaurice, ninety miles north of Ferrol, Spain, and taken in tow again. The Fitzmaurice was bound for Valencia, and hence the travels of the famous stone will probably be prolonged.

The sister obelisk to that above referred to has been presented by the Khedive of Egypt to New York city. As we noted last week, it was proposed to defray the expense of transportation across the Atlantic by public subscription, but this course has since been rendered unnecessary by the magnificent offer of a well known citizen, whose name is as yet withheld, to bear all the expense, amounting to $100,000, himself. This proposal has been accepted, and we understand from the New York *World* that the contracts for the removal and shipment of the stone have been signed. At present the question is being discussed where the obelisk is to be erected when we get it; and opinion seems to be about equally divided in favor of establishing it in the center of Madison Square, between 23d and 25th streets, on Fifth Avenue, or in the park into which it is proposed the site of the present distributing reservoir on 42d street and the same avenue shall be converted, after demolition of the now unnecessary reservoir.

In view of the distribution of Egyptian obelisks over the surface of the earth, one being in Rome, another in Paris, another in London, and now another in New York, it has been humorously suggested that the archæologist of a dozen centuries hence will be vastly puzzled to account for the wonderfully wide contemporaneous dispersion of the Egyptian race, which will be indicated by the localities of its monuments.

SPEECH AUTOMATICALLY TRANSMITTED IN SHORT HAND BY THE TELEGRAPH.

In our next issue we shall present an illustrated article descriptive of Dr. Rosapelly's and Professor Marey's recent investigations into the mechanical productions of speech. By means of very ingenious apparatus the movements of the lips, those of the veil of the palate and the vibrations of the larynx, are simultaneously graphically inscribed, so that their inter-connection and succession may at once be seen. The result is a clearly marked phonetic character produced by the voice itself, the corresponding sound to which any one after a little study can at once produce.

The discovery of this automatic phonography may lead to two important results, first, that for which it is directly designed, namely the teaching the deaf mutes to speak, for the mute has only to make the sounds indicated and which previous investigation has determined to be exactly the right one to produce the articulated word, and second, vocal speech translated into phonographic short hand at any distance from the speaker. It appears quite possible with the apparatus of M. Marey aided by well known electrical appliances for the words of a speaker in New York to be taken down in legible short hand in San Francisco. This is an application scarcely anticipated by the investigators and their apparatus is perhaps not the best adapted to that particular end, but still it possesses none the less the "promise and potentiality" of that wonderful result.

ALLEGED POISON IN SUGARS.

Some attention was attracted last year by numerous letters, published by Mr. L. Rossiter, of Chicago, Ill., in the Chicago *Tribune*, with regard to alleged poisonous effects of sugars. Mr. Rossiter suggested that a large proportion of the sugars in the market might contain poisonous impurities arising from the use of chemicals in their manufacture, his opinion being based upon the effects of the use of sugars as food upon persons of weak or deranged digestion. In the *American Journal of Pharmacy*, we find accounts of analyses made by Messrs. J. S. Johnson and S. E. Parkill, of fourteen samples of sugars and syrups furnished by Mr. Rossiter. Neither lead nor arsenic was found, nor did the ash, by ordinary systematic qualitative analysis, reveal other constituents than sodium, potassium, calcium, magnesium, aluminum, and iron compounds, and sulphates, chlorides, carbonates, and silica. No zinc or tin was found. It thus appears that the sugars of commerce do not contain the injurious ingredients suggested by Mr. Rossiter.

The Double Postal Card.

A new style of postal card is now used in Germany. It consists of two cards of the ordinary size attached together, each having a postal stamp. These double cards are furnished by the Post Office, and sent for the purpose of facilitating the return of answers.

DECISIONS OF THE COURTS.

The suit of Northrop *vs.* Adams for the infringement of a design patent for a provision or cheese safe has been decided adversely to the complainant.

The specification of the complainant's patent described- "A rectangular base, with a top supported by four corner posts, with an intermediate stile or support, dividing each side into vertical panels, all of which are covered with wire cloth of fine mesh. The front side is made to open as a door, which is single, but folds upon itself, the two parts being hinged together at the center style. Around the base is an ogee moulding, and a similar one is run round the top to serve as a cornice. A lighter moulding of the same pattern is run round the edge of each panel, and a pleasant effect is produced by staining all of the moulding a dark color, varnishing all the rest of the wood work, leaving it in its natural color." The patentee claimed as a design for a cheese safe, the rectangular cage, having two vertical panels on each wall, a moulded top and a moulded base.

The main question involved in the suit was the patentability of the claimed invention. Now, the law applicable to design patents does not materially differ from the law applicable to mechanical patents. The same general principles of construction extend to both. To entitle a party to the benefit of the act, in either case there must be originality and the exercise of the inventive faculty. In the mechanical patent there must be novelty and utility; in the design patent, originality and beauty. Mere mechanical skill is insufficient. There must be something akin to genius—an effort of the brain as well as the hand. The adaptation of old devices or forms to new purposes, however convenient, useful, or beautiful they may be in their new *rôle*, is not invention. Thus it has been held that the use of a small model of the Main Centennial Building, for paper weights and inkstands, was not patentable.

Upon applying these rules to the facts of the case, it was apparent that the complainant's patent could not be sustained. Thus it was shown that rectangular safes essentially similar to the complainant's, covered with wire cloth, had been made and used for many years. Such rectangular safes were formerly used for the exhibition of cheese in shops, but of late years had been supplanted by a round safe, with the top divided and connected with hinges, so as to permit one half of it to be thrown back. When these rectangular safes were constructed of large size, each side was divided into panels by a vertical stile; when of smaller size no such division was made. But as the difference in size would not be patentable, so the division of each side into panels was none the more so. The only novelty, then, in the patent, was the use of an ogee moulding about the top and bottom. Mouldings of this description, however, had been used for centuries, and applied, not by way of ornament in architecture, but to articles of furniture and the decoration of interiors. The embellishment of a provision safe with this ancient design was simply the adaptation of a well known ornament to a new purpose. The result, being neither novel nor original, was not entitled to the protection of the patent laws.

The Potato Bug in Germany.

The Germans are greatly interested in, not to say excited about, our Colorado beetle, and well they may be, for the German potato crop is a valuable one, and in no part of the world have we seen so many fine mealy potatoes as there. The beetle has been seen at Schildau in Saxony and in some other localities, and much attention has been given to a study of their habits and means of destruction. In a recent number of the *Industrie Blätter* is a translation of Professor Riley's article from the SCIENTIFIC AMERICAN (page 198) which is supplemented by remarks by Professor Sell and others. Dr. Sell advises to saturate the soil with sulphurets of potash or lime, then with dilute sulphuric acid, so as to generate the poisonous sulphuretted hydrogen in the soil. In regard to attempts made to burn them out by saturating sawdust with petroleum and sprinkling them over the soil, then igniting them, he says that, although the flames are high and an intolerable heat rises from it, the heat does not penetrate far enough into the earth to kill the larva. He found at a depth of 6 or 7 c. m. (2¾ inches) the heat was not over 95° or 100° Fah., which is far too low to kill the single individuals.

At Schildau, in Saxony, where the beetle made its appearance, the fields were first burned over, then plowed up, and finally the sawdust saturated with benzine and mixed with the earth and fired.

In regard to our American remedy, the Paris green and lime, the *Industrie Blätter* remarks: "We are of the opinion that this means will really destroy the beetle, but the lime and Paris green dust might be dangerous to children and that useful animals and plants might be poisoned, and the soil become impregnated with such colossal quantities of arsenic that under some circumstances even the well water would be poisoned." Nevertheless this cure, in a wet form, is recommended by Professor Kuehn, of Halle.

In regard to this pest the *Gesundheit* says that Nature offers some aid. The odor of the hemp plant is so offensive and stupefying as to keep them out of a field. They have also an enemy in the lady bug (*Coccinella*).

Every effort is being made to prevent their importation from here. It is said that specimens of our potato bug have been sent there alive in a paper box without food, showing that it is rather a difficult matter to starve them.

That the farmer and gardener as well as the general public may recognize the insect upon its first appearance and set about its destruction, pictures of the bug, egg, and larva are freely distributed in the papers and by the police.

Models of the bugs at different stages, attached to a green leaf and brightly colored, are put up in little boxes with glass covers for use in the schools. Manufacturers of chocolate, candy, wax, or gums find in the Colorado beetle a convenient model for their wares. Among the latest novelties are sleeve buttons bearing each a full sized potato bug. Voigt has even published an illustrated pamphlet on the subject. In short, the Germans have the potato bug on the brain.

We learn that the Austrian, English, and French Governments have sent representatives to Germany to observe the beetle on the spot, as well as the precautions employed to destroy him. M. Henze, delegate of the French Department of Agriculture in Muehlheim, has shut up 80,000 specimens in little boxes to be furnished to all the communes and schools in France. He also desired, for the museums, large glass boxes in which the nature of the dangerous beetle should be shown by means of an artificial potato field.

An enterprising Muehlheim firm puts up: "Very fine Colorado Bitters," with a beetle on the label.

A patent has been taken out in Prussia for an apparatus to destroy insects and weeds by means of steam. A large apparatus for fields is drawn by horses and operated by two men.

Analysis of Butter Fats.

Hehner says that all methods for detecting foreign fats in butter, which are based upon the physical properties of butter fat, such as its solubility in alcohol, ether, and naphtha, melting point, etc., are useless because it is easy to mix liquid and solid fats in such proportions as to obtain a product totally undistinguishable in its external appearance and physical properties from butter. On the other hand, many a sample of genuine butter is considered to be adulterated because its odor and appearance seem to indicate the presence of tallow. All butter without exception, even the best, by standing a long time in the air acquires a decided odor of tallow and becomes as white as tallow too.

Hehner and Angell have found that the quantity of volatile acids in butter fat is far greater than previously supposed, and further, that this quantity is very constant and almost independent of the race of the cow, the fodder, and the method of making the butter; also the age of the butter has no effect upon it. By distilling the saponified butter with sulphuric acid, they obtained in eight experiments from 4·8 to 7·5 per cent of volatile fatty acids. In this manner no harmonious results could be obtained.

As all animal fats, except butter, consist of tristearine, tripalmatine, and trioleine, they must, when saponified and decomposed by sulphuric acid, yield from 95·28 to 95·73 per cent fatty acids. Hog's lard, mutton suet, and similar fats yielded. by direct experiment, within 0·1 per cent, exactly 95·5 per cent insoluble fatty acids, while pure butter gave from 85·4 to 86·2, on the average 85·5 per cent; others found as much as 87·5. A butter, then, which yields over 88 per cent of fatty acid can be considered as adulterated. To determin the quantity of foreign fats, subtract 87·5 from the percentage found, multiply by 100, and divide by 8 (= 95·5 − 87·5). As butter is never adulterated with a few per cent of another fat, but with at least one third, we can scarcely be in doubt whether it has been adulterated or not.

Hehner recommends to melt the butter and pour off the top through a dry filter, then put 3 or 4 grains of this fat in a small dish, add 50 c. c. alcohol and 1 or 2 grammes of pure potassic hydrate and heat 5 minutes, or until a few drops of water does not produce turbidity. The alcohol is driven off by evaporating to a syrup, the residue dissolved in water, dilute sulphuric or hydrochloric acid added to acid reaction. The insoluble fatty acids separate as a cheesy mass. Heat 30 minutes. Then filter on a tared, thick, moist filter, and wash with boiling water. When the filtrate ceases to show an acid reaction, the funnel is immersed in cold water to solidify the fatty acids, and dried in a weighed beaker in a water bath until the weight at two weighings is constant.

The Coming Winter.

Astronomer Royal Smyth, of the Royal Observatory, Scotland, says that the coming winter is going to be exceedingly cold. From the observations of earth thermometers over a period of thirty-nine years, he finds that between 1837 and 1876 three great heat waves from without struck Great Britain; namely, the first in 1846·5, the second in 1858·0, and the third in 1868·7. The next one will probably come in 1879·5, within limits of half a year each way. The periods of minimum temperature, or greatest cold, are not in the middle time between the crests of these three heat waves, but are comparatively close up to them, on each side, at a distance of about a year and a half. Hence the next cold wave is due at the end of the present year, and very frigid weather may be looked for.

Fertilization of Flowers by Birds.

A curious chain of circumstances, leading to a definite natural result, is noted by a correspondent of *Nature* writing from Mendanao. Certain flowers secrete nectar, which attracts certain insects. These insects are the natural prey of the sun birds and flower peckers; but to capture them the birds are obliged to probe diligently the corollas of numerous flowers. Each bird in so doing brushes off pollen, which adheres to the plumage surrounding its bill, and this pollen is thus conveyed to other flowers, which so become fertilized.