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Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Ammonium sulpho-cyanide, Acetic acid, Ascents, mountain and balloon, Astonomical notices, Beeswaxing floors, how done, Belts, to lay out, Benzine, in turpentine, Better times, Blacking, liquid, Butter fat, analysis of, Calcium light, how made, Cement for filling zinc work, Cement for glass, Correspondence, Washington, Cows, method of wintering, Diamonds, experiments with, Dextrin, how made, Drill, self-feeding, Dyestuff, a new, Electrotyping leaves, etc., Engraving, new process of, Engraving, analysis of, Eyes, influence of gas light on, Flowers, fertilization of by birds, Furnace, improved puddling, Gold in solutions, test for, Gun barrels, stain for, Hair, how to bleach, Hand warmer, an ancient, Honey dew, what is, Horn, to dye black, Horse power, to calculate, Hydraulic cement, Ink, red for rubber stamps, Ink stains, to remove, Lettering for a monument, Magnet, to make a horseshoe, Marbleizing, directions for, Marbling of paper, how done, Mars, atmosphere of, Mars, satellites of.

TABLE OF CONTENTS OF THE SCIENTIFIC AMERICAN SUPPLEMENT No. 96,

For the Week ending November 3, 1877.

Table listing contents of the supplement including sections on Engineering and Mechanics, Technology, Architecture and Building, Chemistry and Metallurgy, Electricity, Light, Heat, etc., Natural History, and Chess Record.

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AN OPPORTUNITY FOR INVENTORS.—\$24,000 REWARD OFFERED FOR A RAMIE CLEANING MACHINE.

The Department of State has received a circular from the Government of India, from which it appears that in 1871 a prize of £5,000 was offered to the inventor of the best machine or process for the preparation of the fiber of the Böhmeria nivea (popularly known under the names of Rhea, Ramie, and China grass), and the terms on which machines would be admitted to competition were widely notified in India, Europe, and America, but only one machine was brought to trial, which, having been carefully tested at Saharanpur in 1872, was found imperfect, and the inventor was adjudged not entitled to the full reward. He was, however, presented with £1,500 in consideration of his partial success. As this machine has not since been adapted to practical use, and no better process of preparing the fiber of the rhea has been discovered, the conditions which induced the offer of a prize in 1871 remain substantially unchanged, and the government therefore offers a reward of about fifty thousand rupees (about \$23,110) to the inventor of the best machine or process which will separate the bark and fiber from the stem, and the fiber from the bark, of the Böhmeria nivea; a smaller reward not exceeding ten thousand rupees (\$4,622), will be given to the inventor of the next best machine or process, provided it is adjudged to possess merit and to be capable without difficulty of adaptation to practical use.

What is required is a machine or process capable of producing a ton of dressed fiber of a quality worth not less than £45 per ton in the English market, at a total cost of not more than £15 per ton laid down at any port of shipment in India. The processes of preparation are to be understood to include all the operations required subsequent to the cutting of the stems from the plants in the field until the fiber is in a condition fit for market. The machinery employed must be simple, durable, and inexpensive, and should be adapted for treatment of the fresh stems as cut from the plant. The treatment of dried stems offers certain difficulties, and the fiber prepared from them must, moreover, always be much more costly than that produced from green stems.

The trials will be held at Saharanpur in the Northwestern Provinces in August and September, 1879. Machines entered for competition should be ready for trial not later than August 15, the competition commencing the next day. The judges will be appointed by the government, and they will watch the whole of the trials; but the machines are to be worked and adjusted by the competitors themselves. The government will provide accommodation and motive power at Saharanpur for all competing machines, and will also pay for the transport from the sea coast to Saharanpur of all machines up to the limit of one ton each, the freight on any excess weight to be defrayed by the owners. The owner or owners of the successful machine or machines shall not be entitled to receive the reward offered except on the following conditions, viz.: That a complete technical description of the machine, illustrated by plans drawn to scale, shall be prepared and published (Government paying the cost) for the information of the public; and that after the expiration of three years from date of award, the public shall have the right of manufacturing similar machines, on payment to the owner of a royalty of 10 per cent on the cost of each machine so manufactured. All persons desiring to compete are requested to make known their intention not later than December, 1878, giving their name, residence, profession, and a brief description of each machine entered for competition. They must also declare themselves bound to conform to all rules which may be prescribed by the judges appointed to conduct the trials.

More detailed information than is contained in the circular above summarized may be obtained by addressing the Secretary to the Government of India, Calcutta, to whom notices of intention to compete should be sent. A complete description of the ramie plant and of the investigations hitherto made into the nature of its fiber will be found on another page of this issue.

It should be understood that ramie is sought to be utilized as a substitute for silk and not for cotton: and that it is already largely employed for this purpose by English manufacturers in Leeds and Bradford.

THE PARIS EXPOSITION IN CONGRESS.

President Hayes, in his recent message to Congress, makes special reference to the French Exposition of 1878, and to the necessity of an appropriation to enable exhibitors from the United States to participate in the show. The President recalls the fact that \$200,000 was appropriated for the Vienna Exposition of 1873, and that practical artisans and scientific men, besides commissioners, were appointed to represent the country; from which the inference is that he recommends the granting of a like sum and the organization of a similar corps of officials.

We have so frequently pointed out the objections to Congress devoting any large amount of the people's money to purposes of international shows that it is not necessary to enter into their details here. Public funds should not be spent to advertise private individuals. People send their exhibits across the Atlantic for business purposes, and in the hope of gaining business advantage; and there is no more reason why the United States Government should cooperate to help them, any more than it should pay their advertising bills at home. The \$200,000 for Vienna was appropriated before the panic. Since then the whole financial condition of the country has changed, rigid economy is im-

perative everywhere, and nowhere so much as in the control of government expenditures. Nor did the Vienna \$200,000 save our representation from becoming a failure. The American contribution to that show was not representative of our industries, the official management fell into disrepute, and the results of the work of the scientific commissioners and artisans are by no means as highly appreciated as they ought to be.

Official reports on these Expositions, in any event, can hardly be worth to the people the money they cost. The press with its enormous facilities for gathering and promptly presenting intelligence, anticipates them by considerable periods of time, and affords much fuller information at very much less expense to the classes for whose benefit reports are designed.

If a large appropriation and a corps of salaried officials do no good, at least it should be expected that they will not defeat their own object; and we are not sure but that this was the sum total of the Vienna experience. At the recent Leather Exposition in Germany, our representation was a splendid success, and it was managed entirely by private parties. So also in 1851, the exhibits—notably the McCormick reaper and the yacht America—were wholly unaided by official help. On the other hand, it is desirable that, if we are going to have any representation at all in Paris, it should be one befitting our industrial importance; and it would no doubt facilitate this result to have some persons officially authorized to organize and manage the general display and confer with the Exposition authorities. The Journal of Commerce pertinently suggests that the Government appoint these commissioners to serve without salary, an idea which seems to us excellent. There are numbers of well known citizens who intend to visit the Exposition, and who would gladly undertake the service for the honor it brings. To these gentlemen the existence of a salary would be a bar to their acceptance of the positions, as its amount would be no object to them, nor would they consent to have their services reckoned on any cash or business basis whatever. In the case of an honorary commission, there would be sundry minor expenses, clerk hire, office rent, etc., which would have to be provided for, and for these a small appropriation might be made, as of course no personal outlay should be imposed upon the members of the commission. This arrangement would leave the bulk of the whole expenditure to be met by private subscription among the exhibitors and other parties directly benefited, and this many have expressed their willingness to do, at present, however, with the tacit proviso, "unless Congress makes an appropriation." The matter is pressing for speedy settlement owing to the very brief time which now remains before the show will be opened. As Congress has already once refused to grant a large specific appropriation, it can easily omit reconsideration of that subject, and can confine its legislation to the authorization of a board of honorary commissioners and the setting apart of a few thousand dollars for their necessary expenses.

IMPROVED METHOD OF WINTERING COWS.

Mr. Linus W. Miller, of Stockton, N. Y., an experienced dairyman, advocates, in a pamphlet entitled "Meal Feeding and Animal Digestion," a system of feeding cows during winter, which involves the use of but three quarts of meal per day. He asserts that this amount of good Indian meal, fed under proper conditions, is more than the equivalent for all the good hay a cow can be coaxed to eat—that the animal does not need to have its stomach distended with a great bulk of woody fiber, which imposes upon the system a large amount of extra mechanical work both in the processes of digestion and remastication—that, in brief, bulk in food is not advantageous but to the contrary, and that nutriment in food governs the condition and health of the animal, and that condensation of nutriment is true economy. Mr. Miller has conducted physiological investigations into the functions of the four stomachs of the cow, whence it appears that meal follows the same course as herbaceous food, and stays longer in the rumen than coarse food, while it also digests more thoroughly than when the energies of the stomach are divided between meal and coarse herbage.

Whatever may be the correct theory in this regard, results of actual practice appear to bear out Mr. Miller's views. The report of a committee, appointed to examine into the system by the Western New York Dairymen's Association, shows the following facts: The examination was conducted upon Mr. Miller's herd of Chatauqua county native cows, the average live weight of which was 900 lbs. The herd were fed exclusively upon corn meal for seven weeks, each animal, according to its digestive capacity, making an average of about three quarts of meal per day for each cow. The animals did not ruminate, did not manifest so much desire for food as cows fed on hay alone in the usual way, a little less than they will eat, showed no signs of unrest or suffering; and at the time of going back to hay, the cows had neither lost nor gained flesh. After returning to hay, their stomachs filled and ruminating went on normally, healthy calves were dropped, and when turned to grass the animals took on flesh faster than those wintered in the usual way. Their daily yield of milk was 29 lbs. 3 ozs., or 1 lb. 11 ozs. per cow more than that of any other herd sent to the same cheese factory.

As regards the economy of meal feeding, Mr. Miller points out that one bushel of corn, ground and tolled, will last an ordinary sized cow of 900 lbs. weight 12 days, and is equal to 240 lbs. of hay. Corn at 60 cents per bushel is therefore

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 transshipment. 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. Rosapely'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 stile. 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. (2½ 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 pub-

lic 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, tripalmitine, 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 determine 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.