

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 261 BROADWAY, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year postage included \$3 20
One copy, six months postage included 1 60

Clubs.—One extra copy of THE SCIENTIFIC AMERICAN will be supplied gratis for every club of five subscribers at \$3.20 each; additional copies at same proportionate rate. Postage prepaid.
Remit by postal order. Address

MUNN & CO., 261 Broadway, corner of Warren street, New York.

The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5 00 a year, postage paid, to subscribers. Single copies, 10 cents. Sold by all news dealers throughout the country

Combined Rates.—The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year postage free on receipt of seven dollars. Both papers to one address or different addresses as desired.

The safest way to remit is by draft, postal order, or registered letter. Address MUNN & CO., 261 Broadway, corner of Warren street, New York.

Scientific American Export Edition.

The SCIENTIFIC AMERICAN Export Edition is a large and splendid periodical, issued once a month. Each number contains about one hundred large quarto pages, profusely illustrated, embracing: (1.) Most of the plates and pages of the four preceding weekly issues of the SCIENTIFIC AMERICAN, with its splendid engravings and valuable information; (2.) Commercial, trade, and manufacturing announcements of leading houses. Terms for Export Edition, \$5.00 a year, sent prepaid to any part of the world. Single copies 50 cents. Manufacturers and others who desire to secure foreign trade may have large and handsomely displayed announcements published in this edition at a very moderate cost.

The SCIENTIFIC AMERICAN Export Edition has a large guaranteed circulation in all commercial places throughout the world. Address MUNN & CO., 261 Broadway, corner of Warren street, New York.

NEW YORK, SATURDAY, MARCH 10, 1883.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Agricultural inventions, Air extractor, Artificial aurora, Balloon propulsion, etc., with corresponding page numbers.

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 375,

For the Week ending March 10, 1883.

Price 10 cents. For sale by all newsdealers.

Table listing sections such as I. ENGINEERING AND MECHANICS, II. CHEMISTRY AND METALLURGY, III. TECHNOLOGY, etc., with sub-articles and page numbers.

COMPRESSED BRAN.—ONE THOUSAND DOLLARS REWARD FOR A NEW INVENTION.

In the manufacture of flour the outer cuticle of the grain is separated by sieves in the form of bran, the particles of which are exceedingly light, but strong and elastic; probably they become electrified, for they have the peculiar quality of standing apart and holding air between them, thereby occupying much space. Thus a barrel that carries 196 pounds of flour will only contain about 70 pounds of bran.

The quantity of bran annually produced in this country is enormous. Of flour we are supposed to manufacture about fifty millions of barrels yearly; for every barrel of flour made, probably about 40 pounds of bran is produced.

Bran forms a superior article of feed for animals. As a mixer with other foods it is of unquestionable value; but owing to its great bulk, and the lack of proper devices for its condensation or compression, it is difficult and costly to transport; hence it is almost a drug to the maker. It only brings about five dollars a ton in this country; but in England it sells for almost twenty dollars a ton. In the earlier practice of our Western milling it was common to turn the bran into the river and let it float off as waste. Even now it barely pays for handling.

With a view to the calling out of some new method, process, or invention, by which bran can be more profitably marketed, the Millers' National Association have recently made public an offer of a premium of one thousand dollars in cash, which is to be paid to whoever is able to meet the following requirements and suggestions:

MILLERS' NATIONAL ASSOCIATION.

Secretary's Office, Milwaukee, Wis., February 19, 1883.

By virtue of a resolution adopted at the Delegate Convention Millers' National Association, in Cleveland, January 31 ult., the Sub-Executive Committee are instructed to offer a cash premium of \$1,000 for the invention and production of the best practical machine that will enable mills of ordinary capacity to compress bran economically into a suitable, cheap, and safe package for export, at a saving of at least five cents per hundred pounds in the process, package, and freight, over the methods now in general use.

Requirements.

First. A machine that will compress one hundred pounds of ordinary bran into a package not to exceed fifteen (15) inches square, or two hundred pounds in the same ratio.

Second. That will, with the aid of an attendant and a reasonable amount of power, prepare for shipment one ton or more per hour.

Third. The inventor or owner of the successful machine must stipulate to sell it at a reasonable price (to be agreed upon between the Executive Committee and himself) to all members of the Association.

Fourth. The offer to remain open one year, the committee to be at liberty to reject all devices, competing for this premium, that do not come up to the requirements of the trade.

Suggestions.

First. Other results being equal, the machine producing a package with the best form for close "stowage," will have the preference.

Second. The package should be compressed in such a manner that when the covering is removed the bran will assume its ordinary condition without manipulation.

Third. No machine, or process, requiring the addition to bran of moisture, or any foreign substance, will be entertained.

Fourth. It is desired that parties building, or with machines in model, intending to compete for the premium, will report progress at an early date.

For further particulars address,

S. H. SEAMANS, Secretary.

The chief utility of such a premium consists in directing the special attention of ingenious minds to this particular subject. The real reward to be derived by the successful inventor will come to him through the protection of the patent laws. These beneficent regulations present to every person a perpetual encouragement to study out and develop new improvements; and they grant to the successful inventor, in the name of the nation, the opportunity of securing a generous reward for any new art or industry that he brings before the public.

The problem which the association presents for solution is doubtless a difficult one; but we think that some reader of the SCIENTIFIC AMERICAN will be able to solve it. Whether accomplished or not, we are confident that many ingenious minds will devote study to the subject; and, as always happens in such cases, these researches will open the way to hundreds of collateral suggestions for other novelties. Under pressure of thought the inventor's brain is apt to yield multitudes of new ideas, which fly out involuntarily, like sparks from grinding steel.

The offer of the association would have appeared more just and liberal had the third requirement been omitted. It conveys the impression that the committee regards the payment of the thousand dollars as a consideration of so much importance that they ought to have the practical control of the invention. Such a notion seems almost absurd. Why, it will cost the inventor, in preliminaries, more than a thousand dollars for time, labor, models, experimental machinery, drawings, patent fees, etc. The committee may as well dismiss the idea of ever being called upon to pay the money, in the face of stipulation number three.

They ask the inventor to press their bran down to a dens-

ity more solid than hickory wood, and retain the compression in the form of a merchantable package, still keeping the quality of the chaff intact.

If this can be done, the commercial effect of the invention will be to increase the selling price of bran probably five or ten times above its present rate; and the 1,000,000 tons of bran, or thereabouts, now annually produced and sold say for five millions of dollars, will bring to the twenty-five thousand mills of this country perhaps not less than fifty millions of dollars a year.

The invention called for, if actually realized, will be of immense value and utility. The man who produces it will be master of the situation; and to him will belong the exclusive privilege of dictating the terms upon which the members of the association may enjoy the use of the invention.

Referring to suggestion number four, we would caution the inventor to give out no description of the nature of his improvements until they are protected by patent.

SCHOOLED BUT NOT EDUCATED.

The great lack of our country to-day, said a shrewd observer recently, is properly educated men. The speaker was a rarely capable business man, whose connection with large financial and commercial affairs brings him into daily intercourse with many of the leading business men of the country.

Our material progress has been so rapid, he went on to say, that men have failed to keep up: consequently the country is full of possibilities which cannot be developed, and of enterprises which are suffering grievously for lack of competent men to manage them. And the difficulty in finding the right men for the waiting work is not felt simply in connection with operations of great magnitude. It is felt wherever there is need of full, specific, and exact knowledge, coupled with self-reliance, practical judgment, and skill to deal promptly and wisely with novel problems.

The men who are now doing the larger work of the world as best they may, have for the most part grown up with their affairs, under conditions comparatively favorable for gaining and retaining the mastery of them. But these men are waxing old, are rapidly dying off, and their mantles fall upon younger men, whose entry upon the stage of action was too late for them to benefit by the earlier formative experience enjoyed by their fathers.

The world's business calls for a wider and wider range of real knowledge, a broader grasp of principles, and a larger executive ability than were necessary a few years ago. At the same time the specializing tendency of the age—the development of specialties within specialties, an inevitable consequence of the increasing magnitude of commercial and industrial affairs—leads to narrower experience, narrower training, and, too often, to a serious limitation of men's grasp of affairs in general, their relations, and interactions. The demands of future years are likely to be for men of larger and still larger capacity; yet the conditions for their development are becoming less and less favorable in active business life as the years roll by, and the subdivisions of service become more minute.

The day has passed, or soon will pass, when a man could begin as a common laborer and rise in succession through all the stages of service, practically mastering each department up to the direction of, say, a great transportation system or other enterprise of national magnitude. The steps are too many and the ascent too great. To a larger extent also, the real workers must remain subordinate while the heirs of capital command the higher stations. How are they being educated for their great responsibility?

The speaker above referred to dwelt with much feeling upon the inadequacy of the traditional systems of education to meet this new requirement. With a few exceptions our great educational institutions, and still more the smaller ones, are in grasp and spirit far behind the age, and entirely out of sympathy with the modern world which the rising generation is soon to take possession of. From the moment the boy begins to prepare for college he faces the past; educationally he lives in the past; and the more conscientiously he does the work laid out for him the vaster will be the final gap between college life and real life. The intellectual habits acquired in school and college may possibly enable him ultimately to grapple with greater power and skill with the later problems of real life, greater, that is, than he would have shown had he been left entirely unschooled; yet in the administration of affairs he is likely to be distanced for the best part of his life by the unschooled practical man who knows from early and real experience precisely what to do in any emergency. The young man fresh from school is apt to know with thoroughness much that the busy world has no use for. He has general notions of many arts and sciences, but his positive knowledge of the realities upon which such arts and sciences are based is usually next to nothing; still less does he know of the practical methods of men who apply them to human uses. His educational years have been spent mainly in a world apart from and largely out of relation with the modern working world he is to enter upon when his schooling ends. His education, admirable as it may appear from a theoretical point of view, serves rather to unfit than to fit him for practical life: and his real education has to begin afresh in the rude and costly school of experience.

This, of course, on the assumption that the youth's education has been wholly by school work. Fortunately there are few boys who do not rebel more or less against the