novel show, that of birds, birdskins, and feathers. Here are cases upon cases and piles innumerable of feathered victims, from the magnificent Impian pheasant off the Himalayas to the tiny humming bird of tropical America. The birds and birdskins are carefully sorted, and particulars taken for the transmission to the brokers, who are thus able to prepare their sale catalogues. One of the latter is before us, and although it is only a supplementary one the following are among the goods it specifies: 3,297 jays, 1,073 kingfishers, 1,047 ospreys, 649 red and orangetanagers, 394 parrots, 98 red ibis, 1,095 bee eaters, 653 bronze merles, 1,416 humming birds, and 2,023 various. Coming to the feathers, ostrich, of course, occupy the place of honor, both as regards quantity and relative value. Among other feathers are those of the osprey and the marabout or paddy bird of India. The latter are very pluffy and graceful in appearance, and in color are either a snow white or gray. The whole of the feather and bird business of London is concentrated in this warehouse, and the value of the peculiar merchandise here on show monthly is something about $250,000.

The storage room, devoted to silk, is very considerable; and as far as possible, the different varieties, of which the principal are Bengal, China, and Japan, are kept distinct. Each skein has to pass muster, the inferior or damaged ones being thrown out; and the merchantable bulk of every bale is then enclosed in a hessian covering, which, when sewed up, constitutes a company's package. Bengal silk is in skeins, that from China in flattened bundles or books, and the Japanese skeins are tied up in grape-like bundles. The twine used by the Japanese silk packers is made of paper, but nevertheless wonderfully strong and of beautiful regularity. They are very liberal in the use of paper bands, which enclose the skeins in all directions; but as this paper is carefully preserved by the sorters and weighed off against the bale, the not over scrupulous "Japs" are defeated in their object, which is to get credit for paper as if it were silk. In the storerooms are between five and six thousand bales of silks. The facts of blinds being fitted to all the windows is calculated to puzzle the uninitiated, but this is a precautionary measure of some importance, it being found that the exposure of silk to light and warmth results in appreciable loss of weight.

The chief source of the indigo supply is India, but of late years the Central American States have been sending increasing quantities to this market. Bengal indigo, especially that classed by importers as Bengal blue, is most highly esteemed. Then follow Bengal violet and copper indigoes, and after these rank Oudes and Madras. The culture of the indigo plant is very precarious; and it thus happens that, although the consumption is tolerably uniform, the price is liable to violent fluctuations.

Inside the indigo warehouse there is but one universal color, and that is blue. The atmosphere is of a cerulean haziness, and the men, as they move about, give one the impression of having been in a dye bath. Certainly the blueness of Gainsborough's blue boy would have been doubly intensified by a brief sojourn in this region. The cases of indigo are weighed, tared, and samples drawn for display in the show rooms on the fifth floor. The skylights of these fine rooms are so arranged as to throw the light from the north on the samples of indigo arranged in long lines of trays below. Color is, of course, the chief guide to quality, lightness being also a characteristic of good indigo.

Correspondence.

A Colossal Fortune Undeveloped.

To the Editor of the Scientific American:

For many years the subject of limiting the production of cotton, to bull the price to a more remunerative figure, has engaged the attention of many cotton planters in the South. If but a tithe of the mental labor which has been fruitlessly expended in this direction could be devoted to the invention of means by which the cost of production of cotton could be diminished 1 cent per lb., we might well look for most important results.

In the great Northwest, there has grown up within a few years a gigantic empire, teeming with its millions of thrifty farmers, who are able, by the aid of improved agricultural machinery, to produce the grain crops which feed a notable part of the civilized world. It is well known that this great result would not have been possible without the labor-saving machinery which has enabled them to compete in the markets of the world. But if we look at the cotton culture of the South, it is matter of great surprise that the production of so important a staple, involving so much constant manual labor, should have received so little assistance from inventors. There cannot be a more inviting field for mechanical ingenuity than this; and having given this subject much thought for ten years, I wish to direct the attention of mechanics to the nature of the demand and the probable means by which the supply can be achieved.

A given number of hands, in the rich cotton belt, can plant and cultivate double the quantity of cotton during the spring and summer that they can gather and prepare for the market in the fall and winter. Here, then, is a limit to the production of cotton which compels the culture of other crops in connection with cotton, crops which do not require labor in the season of cotton picking. Machinery for harvesting the cotton crop will enable the planter to double the quantity of cotton which can be produced by a given number of laborers. Here, then, is the first great want of the cotton grower.

I believe the man who successfully supplies this great want, by inventing machinery which will do for the cotton crop what the improved reapers are doing for the wheat crop of the Northwest, will require a sewing machine to make his money bags. Then application of the buggy plow to the cultivation of the cotton plant will naturally follow, and still further diminish the cost of production.

Shortly after the late war, an ingenious Yankee exhibited in the South a device for picking cotton, which did the work, it is true; but it required to be brought to bear upon the cotton boll with something of the precision which points a gun at a bird. A southern negro would easily gather ten locks of cotton in the time required by the inventor to bring this cotton picker in contact with a single boll.

If I could be permitted to advise the would-be inventor of a cotton-picking machine, I would say: Take your first lesson in a cockleburr patch, as it is here called; pass through it, and note how tenaciously the numerous barbed points upon the burrs catch and hold your clothing. Thus you will find the first elementary principle of the cotton picker. Pass through the patch again upon a windy day, and note how your coat tail flies about in the wind, hunting, as it were, for the burrs that so readily seize it; and note also the increased number of burrs you bring away with you. Here you have a second lesson in the elements. Expand the cockle burr into a drum or cylinder covered with card clothing, such as is used in treating cotton or wool, but with teeth so fine as to exclude the limbs and leaves of the plant, seizing only the lint. Let there be two of these card cylinders, revolving in opposite directions, one upon either side of the row of plants; let them be placed nearly upright, leaning obliquely towards each other like the opposing rafters of a roof, so as to conform somewhat to the pyramidal form of the plant; let them be geared so that they can be raised or lowered by a lever to suit the bight of the plant, and so that they can be approximated or separated to suit the breadth of the plant. Let each cylinder be provided with a comb or counter card, to remove the accumulated cotton from the card teeth, and drop it into a proper receptacle upon the machine. Let the whole be mounted upon broad-tired wheels and drawn by two horses, one upon each side of the row of plants. Let a suitable rotary fan be attached below, to send a strong draft of air up through the cotton plant to put the long, loose locks of lint in active agitation, so that they shall industriously search for the card teeth, and also to blow away sand and dust from the lint, and thus improve its quality. Do this, and you have the dry bones of a cotton picker, to be carefully studied, elaborated, and clothed in suitable habiliments, such as this writer has neither skill nor time to devise.

It is not necessary that the cotton picker shall do its work cleanly; if it can but garner two thirds or three fourths of of the crop, manual labor will take care of the remainder. The customary price for picking cotton by hand is 75 cents per 100 lbs. of seed cotton, the average yield of which, in marketable lint, is 33 lbs. The cost of hand picking, therefore, is $2\frac{1}{4}$ cents per lb., a very large item, which ought to be reduced, by appropriate machinery, by more than one half. A successful inventor who should exact as his royalty only $\frac{1}{8}$ of 1 cent per lb. upon the cotton crop of the United States might fairly figure his annual income at more than $3,000,000, a sum worth striving for by any mechanic who has the gift of invention.

If these suggestions should drop a germinating seed into the fertile brain of the coming man who is destined to immortalize himself by the invention of a successful cotton-picking machine, I shall be most happily rewarded for my own part in the matter. ROBERT BATTEY, M. D.

Rome, Ga.

Boiler Explosions.—A Suggestion to Experts.

To the Editor of the Scientific American:

The importance of the subject emboldens me, although not an engineer, to ask for a little space in your valuable journal, to allow me to rejoin to a communication from L. B. Davies, as to the cause of boiler explosions, which appears in your issue of November 18. I beg to be understood in advance that I have no intention of opening a controversy with an expert such as Mr. Davies seems to be, and that what I shall say is to be taken merely as a suggestion to practical engineers that, possibly, there may be a cause for such accidents which has been overlooked. The experiments as to the action of water under repeated heating, that I shall presently detail, were instituted three years ago in consequence of a series of investigations described, if I rightly remember, in the *Journal des Débats*, of Paris. The point was not directly raised by the article, but some collatoral statements led me to question whether water, such as is ordinarily used for motive purposes, might not possibly acquire an explosive property by frequent heating. Although water is a protoxide of hydrogen, as a matter of fact, as found in its natural state in rivers and reservoirs, it contains a considerable percentage of nitrogenous admixture, partly in the form of animal and vegetable life containing nitrogen, and partly in compounds resulting from the decomposition of animal and vegetable tissues. The sedimentary coating it deposits in boilers, and the column of sediment that settles in a test tube after protracted boiling, are sufficient evidence as to the importance of the compounds held in solution to any careful and accurate investigation of the causes of explosion, in instances where inspection has failed to reveal any defects in the boiler itself. Again, under protracted jar, iron columns often acquire molecular properties that render them extremely brittle, and it is very possible that boiler iron under frequent heating and tension, saying nothing of inequality as respects both, may suffer molecular changes that cannot readily be detected even by an expert.

The experiments I have to detail were conducted in test tubes, with Croton water first, and afterwards with water obtained from the Hudson river. The degree of heat employed was uniform. The tubes used were two ounce, tightly corked with rubber stoppers, through each of which was passed longitudinally the refuse spout of a subcutaneous syringe, for the escape of steam. For the experiment I used seven tubes, each loaded with half an ounce of water. Six of the tubes were employed in this manner, namely, five of the six as a reservoir with which to replenish the sixth, thus eliminating one after another until only the sixth should remain: the seventh to be replenished with fresh water as often as the exhaust reduced its contents to one third of an ounce. That is to say, heating each in succession for five minutes: as often as the contents of any one of the first six was less than one third of an ounce, it was brought back to the original volume of water by replenishing from out its fellows, and so on until five of the six were empty; while, when the seventh had lost one third of its contents, the deficiency was supplied with fresh water from two and a half ounces reserved. The tubes were of average thickness. The interval allowed between boilings was one hour, during forty minutes of which the tubes were suspended in cold water to insure the necessary lowness of temperature. The thermometrical tests in each case were made with a very correct medical thermometer; and the external surface of each tube after cooling was carefully cleaned with a strong solution of caustic potash. The heating instrument was an alcohol lamp, filled after each series of heatings and carefully trimmed; and previous to each series I took the precaution to heat four ounces of fresh water in a tin cup for seven minutes, and then to test the heated water with the medical thermometer, in order to prevent any appreciable variation of temperature. Under these conditions, the test tubes being suspended by a wire loop always at the same distance from the tip of the wick, each time I found that there was a fixed diminution in the time required for perceptible boiling, after each experiment, and that the loss in volume by conversion into steam increased a trifle at each heating. The average first term with all the tubes was 3 minutes and 41 seconds. The last half ounce of the three ounces allotted to the six tubes replenished from each other boiled in 2 minutes and 47 seconds. The same quantity in the seventh tube, constantly replenished with fresh water, boiled in 3 minutes and 5 seconds, the diminution in time being 54 seconds in the one case, and only 36 in the other. Using three ounces of water from the Hudson river, in six tubes, under the same conditions, the average time of boiling at the first series of heatings was 3 minutes and 38 seconds, while the last half ounce boiled in 2 minutes and 27 seconds, a diminution of 71 seconds. Using three ounces of filtered Croton water, under the same conditions, the first term was 3 minutes and 49 seconds, and the second 3 minutes and 13 seconds, a difference of only 36 seconds.

I have carefully repeated these experiments a sufficient number of times to convince me that these phenomena are pretty constant; and, from the difference between filtered and unfiltered water in respect to them, it must be concluded, I think, that the presence of organic compounds has considerable influence in bringing them about. There is also a phenomenon, not readily described, but one readily appreciable by the eye—a manner of boiling, so to speak—which would enable an expert to guess pretty accurately whether a volume of water had been frequently heated, or was merely undergoing that process as virginal. It consists principally in the fact that water that has been persistently boiled and cooled breaks suddenly and violently into ebullition, as compared with fresh water under the same degree of heat. The experiments seem to indicate that nitrogenous compounds are responsible for this phenomenon, which in the last half ounce of a three ounce reduction pretty broadly suggests that the liquid under experiment has acquired an explosive property that, under such conditions of high heat as occur in using steam as a motive power, might prove very dangerous and destructive. I will not presume to say that experiments conducted on such a small scale are conclusive, save as establishing the fact that ordinary water acquires the property of yielding to heat the more readily in proportion to the number of times that it is heated, and that an increased rapidity of conversion into steam accompanies each increment of this change in molecular properties. I believe that nitrogenous compounds are responsible for this change and for the sudden violence of ebullition that accompanies it; but this point I have not been able to verify with the facilities at my command.

New York city. F. G. F.

Suspended Animation as a Preserving Agent.

To the Editor of the Scientific American:

On page 225 of volume XXXIII of the SCIENTIFIC AMERICAN, you have an article on the above named subject in which you give three different lines of investigation for future experiment. These are: 1. The power some animals have of rendering their natural prey utterly insensible for an indefinite period. 2. The peculiar effect of cold on some of the lower animals, which reduces them to a state, not death, nor yet the ordinary torpidity caused by low temperature in other organisms. 3. Hibernation. In considering each in turn, you give as an instance of the first the complete torpor or anæsthesia produced by the sting of the female of the "digger" wasp upon its prey; of the second, the well known torpor produced by cold in the case of serpents and certain fish, with subsequent return to activity on the application of heat: and lastly, hibernation is explained by the fact that "the muscular irritability of the left ventricle of the heart, highly increased, permits it to contract under the weak stimulus of the non-oxygenated blood. It is this exaltation of a single vital property which preserves the animal life." One or two quotations from recent lectures of Dr. Brown-Séquard in your city will serve to indicate several other methods of investigation. The learned doctor gives an instance of a dead ox having been kept 56 days without putrefaction. M. Flourens considers that a spot in the *medulla oblongata* is the focus of vital force. There is, you know, a spot which is pierced by the matadors in Spain when they rush to kill a bull immediately. Death occurs instantly. * * It is interesting to know what becomes of the nervous force in these cases. It seems to have been altogether lost. I say it seems, for if we examine a little further we find that it is only dormant. The nervous centers have lost it almost altogether, but the nerves are quite rich in nerve force, so much so that I have kept one of those animals for nearly 65 days in my laboratory, without any trace of putrefaction, at a temperature which varied between 45° and 65°. The lack of putrefaction certainly depended on the long persistence of the nerve force after death."

Animals thus killed could no doubt be transported across the Atlantic from North or South America, in sailing vessels, without loss of weight and with little expense. It would be interesting to know if simple compression of the *medulla*, as by a ligature, for example, would not so suspend animation that it could be recalled at pleasure.

I quote further from the same author: "You know that they (the fakirs of India) may remain dead to all appearance for a number of days, and, it is even said, for months, without any change occurring in the body, without any change in the weight, without their receiving any food. They show neither circulation nor respiration, as their temperatures diminish very considerably, and altogether present a series of effects which are certainly very marvelous. But in the light of the fact that I had a dead animal in my laboratory lying for several months without any sign of decomposition, in a temperature varying from 40° to 60° during day and night, we can understand that these fakirs may remain able to live although they do not live—that is, they do not have actual and active life. But why, you will say, do they come out? Admit that there is in us a power which is quite distinct from our ordinary power of mind, which is quite distinct from that which we call consciousness, which during our sleep is awake and watches: with this admission and the facts I have mentioned above, we have all the elements, I think, for an explanation of what has been said about the fakirs."

Although I do not quite comprehend this explanation. I have thought it well to allude to it, as leading to a possible solution of the problem given toward the close of your article, namely that of having our own sensation and volition suspended at will, indefinitely.

Chatham, N. B., Canada. JOHN MCCURDY, M. D.

The Supposed Planet Vulcan.

To the Editor of the Scientific American:

I felt much interest in the discussion on the planet Vulcan; and if all the observations are genuine, they are totally irreconcilable with any hypothesis as to the periodicity of the planet yet proposed. I think it was in the winter of 1872 that I gave you my observations, which you published, of a transit of the planet seen—as I have since determined—by me on September 15, 1859, in the forenoon. If I recollect rightly, I gave the diameter of the planet as apparently $2\frac{1}{4}$ inches, taking the apparent diameter of the sun as 28 inches. This was about 8 o'clock, A. M., when the planet had just entered on the eastern limb of the sun, a little south of the sun's equator. The sun being near the horizon, it was enlarged by refraction. The planet was nearly, if not quite, two hours in making the transit, and I looked at it every five or ten minutes. We used only a smoked glass. In studying and comparing the phenomena I attributed to this planet, I found a regular recurrence of the phenomena at about the end of 23 days. By averaging the periodicity, I fixed it at 23·02 days. During over ten years I have minutely observed the recurring phenomena, with a view of verifying both the theory and the periodicity, and I have found but little if any variation in the periodicity. I do not claim that it is exact, but I am satisfied it is as near an approximation as can be arrived at until the planet's true position is determined.

I believe that the planet has an enormous size, at least equal to that of Uranus: and therefore the planet has never been seen by the observers who saw small black specks make transits of the sun. If any such speck has been seen, of which there can be no doubt, then it was a satellite and not the planet. I believe, however, that Mayer saw the planet make a transit on March 15, 1758, when he saw a spot one twentieth the diameter of the sun, which agrees in size with my observation in 1859.

It is to be regretted that M. Leverrier rejected all the observations where no forward movement of the speck was observed; for if it were a satellite, it might for a time be stationary, or have even a retrograde as well as a forward movement. The following calculations have recently been made:

From 1758, 74 days, when seen by Mayer at the descending node, to 1859, 258 days, when seen by Tice at the ascending node, is 101 years and 184 days$=$37074·24 days$\div$R (23·02)$=1610\frac{1}{2}$ revolutions + 0·55 days.

From 1758, 74 days (Mayer), to 1859, 85 days (Lescarbault), is 101 years 11 days$=$36900·25 days$\div$R$=$1603 revolutions + 0·19 days. Both these observations were at the descending node; therefore a whole number expressed the number of revolutions.

From 1758, 71 days, to 1876, 91 days (Wolf and Weber, April 4, 1876), is 118 years and 20 days$=$43119·50$\div$R$=$1873 R + 3·08, from which deduct 2 days for the time it will take the planet to move from node to inferior conjunction, leaving 1·0 days. My position for the planet was for April 3, 1876, at its inferior conjunction, or the day before the observation of the small speck.

From 1859, 85 days (Lescarbault), to 1859, 258 days (Tice), is 173 days$=7\frac{1}{2}$ revolutions+0·36 days. From which has to be deducted difference between time in Europe and America, which will leave a difference of between 2 and 3 hours.

Mayer's observation and the observation of October, 1802, gives 707 revolutions + 2·98 days, deducting 2 days for passage from node; this leaves 0·98 day; but one is an observation at the ascending node, and the other at the descending node, therefore there should be half a revolution. It is therefore half a revolution, say 11·50 days, short. But here a remarkable fact occurs, a series coming in as though there were two planets, half a circle, 180°, apart, and revolving around the sun in the same period, 23·02 days.

From October 10, 1802, to October 2, 1839, is 13,506 days $=$591 revolutions + 1·58 days.

From 1839, October 2, to March 12, 1849, is 3,448 days$=$ $145\frac{1}{2}$ revolutions + 0·9 day.

From 1839 to either of the observations of 1859, there lacks half a revolution. The observations of 1802, 1839, 1849, lack half a revolution when compared with 1758, 1859, 1876. The observation of March 20, 1862, has no corresponding observation, differing with one series 7·56 days, and 14·08 with the other. The observations published in SCIENTIFIC AMERICAN for July 23 and October 24, 1876, belong to the series of 1802, 1839, and 1849. They are midway between the latter series and those of 1758, 1859, and 1876. From July 23 to October 24 is 92 days; four revolutions of 23·02 days are 92·08 days.

It will be seen that the component elements of the problem as far as known are irreconcilable, because some may not be authentic. The way out of the difficulty is to look for the planet, not the satellites, outside of the sun when at its greatest eastern or western elongation. Its immense size will render it visible twice for a day or so on each revolution, under proper conditions of the atmosphere. I did see it, and showed it to my family on the afternoon of June, 1876, in the exceptionally blue and serene atmosphere of that day. It was about five or six apparent solar diameters northwest of the sun.

It probably may make a transit of the sun on March 12, 1877, as it will be at its inferior conjunction on that day and very near the node. I expect it to make a transit on March 14 or 15, 1878, and on the 14 or 15 of September, 1882. It may be visible at the total eclipse of July 29, 1878, but it will be very near the sun, having passed its inferior conjunction a day or two before. JOHN H. TICE.

St. Louis, Mo

A New Method of Cutting Screws.

To the Editor of the Scientific American:

Thinking a method for cutting screws would be of benefit to some of your readers, I send you the following, which is not generally known:

When the screw tool has cut the required length of screw, the quickest way of taking the saddle back is by hand; and to do that, the part of tailstock which comes in contact with the saddle must be set a certain distance from it; and to find that distance, it must be known which are the right places for putting the nut in and out of gear with the leading screw. But previous to setting the tailstock the required distance from the saddle, the screw tool must be set true and opposite the end of the work to be screw-cut—where in some cases a hole is drilled—likewise the nut in gear with the leading screw. The following rules for getting the above distance will be found to answer for any pitch of leading screw: First, when the number of threads per inch required to be cut can be divided by the number per inch of the leading screw without any remainder, the nut will be right when in gear with any part of the leading screw. And in all other cases, multiply the number of threads per inch that you wish to cut by some number of inches (which will depend upon the length of the screw to be cut) that will give an even number, which will be the proper distance to move the saddle.

I have used this mode for several years on both male and female screws of single, double, and triple threads, and have never known it to fail.

Smithville, N. J. EDWIN JUDD.

Smiler's Health Lift.

Dr. Smiler, says Max Adeler, had a large tank placed on the top of his house from which to supply his bathroom, and so forth, with water. The water had to be pumped up about fifty feet from the cistern in the yard, and the doctor found it to be a pretty good-sized job, which would cause him constant expense. So after thinking the matter over very carefully, one day an idea struck him. He built a room over the cistern and put word "Sanitarium" over the door. Then he concealed the pump machinery beneath the floor, and he rigged up a kind of complicated apparatus with handles and hinges and a crank, so that a man by standing in the middle of the machine and pulling the handle up and down would operate that pump.

Then the doctor got out circulars and published advertisements about "Smiler's Patent Health Lift," and he secured testimonials from a thousand or so people who agreed that the health lift was the only hope for the physical salvation of the human race. Pretty soon people began to see about it, and Smiler would rush them out to the "Sanitarium" and set them to jerking the handles. And when a customer had pumped up fifty gallons or so, Smiler would charge him a quarter, and tell him that three months of that kind of thing would give him muscles like a prizefighter.

The thing became so popular that he had to enlarge his tank and put in a smaller pump; and he not only got all his pumping done for nothing, but the people who did it paid him about $1,500 a year for the privilege.

One day, however, Mr. Maginnis, who had been practising at the health lift every day for months, broke the board upon which he was standing, and plunged into the cistern, and just as he was sinking for the third time Smiler fished him out with a crooked nail in the end of a clothes prop.

A few days later Maginnis came round with a lot of other patients, and cross-examined Smiler's servant girl, and learned about the truth, and then they went home mad. A consultation was held, at which they resolved to prosecute Smiler for damages and for obtaining money under false pretences. It is thought by good judges that, by the time the court get through with Smiler, it will be about the unhealthiest lift for him he was ever interested in.

Sawmill Machinery.

The building devoted to the sawmill exhibit, which is situated at the base of George's Hill, presents, says one of our contemporaries, a sight to the inquiring mind both interesting and instructive. In it may be seen, in operation, all the processes and machinery of a regular sawmill, all the leading manufacturers of this important branch of machinery being represented. The exhibit which attracts the most attention is that of the Stearns Manufacturing Company of Erie, Pa., who have some of the most beautiful pieces of mechanism at work that we have ever seen. To them was awarded a prize medal and diploma of merit for their machinery, on account of its manifest superiority of construction, in the many novel features and important improvements they have made (which are patented), and general excellence of workmanship. The Stearns Manufacturing Company have long been regarded as being at the head of this branch of business, and their productions may be found in sawmills all over the country. The central object of interest in the whole sawmill building, one which commands the attention of all the mill men, is a saw which cuts through a sixteen foot log in one and a half seconds of time, every revolution of the saw cutting in $10\frac{1}{4}$ inches. This is the highest speed ever before attained, and shows conclusively to what a high degree of perfection they have brought their machinery. The work exhibited by them, in all its details, speaks emphatically for itself, and shows that the Stearns Manufacturing Company have no need to fear any rivals in their business, as their workmanship cannot be excelled. This is all the more true when we consider that those articles are taken from regular stock, and are not made specially for exhibition. A better idea, therefore, can be had of the general excellence.

Prompt Payment.

"Prompt pay is the key to all success in business. There are times in the history of every trader when he finds it inconvenient to meet his bills promptly, and in such case we find the man who knows his credit to be good becoming lukewarm, forgetting that his creditors are calculating upon him perhaps to meet some pressing obligation. The result is that he disappoints them, and thus, after one or two repetitions of the same, even the man whose credit is first class can soon impair it, and sometimes to a degree that makes it hard for him to recuperate. Now let us take the man of moderate (say fair) credit. He knows under such circumstances that his credit is scrupulously watched; and if his bills begin to lapse, he is at once notified of it, and informed that unless past bills are paid no more goods can be procurred. With such a contingency facing him, he sees it is to his interest to meet his payments promptly, and is on the high road to success. Prompt pay does two important things—it inspires confidence in the seller, putting the buyer upon a first class basis, and it insures the prompt shipment of goods."

Our English contemporary, whence we extract the above sound advice, forgets to point out that there is a still greater advantage in seeking no credit at all, but in making payment at once. Persons who have not tried the cash system (and we mean not merely in ordinary business transactions, but everywhere, even in the small expenditures of the household) has any idea how much it simplifies the transaction and benefits both the buyer and seller. Moreover it is a saving to the purchaser of a very large percentage. We have found, by inquiry among many retail dealers in this city, that such houses as are in the habit of allowing credit to their customers, from six months to one year, add on an average of at least ten per cent to the cash price. And this must be so, because the dealer cannot afford to lose the interest on his money and take the risk of a failure of payment of a portion, which is inevitable. Another fact for debtors, more especially of wine merchants, tobacco sellers, and tailors, is worth remembering: and that is that, where one of these dealers gives credit, he calculates that a certain percentage of the debts will never be paid, and this percentage is necessarily added to the charges made to all customers, both time and cash. There are multitudes of other benefits, which will suggest themselves to any thoughtful person, all accruing by the prompt cash system.

THE American Institute Fair closed on November 25. Mr. F. D. Curtis delivered an oration, in which he stated that the entries at the exhibition numbered 1,233 and the visitors over 500,000. Awards were given in the usual wholesale manner.