### A RESULT OF THE MISSISSIPPI JETTIES.

As a direct result of the success of Captain Eads' jetties at the mouth of the Mississippi River, is noted the present remarkable demand for huge grain carrying barges for the transportation of wheat from St. Louis to the ocean-going vessels at New Orleans. This demand for barges is supplemented by the recent purchase of several of the most powerful towboats ever built at Pittsburg, and which were originally designed for the coal trade. With 20 feet of water assured at South Pass, where the jetties are located, the river transportation of grain to ocean huils bids fair to assume proportions that must jeopardize the overland carrying of grain between the upper Mississippi and the seaboard. Within the past few weeks the St. Louis and New Orleans Transportation Company and the Mississippi Valley Transportation Company have been in the market as purchasers for steamers and barges. The latter are of the variety known in Western waters as the "model" barge, in contradistinction to the coal or square barge. These craft are built to a model, and those recently contracted for are of the following dimensions: Length 225 feet, width 36 feet, hold.9 feet. The "cargo box" or receptacle for grain has a capacity for 60,000 bushels or about 1,500 tons. At present forty such barges are being built at different yards along the Ohio River, and the total number of barges that will soon find employment in the grain-carrying trade between the points named is placed by good authority at 120. A "tow" of such barges consists, under favorable circumstances, of five, a loaded barge drawing about eight feet. To make the round trip between St. Louis and New Orleans requires twenty days, and the freight on wheat averages 8 cents per bushel. The lack of return cargoes prevents this rate from being as great a "bonanza" as would appear from an income of $24,000 for a three weeks' job. Nevertheless it is a good thing for those engaged in this wholesale way of sending grain down the "Father of Waters." As a fair sample of the amount of merchandise carried by one "tow" of barges of less size than those described above, the following is appended: The steamer Jno. Gilmore'sbarges arrived at New Orleans within the past week, from St. Louis, with the following cargo: 680 bbls. and 315 half bbls. flour, 188 bbls. meal, 110 bbls. grits, 4,258 sks. corn, 200 sks. malt, 55 bbls. oil, 10 bbls. apples, 380 pckgs. lard, 786 bales hay, 39 pckgs. sundries, 101,499 bushels wheat, and 25,000 bushels corn in bulk.

### STRENGTH OF YELLOW PINE.

From a paper read by Prof. R. H. Thurston before the American Association for the Advancement of Science, we find some very interesting facts relative to the strength of yellow pine and other timber. Prof. Thurston made experiments for determining the modulus of elasticity, using a very large number of specimens in his trials. He found that the deflection of timber bearing a load and supported at the extremities is very nearly proportional to the load, even far beyond the customary limits of strain, and that the modulus is very nearly constant for all moderate deflections. When higher loads (as one fourth or one eighth the maximum) were imposed for a considerable time, as ten or twenty minutes, the deflection gradually increased; on removal of the weight it steadily decreased, returning nearly to its original set. Heavy loads, long applied, produced fracture of pieces, the companions to which resisted considerably more when the load was increased steadily up to the moment of fracture. The maximum permanent load was apparently something less than one half and greater than one third the maximum load which could be sustained under ordinary test.

From the whole series of experiments Prof. Thurston drew the following conclusions: The elasticity of yellow pine timber, such as is usually used in construction, is very variable, the modulus varying from 1,000,000 to 3,000,000, the average being about 2,000,000 in small sections, and a little above 1,500,000 in large timber; the highest values are given as often by green as by seasoned timber; the density of the wood does not determine the modulus, the figure varying sometimes directly and sometimes inversely as the density, even where the amount of seasoning was alike; a high modulus usually accompanies high tenacity and great transverse strength; the resistance offered to transverse stresses is greatest where the lines of grain are vertical.

Prof. Thurston recommends the designing and constructing engineer to adopt a moderate value of the modulus in proportioning a work, and by careful inspection and test to secure the rejection of all material which is not of good quality.

### A NOVEL IMPORTATION.

The *American Agriculturist* states that the large tea importing house of Messrs. Billinge & Wetmore, of this city, have recently received from their correspondent in Calcutta a very unusual and out-of-the-way consignment—this consisting of several tons of mahwa flowers, to be sold as cattle food. The idea of the "*effete* East" sending food to America seems strange enough. The mahwa tree and its edible flowers have already been fully described in the SCIENTIFIC AMERICAN and in the SUPPLEMENT, and we need only add that the flowers form such a valuable food product to the natives of India that in the expeditions made by the English against troublesome tribes, they have only to threaten to cut down the mahwa trees to bring the rebellious people to terms. A sample of the flowers as imported shows a soft sticky mass, having much the appearance of raisins of a poor quality, such as are packed in casks. When soaked in water the individual corollas swell out and assume a flattened, globular shape, about as large as an average cranberry, and are found to consist of a very fleshy cup, within which are a great number of anthers. At the instance of the *Agriculturist*, the consignees had an analysis made of this interesting product, and the report of the chemists shows that the flowers contain the remarkable amount of 63·40 per cent of sugar! This enormous percentage of sugar, without reference to other constituents, fully accounts for the value attached to the flowers in India as an article of food, and for use as a source of spirituous liquors. From a scientific point of view, the mahwa is a most interesting product; for it is rarely that we find the flower, the corolla of a plant, to serve any more than as a temporary purpose in protecting the reproductive organs within. For it to secrete more than half its weight of sugar, and thus become an article of economic value, and even of commerce, is most remarkable. The future of the mahwa as an article of trade in this country will, of course, depend upon its cost; and the commercial aspect of the article remains to be developed.

### THE BRITISH ASSOCIATION MEETING.

The fiftieth annual meeting of the British Science Association began at Swansea, Wales, August 25. As usual the attendance embraced a large number of the best known promoters of science in the United Kingdom. The proceedings of the first session were purely of a business character, ending with a vote of thanks to the retiring President, Prof. G. J. Allman. In the evening, President-elect Andrew Crombie Ramsey, Director-General of the British Geological Survey, delivered his inaugural address, in which he considered at great length the recurrence of the same kinds of incidents throughout all geological time; in other words, the facts bearing upon the doctrine of uniformity of action and results, from the earliest geological epochs to the present day. In this address Prof. Ramsay considered the nature and evidences of metamorphism from the Laurentian epoch down to the pliocene period, arriving at the conclusion that at no period of geological history is there any sign of volcanoes having played a more important part than they do in the epoch in which we live. Mountain formation was next considered, the recurrences of the phenomena of mountain upheaval and development being discovered in every geological age. The recurrence of beds of various salts, chiefly rock salt, and the circumstances that produced them, were found to bear further evidence of the uniformity of physical conditions and causes throughout all time. Fresh water formations, deposited in lakes and estuaries, were traced from the Upper Silurian Blani beds of India down through geological time to the later Tertiary beds, showing the recurrence of similar conditions and geological operations in all ages. And equally striking testimony was borne by the successive glacial epochs, which have left their traces in abundance in various formations from almost the earliest paleozoic times down to the last post-pliocene period of ice. In summing up, Prof. Ramsay expressed the conviction that from the Laurentian epoch down to the present day all the physical events in the history of the earth have varied neither in kind nor in intensity from those of which we now have experience.

Reports of the subsequent proceedings of the association have not yet come to hand.

### GREAT AND SUDDEN CHANGES OF TEMPERATURE.

Prof. Elias Loomis, in the current number of the *American Journal of Science and Arts*, offers an explanation of the great and sudden changes of temperature which frequently occur in some parts of the United States—a circumstance of which little account has thus far been taken. A very remarkable case of this kind occurred at Denver, Colorado, on January 15, 1875. In studying these sudden changes the first fact that attracts attention is that the air at Denver and its vicinity is very dry. Only one explanation of this dryness seems possible. The westerly winds from the Pacific Ocean have their moisture mostly condensed in passing over the Sierra Nevadas, so that between these mountains and the Rocky Mountains the air is extremely dry. By passing over the Rocky Mountains there is a further condensation of vapor, so that when the air descends on the eastern side of these mountains it is almost destitute of moisture. The vapor which comes up from the Gulf of Mexico is diffused over the Mississippi Valley and mingles with the dry air which comes from beyond the mountains, so that the dryness of the air rapidly diminishes as we advance eastward from the Rocky Mountains. Between 11 P.M., Jan. 14 (1875), and 7 A.M., Jan. 15, the thermometer at Denver rose 42°. The relative humidity fell from 71 to 21. The wind, which had previously blown from the northeast with a velocity of three miles an hour, at 9 P. M. veered suddenly to the southwest with a velocity of twelve miles per hour. The direction of the wind, the dryness of the air, and its high temperature, prove beyond a doubt that this air came from the West side of the Rocky Mountains, having been brought over the latter to Denver by a storm which had its center in San Francisco on Jan. 14, and which traveled about 1,400 miles in twenty-four hours. The vapor contained in this air would be mostly precipitated on the west side of the Rocky Mountains, so that it would descend on the east side deprived of its moisture, and with a temperature above that which prevailed in the Salt Lake basin, on account of the latent heat liberated in the condensation of the vapor. This warm and dry air supplanted the cold air which previously prevailed at Denver, and which still prevailed at neighboring stations east and north of Denver. After the center of low pressure had passed Denver, the northeast wind returned and brought back the cold air which had constantly prevailed at stations not very distant. In winter, during periods of extreme cold on the east side of the Rocky Mountains, when the temperature of Denver sometimes sinks more than 20° below zero, there prevails in the Salt Lake basin an average temperature of about 30°; and when by changes of atmospheric pressure this air is carried over the mountains it may reach Denver with a temperature of 50°, resulting from a precipitation of its vapor on the mountains. We then find a mass of air having a temperature of +50° in close proximity to a mass of air having a temperature of —20°, and by the movements of the atmosphere attending the progress of a great storm these different masses of air may be brought successively over the same station, causing a change of temperature of 50° in a single hour. Other cases of sudden change, which occur so frequently in the West, admit of similar explanation.

### THE FAIR OF THE AMERICAN INSTITUTE.

The fair, considering the time which has elapsed since its opening on the 15th inst., is in good order, the majority of the exhibits being in position and in condition for examination; and while the character of the Exhibition is about the same as usual, it is on the whole very creditable, both to the managers and exhibitors, and it appears satisfactory to visitors.

We miss the display of electric lights, telephones, and other electrical apparatus, prominent features of former exhibitions; but it is possible they may appear later. The amateur department inaugurated this year is not as well patronized as we expected it would be, and most of the amateur exhibits are not creditable to our amateurs as a class. The photographic exhibits are evidently not all in place, but some that are to be seen are very fine. Mr. Rutherfurd shows several interesting photographs of solar spectra.

In the main building are a number of exhibits of which we may speak later.

In the machinery annex the main lines of shafting are driven by two fine horizontal engines, a Wheelock engine of 150 horse power, and a Whitehill engine of 50 horse power. An Otto gas engine of 7 horse power is connected with a line of shafting which drives several light wood working machines made by H. B. Smith. The New York Safety Steam Power Company exhibit several of their inverted vertical engines, and the Baxter engine is to be seen in different sizes. Colts' disk engine, made by the Colts Fire-Arms Manufacturing Company, is shown. It employs six pistons working in as many cylinders. The ends of the pistons act directly on a wabbling disk which carries the crank on the main shaft. In the line of woodworking machinery we find very little that is novel, although several of the prominent manufacturers are represented. Machinists' tools are almost entirely absent.

The Peerless Punch and Shear Company exhibit several foot and power presses, for descriptions of which we refer the reader to back numbers of this journal.

Among the novelties we find Allen's automatic grain weigher and register for weighing grain in the running stream. This machine takes care of itself, and weighs with perfect regularity, keeping tally of the amount of grain weighed with mathematical accuracy. A curious little machine for making cornucopias for putting up candies, groceries, seeds, etc., is exhibited by D. W. Seely, of Albany, N. Y. The paper goes through this machine literally "flying," and cornucopias are turned out at the rate of three hundred per minute.

### Donald McKay.

Donald McKay, the once famous ship builder of East Boston, died at Hamilton, Mass., September 20. For many years his ships were in great demand. One of his first ships was the Washington Irving, for Enoch Train & Co.'s line of Liverpool packets. From that time until 1851 Mr. McKay built the Anglo-Saxon, 894 tons burden; New World, 1,404 tons; Moses, 700 tons; Anglo-American, 704 tons; A. Z., 700 tons; Jenny Lind, 533 tons; L. Z., 897 tons; Plymouth Rock, 960 tons; Helicon, 400 tons; Reindeer, 800 tons; Parliament, 998 tons; Moses Wheeler, 900 tons; Cornelius Grinnell, 1,118 tons; Sultana, 400 tons; Antarctic, 1,116 tons; Daniel Webster, 1,187 tons (lost at sea, 1853); Staghound, 1,534 tons. The discovery of gold in California created a demand for fast sailing vessels, and it was then that Mr. McKay's idea of clipper ships came into notice. Early in the season of 1851 he built the famous clipper ship Flying Cloud, 1,700 tons burden, which, under the command of Captain Cressey, made the extraordinary passage from Boston to San Francisco in 89 days. Mr. McKay, not satisfied with this, produced, in 1852, the Sovereign of the Seas, of 2,400 tons burden, the largest, longest, and sharpest merchant ship afloat at that time. She did not make so quick a passage to California as the Flying Cloud, yet, although she was dismasted, she beat the entire fleet of clippers that left at the same time by seven days, and on the homeward passage made the greatest run ever recorded.

Late in the fall of 1853 Mr. McKay launched the Great Republic, the largest merchant ship ever built, measuring 4,556 tons, and spreading 15,653 yards of canvas in a suit of sails. In the construction of this mammoth vessel, 1,500,000

feet of hard pine, 2,056 tons of white oak, and 336½ tons of iron were used. Fifty thousand days' work were done on her hull alone. She was towed to New York, but, while there, took fire and was burned at the wharf. Her upper works were rebuilt, and her size reduced about one-third. Her greatest speed has been 413 miles in twenty-four hours. Mr. McKay built many vessels in 1854 and 1855, but in the latter year the ship-building interests began to decline. His last ship was The Glory of the Sea.

## AMERICAN INDUSTRIES.—No. 57.

### THE MANUFACTURE OF PARLOR FURNITURE.

It is said that when Jenny Lind first visited America, and after she had been some time in New York City, she inquired where our "poor people" lived. She saw so many signs of thrift, comfort, and prosperity everywhere, so many evidences of culture in every class of people with whom she came in contact, the residences so commodious, and the people so well clad, in comparison with what she had seen in the Old World, that it appeared to her, even after she had been for some time in New York, that she had only become partially acquainted with real life here. In the prosecution of no other one line of business, perhaps, is this distinction so clearly brought out as in the industry which we this week make the subject of our first page illustrations. In no other country in the world has such an industry heretofore been possible, carried on in the manner and according to the scale on which it is here conducted, for, although it is true that equally beautiful and far more elaborate specimens of household furniture and decoration are to be met with in the mansions and palaces of the older countries of the world, such work there is almost always made to order, and obtainable only by the few, at a cost far exceeding the price of quite as serviceable and very similar goods here.

There has been a rapid development of this branch of business within the past twenty years, and with its growth has come a natural division according to which the different specialties are made exclusively by particular manufacturers. The manufacture of dining-room and chamber furniture each constitutes separate lines of business, while parlor furniture is a specialty of itself, and the leading details of this department of the trade are shown by our artist, as the industry is conducted by Messrs. M. & H. Schrenkeisen, of New York City.

The first operation in the manufacture is represented by the view at top of first page, where the log, as it comes to the factory, is taken by a large band saw and cut into the thicknesses and lengths required. This saw runs on a wheel about five feet in diameter. An adjoining view shows a smaller band saw, used to cut up plank and boards and further divide the lumber into the different sizes to fit it for the several pieces to be made. There are seven of these band saws and nine jig or scroll saws in constant operation. The wood having been cut to the required size, the first detail of the manufacture consists in the marking of the patterns thereon. This was formerly done with a pencil, but now stencil patterns are made in zinc, by which the pattern is so plainly shown on the wood that there is much less liability to error in cutting than was formerly the case.

Previous to the work on the jig saws, nearly all the pieces have to go to the boring machine, where holes of different sizes are put through such parts of the pattern as required to enable the workman to pass through the end of the saw in cutting out the design. These holes are usually bored in places where the curves are so small that it would be difficult to work them out with the saw, although some of the jig saws are less than an eighth of an inch wide. The workmen in this department, however, from long practice, are able to follow the intricate patterns with such firmness and facility that the most complicated designs are worked out with great rapidity, and apparently without the least pause or hesitation.

The friezer, or machine carver, shown in one of the views at the top of the page, takes up but little room, but the variety of work it will do is almost unlimited. There are several modifications of this machine, for different classes of work, but the essential principle in them is the revolution, on a small axis, of different shaped knives, according to the design of the work, the wood being pressed against the knives in the line of guides and gauges adjusted to the particular pattern. In this way the machine may be adjusted to do almost any kind of carving desired, but it is found more economical in practice to do a large proportion of the carving by hand, rather than fit up the knives and patterns for the machine for all the new and elaborate designs in carving which are always being introduced.

The variety moulder, shown in one of the illustrations, represents only one of several machines in operation for this department of the work, but it is one which will cut almost everything known to the trade in the way of mouldings. The planing and turning machines, which are also the subjects of separate views, are of several sizes, and of patterns entirely familiar to all wood-workers, but the "jointer" is a machine less commonly known. It is to put a smooth edge or corner on pieces to be joined together, and it makes the edges and angles, either flat or any desired bevel, so smooth and even that when two pieces of wood of the same grain are placed together it is difficult to see where they join. The sand-papering machine shown at the bottom simply represents arms covered with sand paper, which are made to rotate very rapidly while the workman passes the rough surfaces over them to smooth off the unevenness made by the saw or planer.

The carving by hand, of which a view is given in one of our illustrations, forms a very important part of the work done at this establishment, at which from thirty to forty expert hands are kept regularly employed. This work is all done by the piece, from original designs gotten up by the house, the firm being constantly engaged in contriving something new which is likely to please the artistic taste of the community. In this way they will get up a suit of parlor furniture, subject it to criticism, make possibly considerable alterations in it, decide on the different ways in which it will be upholstered, and then have from one to two hundred sets made of this particular style. No one outside of their own immediate business is allowed to know what their new designs are until these sets of furniture are finished and ready to put on the market. In short the firm take the log as it comes from the woods, and do every part of the work necessary to make therefrom the completed furniture as it appears in the parlor, and all from new and original designs of their own.

One of the most important details of the work, without the most sedulous care in regard to which it would be impossible to make durable work, is the proper seasoning of the lumber. Only the best seasoned wood is used to start with, but it is almost impossible to thoroughly season a thick plank all through. After the work is cut out in the rough, therefore, the pieces all go to the drying room, a large apartment with slatted floors, under which run steam pipes, by which the temperature can be kept up to and above 100° Fahrenheit constantly. In this way the moisture is thoroughly evaporated, and all after danger of cracking from exposure to unusual warmth is avoided, as the finely finished work, in which the pores of the wood are all closed, and its surface has a glass-like polish, will not allow of its afterward absorbing moisture from the air. The cracking which sometimes happens in very old furniture does not arise from this latter cause so much as from the improper gluing of panels, etc., a detail which here receives careful attention.

The upholstering and finishing of the work is all done at the warerooms, on Elizabeth street, near Canal street, where the firm occupy a six story building, L-shaped, but covering a space equal to 50 by 150 feet. This building, as also the factory on Monroe street, 100 by 100 feet, and six stories high, are shown in the view in the center of the page. A 100-horse power engine furnishes the power required at the factory, and this is run almost entirely by the shavings and turnings made in the work.

Most of the goods now made are of cherry, "ebonized," as it is called, and black walnut. The ebonizing is done by dipping the furniture in an acid coloring bath, which turns it black and eats its way into the wood so as to give more than a surface coloring, and a scratch or light cut shows black underneath. In this style of furniture a large portion is finished with lines, bands, and beading in gold leaf, though some of it is also made in plain black, either brightly polished or what is called a dull finish. In the upholstering department the final work of finishing is never put on the goods until just before shipment, as finished furniture of the finest quality requires great care. In sofas, easy chairs, rockers, etc., steel springs, hair, and moss, are used, as may be required for different kinds of goods, but only the best qualities of any kind of stock are employed, and, although a fine finish is always obtained, the work is throughout of the most solid and substantial character.

The firm are the owners of several patents connected with the furniture manufacture, among the most successful of which have been their patents on spring rockers, for which they had a great run for several years after they were introduced, and which still form a leading article in the trade. They have also obtained a number of patents on band embroidery trimmings and coverings. The most of the goods used for coverings are imported, orders being given on samples sent here by European manufacturers, with the agreement that the firm shall have the exclusive control of these styles for a definite period, or until they shall have had time to put their goods on the market. The variety of these coverings is very extensive, embracing almost everything in the way of raw and finished silk, figured stuffs in satin, tapestries, reps, serge, damask, plush, etc., the patterns of only a small portion of which can be found in the large and handsome illustrated catalogue issued by the firm. In order, however, to keep their customers and agents fully informed in regard to the new styles they are constantly getting out, they have a photograph establishment fitted up in one portion of their warerooms, where they make prints of each new set of furniture when it is ready to put upon the market, and from which they receive orders from agents and dealers.

The firm have already done some business in the way of exporting furniture, but the foreign demand for ready-made upholstered parlor furniture, which is the particular specialty of this house, is relatively far less than is the call for these goods in our own country, where almost every well-to-do mechanic has his parlor, or "best room," furnished in a way which is almost unknown among the same classes in other parts of the world.

## DECISIONS RELATING TO PATENTS.

### By the Acting Secretary of the Interior.

EX PARTE GREAVES.—CONDENSING CYLINDER FOR CARDING MACHINES.

Bell, Acting Secretary.

1. The Commissioner of Patents may issue a patent for one or more of the divisions of a reissue application, and subsequently issue a patent to the applicant for the remaining divisions, if it be held that otherwise he is entitled to them.

2. Until an application for reissue is ended in all its divisions the vitality of the original patent continues so far as required to support that portion of the application which remains undecided.

### By the Commissioner of Patents.

EX PARTE LEE.—COUPON RAILWAY TICKET.—APPEAL FROM THE EXAMINERS-IN-CHIEF.

Marble, Commissioner:

1. The patentable features of a railway or other ticket, like those of any other substantive thing, must depend upon peculiarities of mechanical construction.

2. The printed matter upon a ticket is nothing more than an arbitrary direction as to how such ticket is to be used, and can have no bearing upon the patentability of the ticket itself.

3. A railway ticket anticipated by an internal revenue stamp where the system and the manner in which it is carried out is substantially the same.

4. Duplication of checks or coupons as a matter of expediency, obviously suggested by the necessity of the case, does not require invention.

## THE FRANKLIN SEARCH EXPEDITION.

The members of the Franklin search party under the command of Lieutenant Frederick Schwatka, U. S. A., were picked up, August 1, by a New Bedford bark, at Depot Island, Hudson's Bay, where they had been since March 4. The party had been for two years exploring the regions north and northwest of Hudson's Bay in search of relics of Sir John Franklin's expedition. Reports of the first year's work were received and published about a year ago. Having come to the conclusion that the records of the Franklin expedition might be preserved in cairns in King William's Land, Lieutenant Schwatka set out on the first of April, 1879, to look for them. During the succeeding eleven months he accomplished the longest sledge journey ever made in an unexplored Arctic country, traveling in all 3,251 statute miles. It was the first sledge journey ever made that covered an entire Arctic winter; and the temperatures experienced exceeded in frigidity anything ever before encountered by white men in the field.

On January 3, 1880, the thermometer sank to 71 degrees below zero, Fahrenheit, or 103 degrees below freezing point, and during the entire day it did not rise above —69 degrees. During sixteen days the average temperature was 100 degrees below the freezing point, and during twenty-seven days it was below —60 degrees. All this time the party traveled, in fact they never halted a single day on account of the cold.

During the summer and fall of 1879 they made a complete search of King William's Land and the adjacent mainland, traveling over the route pursued by the crews of the Erebus and Terror upon their retreat toward Back's River, and while so engaged the party buried the bones of all those unfortunates remaining above ground and erected monuments to the memory of the fallen heroes. Their research established the mournful fact that the records of Franklin's expedition are lost beyond recovery.

A large quantity of relics were gathered by the party to illustrate the last chapter of the history of Sir John Franklin's expedition. From each spot where the graves were found a few tokens were selected that may serve to identify those who perished there. A piece of each of the boats which had been found and destroyed by the natives was brought away, together with interesting though mournful relics in the shape of the prow of one of their boats, the sledge upon which it was transported, and part of the drag rope upon which these poor fellows tugged until they fell down and died in their tracks. In addition to these the party secured a board which may serve to identify the ship which completed the northwest passage.

They also brought the remains of Lieutenant John Irving, third officer of the Terror, which were identified by a prize medal found in his opened grave. The party endured many hardships and were threatened with starvation after their return to Depot Island, where they failed to find the supplies which were to have been left there for them by the schooner Eothen. The party suffered no serious sickness while in the field.

## A Remarkable Group of Solar Spots.

*To the Editor of the Scientific American:*

One of the very finest groups of sun spots it has ever been my pleasure to witness was observed by me through the five-inch Newtonian telescope yesterday morning, September 12, 1880. It was situated then about midway from the center of the sun's disk and the western limb south of the equator. Its length was enormous, occupying a space equal to one-quarter of the sun's diameter, and therefore over 200,000 miles in length. I present herewith a sketch made of the group at the eyepiece of the telescope, and which conveys but a faint idea of its grandeur. At A and B were quite large spots, surrounded by a very delicate penumbra, while at C was a most beautiful cluster of small spots. The whole group was remarkable for its brilliance and distinctness. In addition to this large group there was a fair-sized single spot near the center of the disk, with a faint penumbra and dark markings in its vicinity; also a faint double spot below this one.

WILLIAM R. BROOKS.

Red House Observatory, Phelps, N. Y.,
September 14, 1880.