

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT NO. 37 PARK ROW, 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. Single copies of any desired number of the SUPPLEMENT sent to one address on receipt of 10 cents. Remit by postal order. Address MUNN & CO., 37 Park Row, 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, with handsome cover, 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 with 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., 37 Park Row, N. Y.

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 pages, profusely illustrated, embracing: (1.) Most of the best articles 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, 15 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., 37 Park Row, New York.

VOL. XL., No. 25. [NEW SERIES.] Thirty-fifth Year.

NEW YORK, SATURDAY, JUNE 21, 1879.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Amalgamator Co., Bees, utility of, Belts, slipping, preventive for, Brick making on the Hudson, Canal, the Isthmus, Cement for rubber and wood, Color blindness, etc.

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 181,

For the Week ending June 21, 1879.

Price 10 cents. For sale by all newsdealers.

Table listing sections I through X: I. ENGINEERING AND MECHANICS, II. MINING AND METALLURGY, III. TECHNOLOGY, IV. RECENT SCIENCE, V. PHYSICS AND CHEMISTRY, VI. MEDICINE, VII. ELECTRICITY, VIII. ASTRONOMY, IX. ART AND ARCHITECTURE, X. NATURAL HISTORY.

A PRAIRIE BOY'S EXPERIENCE.

The habit of intelligent industry is, all things considered, not only the best legacy a father can leave his sons, but one of the most enduringly valuable elements of any boy's education. Emphasis, however, is to be laid on the word "intelligent." Habitual hard work, with no other motive than compulsion, is sheer slavery; and many a parent has found his efforts to make his sons industrious thwarted and their lives spoiled, simply because he has unwisely undertaken to give them the training of slaves, not that of free spirited and interested toilers. It is not the amount of work that boys do, but the manner of their doing it that makes them like or dislike hard work.

Absolute idleness in youth is often a better preparation for successful effort in riper years, on the farm or in the workshop, than a youth of unwilling drudgery. And one cause of the eagerness of country boys to abandon farm life has been—and this the chief cause—the unwisdom of parents in making their boys feel to the full the monotony and drudgery of farm life while restricting in every way its enjoyments. When boys are given a liberal foretaste of the freedom, the wholesome joys, and the profits of country living, they will be less likely to feel that anything is better than farming. And the same laws hold in every other industrial calling.

We are led to dwell upon this aspect of parental management by a Kansas letter to the New York Tribune, in which the writer tells the story of a prairie boy's experience at the hands of a wise father. The setting of the story we have no space for. Suffice it to say that it came out of a casual encounter between a country boy and the writer, who had lost his way. While conducting the traveler to the road he had strayed from the young pioneer contrasted his father's plan of encouraging his boys in being industrious and that of a neighbor.

"Now, there is Mr. A., who lives on the quarter section adjoining ours, and he has two sons, John and Henry. John is a little older than I, and Henry a year younger. Well, the way he encourages his boys is by having them up by daylight in the morning and keeping them on a keen jump all day long. He hardly allows them time to eat their meals. Why, last summer they worked till 9 o'clock every evening, and didn't find an hour all summer in which they could go a fishing, or even in swimming. Then to pay them the old man gives them their board and his own worn out clothes, with occasionally a pair of boots or something of the kind thrown in. That is the way he teaches them to be industrious. But father's plan is entirely different. He gave me four acres of land which he had broken (this was two years ago last spring), and I was to do just what I pleased with it, and he would furnish me seed or means to obtain seed; all that he required of me was that I should attend to the garden, do the chores at the barn, and go to school in the winter.

"The first year I planted corn, and from my four acres I raised 120 bushels, which I sold for 30 cents a bushel.

"The next spring father let me have the use of his team, and I plowed my four acres and planted one and a half acres in castor beans, one half acre I put out in strawberry plants, one acre in sorghum, two rods in onions, and the remainder of the acre in sunflowers. Father laughed when I told him my plans, but he said it was my own land and I could do as I liked with it. I told him I wanted to experiment on different crops, so as to see which was the most profitable. Well, my castor beans were a good deal of trouble. I had to watch them so closely not to lose them when they cracked open. It was necessary to pick them immediately as fast as they ripened; but my little sister, seven years old, could attend to them about as well as I, and she did this faithfully on my promising her \$5 when I sold my crops in the fall. I raised twenty-two bushels of beans off of my one and a half acres, which I sold at \$1.25 a bushel, so after paying my sister \$5, I realized for them \$22.50. Father had raised considerable sorghum, and he had all of the arrangements for pressing, boiling, etc. We worked together in preparing our sorghum, and I had from my one acre two barrels of good sorghum molasses, which I sold for 35 cents a gallon, thus making \$22 from my sorghum crop. My sunflowers, which were the laughing-stock of so many, brought me enough to pay me for my trouble. I had planted and cultivated them very much as if they were corn. The flowers were splendid, many of them measuring three feet six inches in circumference, the stalks being from ten to twelve feet long and three inches in diameter. I planted them principally for the stalks, which I sold over at the next town for fuel. I had ten cords off of that part of an acre, and I realized \$15 from the sale of them. I gave the seeds to father for his poultry. He thinks they are better than corn. Those who bought the stalks say that they burn readily, and make a very hot fire.

"Last spring I planted nothing but sorghum and onions, as they had brought me the most the year previous, and I have done better than either year before. My onions were the most profitable crop of all, as I made \$12 off of my two rods. So last fall I had, after disposing of my crops, \$71.50 in cash, nearly double what I had made the year before. I spent \$20 of this on my wardrobe, \$10 at Christmas, bought three more calves at \$10 a head, and had \$11.50 left for sundries. My onions didn't do quite as well as the year before. So this year I have made \$300 off of my four acres. I can assure you I am beginning to feel very much encouraged in being industrious. I have just bought twenty more calves. I had to pay \$12 a head for these, but they are beauties, I can tell you. If they do well they ought certainly to be worth in a

year from now \$450. I was offered \$90 to-day for my other lot. I have no trouble in finding a market for my produce; for what I cannot sell here I ship on the railroad, and, as they carry at reasonable rates, I often prefer shipping, as I get better prices in the larger towns. I shipped nearly all of my strawberries this year.

"I was fifteen years old last August, and am worth to-day \$390. To be sure my father has favored me in every way, furnishing me with seed, feed for my stock, allowing me the use of his team and farming implements, etc. But now I can afford to be more independent, and hope before long to help him, instead of his helping me. Father is making money, too. This is a fine wheat country, and he has put the most of his land into wheat. We have had fine seasons so far for our crops, and next year we may have grasshoppers or drought, or some drawback; but we have enough ahead now to stand one or two unprofitable seasons, so we don't worry. I intend to invest every year in stock, as I have found it far more profitable than anything else."

The moral of the story goes without telling.

UNKNOWN NEW YORK.

That the State survey of the Adirondack wilderness should have discovered mountains, lakes, and other geographical features as little known to the world as the mountains and lakes of Central Africa, was not surprising. It does strike one as strange, however, that the geography of the central counties of the State should be little if any better understood. Yet the State surveyors found last year that every one of the cities and towns of that region, to the number of two hundred or more, were from one to two miles out of place, on every map of the State hitherto published. And worse than that, the topographical features of that thickly settled and prosperous part of the State are sadly misrepresented on all our maps. In reviewing the work of the survey during the past year, Director Gardner remarks that "few people realize that in the central part of our State, represented on their maps as level regions, are mountains rising to such heights above the surrounding country that the eye can sweep at a glance 5,000 square miles of land and lakes, touching here and there blue horizons over sixty miles away." The deep pleasure which these broad but unvisited views inspired very naturally increased Mr. Gardner's regret that the topography should be so unknown to educated people. "In Germany," he says, "every child is taught the physical features of its native country; but in New York, neither young nor old know the aspects of those counties which they have not personally visited. In this matter, like the Indians, they know only what they have seen." This criticism he makes on the strength of a wide intercourse with the intelligent citizens of central New York, to whom he has often put questions to test their knowledge of the topography of their part of the State.

"I am led to recur to this subject," he concludes, "because of the deep impression made upon me each season by the unexpected grandeur, beauty, and variety of the landscapes seen in the prosecution of our work. Ideas of the aspects of the State derived from maps have, in my own case, proved to be so false and vague, that I find in this survey the attractive novelty of exploring an unknown region. Colorado was not a greater surprise to me than has been the structure of my native State. In the study of the origin of some of its most remarkable features lie untrodden tracts of knowledge which are yet to awaken great interest. The configuration of a part of central New York is as unique and as unknown to science as that of any part of the Rocky Mountains."

STRIKE OF PITTSBURG PUDDLERS.

By the strike of the puddlers of Pittsburg, Pa., June 2, something like 40,000 men were thrown out of employment in that city and in Allegheny, with the prospect of stopping the work of all the men employed in the coal mines and other establishments connected with the mills. A few mills which were practically independent of puddlers, remained at work, but with small prospect of continuing long. The Herald report of that date says:

"This morning, about ten o'clock, 200 puddlers formed into a line and marched up Liberty street and Pennsylvania avenue to the steel works of Hussey, Howe & Co. They threatened the employes of this firm with unpleasant results if they did not stop work. The firm has only sixteen puddlers, although it employs 500 hands. The men would not stop work in the middle of the day, but said they would to night. The strikers then separated and went to various mills where they thought there were any 'black sheep,' or men who were disposed to work at less than regular rates, and they ordered all such men not to go to work. This is the first strike in which the iron workers have stopped the steel workers."

As usual this is not a strike of labor against capital, but rather the action of a few unscrupulous workmen who are willing to take advantage of their position to stop the wages of ten times their number of fellow workmen.

THE UTILITY OF BEES.

One of our foreign exchanges states that a great bee master, the Rev. M. Sauppe, in Lückendorf, has made the following calculation, intended to prove the eminent agricultural and economical importance of the rearing of bees:

Of each of the 17,000 hives to be met with in Saxony 10,000 bees fly out per diem—equal to 170 millions—each bee four times, equal to 680 millions, or, in 100 days, equal to