

ERASTUS BRIGHAM BIGELOW.

In the death of Erastus B. Bigelow, America loses another of the great inventors whose genius has so largely helped to raise her industrial prosperity to its present high position. Thirty-five years ago all carpets were woven on hand looms. The cost of labor in this country made it impossible for American carpet makers to compete in cheapness with the work turned out by the ill-paid hands of England and France; and even then, the high price of carpets made them rather an article of luxury than one of everyday use and convenience. In 1842 Mr. Bigelow, after making several useful though less important inventions, perfected a series of devices for making the carpet loom automatic, so that the costly labor of man might be displaced by the cheaper labor of women or boys.

After many unavailing efforts to induce carpet makers to undertake the manufacture by the new method, Mr. Bigelow succeeded in persuading the Lowell Manufacturing Company to make the experiment, and in 1845 the successful weaving of ingrain carpets by power was demonstrated. Subsequently Mr. Bigelow achieved the invention of power looms for the weaving of Jacquard Brussels, and Wilton carpets. To apply these inventions the inventor was compelled, in 1848, to set up a factory of his own. This establishment, at Clinton, Massachusetts, has grown to be the largest in the world for the manufacture of Brussels and Wilton carpeting, in which the several processes of worsted spinning, dyeing, and weaving are united in one concern. We may also set it down to the credit of Mr. Bigelow's inventions largely that the United States now leads the world in carpet production.

Mr. Bigelow was born in West Boylston, Mass., April, 1814, and died at his home in Boston, Saturday, Dec. 6.

REMARKABLE FLY WHEEL EXPLOSION.

On the night of December 5, 1879, the Rensselaer Iron Mill, at Troy, N. Y., was the scene of a most remarkable accident. The newspaper report says:

"It was about 10 o'clock, and the 200 workmen were busily engaged at their various tasks. Suddenly the large flywheel, 35 feet in diameter, and weighing 60 tons, exploded, it being separated into 10 pieces of about 6 tons each. Each of these pieces was hurled for some distance, several of them being forced through the roof. One passed through the air about 200 feet, and descended through the roof of a neighboring mill. Striking upon the iron floor, it bounded for a distance of 30 feet, settling within three feet of a nest of two boilers. Several workmen were about passing when the ponderous fragment entered, and their escape from death was narrow. James Wallace, a heater, was buried beneath a five ton piece of the wheel, and when extricated was still alive. He cannot recover, however, his skull being fractured, and he having been injured internally. In places the roof was completely destroyed. The damage will not fall short of \$10,000. Work will be necessarily suspended for two weeks or more. The escape from a boiler explosion was exceedingly narrow, a piece of the bursted wheel, weighing six tons, falling between two of another nest of boilers, and destroying a portion of the brick work. Had the mass crashed through the boilers, the loss of life would have been large. Another fragment descended through the roof, breaking a steam pipe and burying itself through the floor at a spot where a workman had been standing not five seconds before. The wheel had been in use 11 years, often subjected to inspection, and the cause of its explosion is a mystery."

We trust that the causes of this extraordinary accident will be investigated by competent mechanical engineers, and the whole matter explained for the public benefit. We should be glad to receive full particulars with drawings for publication, if any of our friends can supply them.

A somewhat similar occurrence took place in this city in June, 1876, at the Kuntz Brewery, Third Avenue. In this case the fly wheel was only 9 feet in diameter, weight 3,600 lb. We gave at that time an extended report of the affair, with drawings, which showed beyond all question that the accident was due to carelessness and botching in the original fitting together of the wheel.

If there is any one part of a machine that requires more intelligence, skill, and minute care in its construction than another, it is the fly wheel. And after the wheel is put into use no other portion of an engine needs more frequent, careful inspection, and tapping, for the detection of flaws or the incipient loosening of parts, than the fly wheel. But we fear that both in the use and in the construction, carelessness is apt to be the rule and carefulness the exception.

THE SCIENTIFIC AMERICAN FOR 1880.

Like all the rest of American institutions, the SCIENTIFIC AMERICAN closes the year with the most assuring prospects of prosperity in the year to come. There never was a time when our patrons in the scientific and industrial world were more numerous or more successful in their undertakings, or had more solid grounds for looking back with satisfaction, or forward with confident expectation of increasing prosperity. The country has entered upon a period of successful activity which has made the past year profitable beyond precedent; and the coming years bid fair to surpass it in solid gains. Having taken possession of the vast and varied markets of our own land, our farmers, manufacturers, and merchants are reaching out to the earth's remotest ends, with every prospect of retaining and increasing their hold upon the world's most profitable trade.

From its intimate connection with all the great and growing material interests of the country the SCIENTIFIC AMERICAN cannot but share largely in the country's general prosperity; and the publishers are determined to make it more and more worthy of its position as the most popular scientific and industrial paper in the world. With a circulation of 50,000 copies every week, among the most intelligent and active men of the country, the men who are doing the country's best work and contributing most to its industrial and commercial activity, the SCIENTIFIC AMERICAN has a basis of permanent prosperity unrivaled among newspapers, and can offer to advertisers a medium for reaching customers unequalled in scope and directness. In addition, its monthly EXPORT EDITION, with a guaranteed circulation in all the principal cities and commercial centers in the world, is probably doing more to spread a knowledge of American productive industry throughout the world than all other periodicals combined. An examination of any issue of our EXPORT EDITION will show how widely its advantages as an advertising medium are appreciated by our great manufacturers and merchants engaged in foreign trade.

With reference to matters more strictly personal, it may not be improper to say that the increasing favor with which the SCIENTIFIC AMERICAN is received by intelligent readers at home and abroad is the surest guarantee that the work it is doing is approved by its numerous friends.

As its circulation increases the possibility of adding to the scope and value of the matter it offers from week to week increases proportionally; and it is the purpose of its publishers not to slacken their efforts to make the paper increasingly worthy of its name and reputation. One great advantage of its widening circulation is the wider range of information it receives with regard to scientific discoveries, trade prospects, and commercial changes, from its friends in all parts of the world; and just here we may properly express our thanks for such communication from United States consuls, travelers, the heads of foreign business houses, and others, who have thus added materially to the interest and value of our pages. It is enough, in the way of promise for the future, to say that the coming volume of the SCIENTIFIC AMERICAN will not be inferior to those of the past, and will be as much better as experience, increasing facilities, and strenuous effort can make it.

Among a number of valuable and interesting subjects in hand for early issues, we may mention an article fully illustrating the central office system of telephonic communication, which is becoming so important a factor in modern social and business life. The illustrated articles on amateur mechanics, which have been so favorably received during the past year, will be continued; so, also, will the valuable series describing and illustrating our great manufacturing industries, and a larger share of attention will be given to practical mechanics and improvements in the various arts and other productive industries.

The SCIENTIFIC SUPPLEMENT will, as heretofore, give, in addition to many valuable original papers on scientific and mechanical subjects, a careful selection of all the more important discussions in the various departments of science and art made in all parts of the world. As hitherto the SCIENTIFIC AMERICAN will publish every week a full table of the contents of the SUPPLEMENT, so that those who are not subscribers to both papers may learn whether the SUPPLEMENT contains matter which is of especial interest and value to them.

THE FUTURE OF AFRICA.

What the eighteenth and nineteenth centuries have done for America the twentieth is likely to do for Africa. Civilization is attacking her ancient fastnesses from all sides. Europe is especially alive to the enormous capacities of the continent for trade. A score of more or less powerful missionary societies are bent upon the evangelization of its swarming millions; and with the facilities for rapid progress furnished by steam and electricity the speedy conquest of the interior by Christianity and the arts of peace is all but assured. Unlike the Americas, when first discovered, Africa is well peopled by nations for the most part well advanced in civilization, and ready to become important factors in the industrial and commercial world. They are far enough advanced to be large producers of many things that the industrial world has need of, and are equally well calculated to become large consumers of industrial products.

What with telegraphs along the coast, steamers and railways pushing inward along its ancient lines of traffic, the suppression of its external slave trade, the pluck and energy of scientific, missionary, and commercial explorers, and the great wealth of the national and international societies bent upon the early evangelizing of the African peoples and the commercial development of the enormous natural capacity of the country, we may reasonably expect in the near future an awakening in Africa as marvelous as anything the world has yet witnessed. Dark as its present condition is, Africa is a land of splendid possibilities.

It is not surprising, therefore, that commerce is studying its newly opened regions with keen interest; or that the ecclesiastical world is showing the liveliest concern for the future of regions which promise to be the seats of great Christian nations.

For a comprehensive, exact, and trustworthy survey of the real condition of this vast continent, its physical and ethnological characteristics, the recent work of its numerous explorers, the prospects of the various missionary enterprises on foot there, and the most suitable places for new

undertakings, nothing could be more satisfactory than the paper read by the careful and learned recording secretary of the American Board of Christian Foreign Missions at the late meeting of the board of commissioners of the society at Syracuse. The paper is published in full in the current number of the SUPPLEMENT, in connection with an excellent map of Africa, embodying the results of all recent explorations.

STAMPS FOR TRADE MARKS.

In another column a correspondent proposes a method by which Congress might give protection to trade marks incidentally, under its power to levy and collect taxes.

Briefly stated, the plan is for the Bureau of Internal Revenue to make and issue to each manufacturer, who should want protection, a special stamp bearing his trade mark, as is now done in the case of patent medicines; these stamps to be sold nominally for revenue, but really for that protection to the manufacturer which might be provided under existing laws against the counterfeiting of revenue stamps. The tax thus levied would be uniform throughout the United States, thereby conforming to the requirements of the constitution; but the payment would be optional with those who desired its indirect protection.

The suggestion is a clever one, but open, we think, to several serious objections. The stamps would be expensive, even were the government to furnish them at cost. The labor of attaching them to each article to be protected would add another large item to the expensiveness of the proposed method. And still worse, it would be quite impossible to make the stamp permanent. The trade mark on a piece of chinaware, for example, would lose half its value if it could not be wrought into the material or imprinted upon its surface so as to stay. The same may be said of most lines of metal manufactures, woodenware, and so on. A stamp for revenue purposes, on the contrary, is intended to be quickly, surely, and easily destroyed. The existing system of State registration, imperfect as it is, would seem to be less troublesome, cheaper, and more efficient.

Henry Crawshaw.

Not six months ago we had occasion to notice the death of Robert Crawshaw, the great iron master of Merthyr Tydvil, Wales. About a year before, his brother, Francis Crawshaw, died; and now we have to note the death of Henry, the last remaining son of William Crawshaw, the great iron king of Cyfarthfa. A full account of the vast establishments built up by the elder Crawshaw and his sons was given in this paper last June. When he died he left the whole of his valuable property in the Forest of Dean to Henry Crawshaw, Cyfarthfa to Robert Crawshaw, and Treforest and Hirwain to Francis Crawshaw. From the time he came into possession of this property until the depression in the iron trade Henry Crawshaw continued to increase and improve his inheritance, the total amount of ore worked between 1860 and 1870 reaching nearly 400,000 tons. At the time of his death he was preparing to enter extensively into the tin plate trade. He was the nearest likeness to his father among the three sons, and had all his father's perseverance and intuitive power. He was rugged in manner, but generous hearted, and won the hearty reliance of all by his unswerving probity. He died November 24, aged seventy-six.

Long Range Telephoning.

In a recent issue of this paper an exchange was credited with the statement that Mr. Robert Packer, "superintendent of the Pennsylvania Railroad," while traveling in Nebraska had conversed with his wife and friends at his home in Sayre, Pa., two thousand miles distant, by means of a telephone.

We now learn on good authority that, though Mr. Packer's friends received his communication by telephone, it was not so sent by Mr. Packer. The message was sent from Nebraska to Mauch Chunk, Pa., by telegraph; thence it was telegraphed to the Sayre office of the Pennsylvania Canal and Railroad Company (of which Mr. Packer is superintendent), and from there it was transmitted to Mr. Packer's house by telephone—falling short of the newspaper report of the telephone's performance by some nineteen hundred and ninety-nine miles and a fraction.

Our Sons Need Good Reading.

"I wish that my son had more of a taste for useful reading and study." Such is the lament one often hears from anxious fathers. To interest their children in things that are beneficial, thus to save them from bad company and pernicious habits, is the constant aim of every faithful parent. One excellent means to this end consists in making the SCIENTIFIC AMERICAN a regular visitor at your dwelling. Let it be in sight on your bookcase or table, and notice how quickly it attracts the young. Its pages are full of the most interesting, varied, and useful information, the study of which insensibly excites the mind with a desire for more; and this desire, once fairly kindled, endures through life, expanding and ennobling the intellect. A new volume of the SCIENTIFIC AMERICAN commences next week. Fathers, subscribe for your sons if not for yourselves.

Recognition of American Merit.

In the Transactions of the Institute of Naval Architects, London, England, 1879, are the names of John A. Tobin, Engineer Corps, U. S. Navy, J. B. and N. G. Herreshoff, United States America, all of whom were elected members at the last meeting.