

The Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

No. 37 Park Row (Park Building), New York

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Three Dollars per annum—One Dollar in advance, for our months. Single copies of the paper are on sale at the office of publication, and all periodical stores in the United States and Canada. Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.
See Prospectus on last page. No traveling agents employed.

VOL. IX, NO. 26... [NEW SERIES.]... Nineteenth Year

NEW YORK, SATURDAY, DECEMBER 26, 1863.

1864.

We shall mail to each of our subscribers a copy of our annual prospectus for 1864, and would remind them that we furnish the SCIENTIFIC AMERICAN to clubs at greatly reduced rates.

For 20 names sent in a club the subscription price is \$2 per annum. If it is found impracticable to get up a large club, we would remind each and all of our generous patrons that if they can each add a single name to our list, the mathematical fact is made perfectly plain that our list will be doubled. We have no claim upon any one of our subscribers. We furnish them the paper and they pay for it according to our terms. Nevertheless it would gratify us exceedingly if they would stir about a little and induce some of their clever neighbors to join with them in taking the SCIENTIFIC AMERICAN for 1864.

Go and remind your neighbor that the long winter evenings ought not to be wasted away by unprofitable dozing in the chimney corner, and that while he is toasting his toes around the blazing hearth, he ought to be storing his mind with useful knowledge, such as is always found in the SCIENTIFIC AMERICAN. Show him one of your numbers and tell him that he can get fifty-two of them for only \$3, of equal size, each containing a varied assortment of the most interesting information; and we will guarantee that unless he is a miserable miser he will pull out the old suet-skin and hand over the appropriate greenbacks.

We tried this the other day in Norwalk, Conn., and got an honest carpenter to chalk over his \$3; and he growled considerable because some one had not got him to do the same thing before. Certainly there is no harm in trying what can be done by thus coaxing him.

ANOTHER YEAR CLOSED.

Like the weaver's shuttle speeding along in the loom, so our days and years sweep rapidly past, and thus our web of life is woven. During periods of great excitement, when mighty events crowd swiftly upon each other, the mind fails to take cognizance of the fleeting moments. We can scarcely realize the fact that another year in the life of the SCIENTIFIC AMERICAN has been measured out, and that this number completes volume nine of our new series. For about three years now our nation has been engaged in the most momentous civil war on record, and the struggle has been increasing in magnitude and importance. Originating in the unreasonable disaffection of ambitious and selfish men, it was forced upon the legal rulers and loyal people of the land, who accepted it with hesitation and sorrow in view of the afflictions which would naturally attend it. But amid the grief of thousands whose homes and hearts have been made desolate, the nation has cause for being devoutly thankful at its unexpected

and surprising prosperity. Civil war usually crushes out useful industry, and in every such case the people become impoverished. But every attempt to carry the conflict into the loyal States has been frustrated, and the armies of the Government have pushed back the insurgents, and have also been successful in reducing extensive territories to legal authority. Such results are very encouraging, auguring well for future success in ultimately subduing the rebellion and conquering obedience to law and order.

Amid this great war the people of the loyal States have been permitted to pursue their usual avocations in peace. No better evidence of material national prosperity can be adduced than the general and active employment of the people in useful industry, which is the true "Wealth of Nations." There has been plenty of employment for all, and the wheels of commerce have rolled on with unexampled speed and success. New sources of industry have been developed, and old branches have received a marked impetus, so that our industrial products have exceeded in quantity those of any similar period in the history of our commonwealth. Herein lies the great strength of our country, for the productive power of a nation is the true measure of its strength.

No better proof can be adduced of our progress and improvement in the industrial arts than the achievements of inventors. The number of patents issued in our country during the year closing with this number, is 8,746, against 3,220 for the same period in the previous year—being an increase of no less than five hundred and twenty-six! Every department of industry has been benefitted by these improvements, and the numerous illustrations of new inventions which have appeared in the columns of the SCIENTIFIC AMERICAN afford cheering evidence of great progress made in the useful arts during the past year. A great scarcity of labor has necessitated a demand for new inventions to abridge human toil, and inventors have been more than usually successful. The demand for labor, however, is still urgent, and inventors never had a more favorable prospect for obtaining lucrative employment in devising new labor-saving mechanism. In conclusion, we can heartily join the President in the introductory lines of his late message:—"Another year of health and of sufficiently abundant harvests has passed. For this, and especially for the improved condition of our national affairs, our renewed and profoundest gratitude is due."

THE PEOPLE'S COLLEGE.

The Trustees of the People's College have issued an address respecting its present condition. It is located at Havana, N. Y., but the main edifice is not quite completed. It is 216 feet long, 52 feet wide, five stories high above the basement, and there is a rearward projection from the center erected, 70 feet long by 64 feet wide, which will soon be ready for the students. The college farm consists of 200 acres, and upon this and the edifice about \$100,000 have already been expended. In 1862, the State of New York gave to this college an annuity of \$10,000 for two years, chiefly for the support of the Professors, defraying the expenses of indigent students, &c.; and in July 1862, Congress granted 99,000 acres to the State for the establishment and maintenance of such an institution; similar grants for like objects having been made to other States. The edifice when completed will cost \$175,000; it will have a chapel, 220 rooms for students, a culinary department, and rooms for the steward. The first term of the college will commence on Tuesday, April 7, 1864, and will continue to the 15th of July. The terms of admission are as follows:—

CLASSICAL COURSE.—Candidates for admission to this course must sustain a satisfactory examination in English grammar, geography, and arithmetic; in the Latin grammar; Caesar's commentaries, six books of Sallust; Virgil's *Æneid*, six books; Cicero's Select Oration; in the Greek grammar and Greek reader, or in an equivalent amount of classical Greek.

SCIENTIFIC COURSE.—Candidates for admission to this course must sustain a critical examination in English grammar, geography, and arithmetic.

PROVISIONAL OR SELECT COURSE.—For admission to this course, the candidate must be prepared to pur-

sue, with profit to himself and without hindrance to others, the studies of his choice.

Candidates for admission to either of the above courses must be more than fourteen years of age, and must furnish satisfactory evidence of good moral character.

No less than twenty-two different branches of education are to be taught at this college; comprehending natural and revealed theology, intellectual and moral philosophy, jurisprudence and political economy, logic, history, rhetoric, anatomy, physiology, geology, chemistry, languages, agriculture, engineering, military science and tactics, &c. The course of the college to be pursued, to entitle students to the degrees of Bachelor of Arts and Bachelor of Sciences, will be four years; but a student may enter the college with the intention of pursuing a select course of study, and when this is completed and he passes a good examination he will be entitled to a diploma. The expenses of a student for tuition, board, and room rent, will be \$120 per annum, paid in semi-annual instalments in advance. Students will be allowed compensation for labor, which they may apply to the reduction of their expenses.

This institution embraces the object of useful labor combined with a superior education. Those students who intend to pursue an agricultural course, will labor on the farm; those intended for a mechanical trade will labor in some of the workshops. It is provided in the charter of the college that its students shall labor on the farm or in one of the shops from two to four hours daily, during five days of the week—a rule that should never be relaxed.

The institution was projected about sixteen years ago, by members belonging to the Mechanics Mutual Protection, an order which has ceased to exist; but we still recognize the names of two of its old members in the Board of twenty-four Trustees. The objects of this college are good, but the educational branches laid down in the programme are too numerous, and there are too many lawyers and too few farmers on the Board of Trustees. At first it was intended for the practical education of young farmers and mechanics.

The President is Amos Brown, LL D., and the Governor and Lieutenant-General of the State, with the Speaker of the Assembly and Superintendent of Public Instruction are *ex officio* Trustees. The Treasurer is T. L. Minier, Esq., Havana, N. Y. Eight professors have been elected to the different chairs, and we suppose they will enter upon their duties at the first term next spring.

CONCERNING STEAM BOILERS.

We have in previous numbers of the SCIENTIFIC AMERICAN frequently called the attention of engineers and manufacturers to the condition of their steam boilers; for we have felt, and still feel, that in too many cases they are neglected and overlooked. If there is any department where false economy is out of place it is certainly about a steam boiler; and by this we mean a disposition to let repairs go until a more convenient season, or as a person once said in our hearing, "till it gets so that it is worth mending;" this is false economy. The tailor's proverb about "the stitch in time" is eminently true of steam and the apparatus driven by, or the vessels containing it. All the leaky rivets (if any) should be driven tight, slack braces set up to their duty, seams calked where they require it, ashes kept away from water-drip when it falls on the sheets, clinkers prevented from forming on grate bars (where anything like decent coal is provided, no excuse should be received by manufacturers for this neglect), safety valves overhauled and put in working condition (too many of them are mere percussion caps, so to speak), flues swept at least once a week, ashes and soot kept out of the smoke box; every ounce of it is a non-conductor that robs the boiler of its rightful heat. In short, every detail and appurtenance of a steam boiler requires conscientious, thorough, and continual supervision; then there will be fewer lives lost, less property destroyed, and a better class of engineers and manufacturers generally. That is the true way to raise the wages of engineers and make business pay; elevate the standard of the services rendered, and, our word for it, manufacturers will accede to all reasonable requests,