

**A NEW BOLT CUTTER AND NUT TAPPER.**

The machine shown in the illustration has been especially designed to screw-thread the larger sizes of bolts and nuts, and is consequently made very strong and stiff, being also adapted to cut all sizes from a quarter of an inch to two inches in diameter. It has been recently placed on the market by Messrs. Wells Bros. & Co., of Greenfield, Mass. It has three step-cone pulleys, is back geared, and is furnished with friction clutch countershaft, increasing its capacity to turn out work rapidly. The drawers in the base of the machine afford convenient receptacles for tools not in use.

**THE COMING ATLANTA EXPOSITION.**

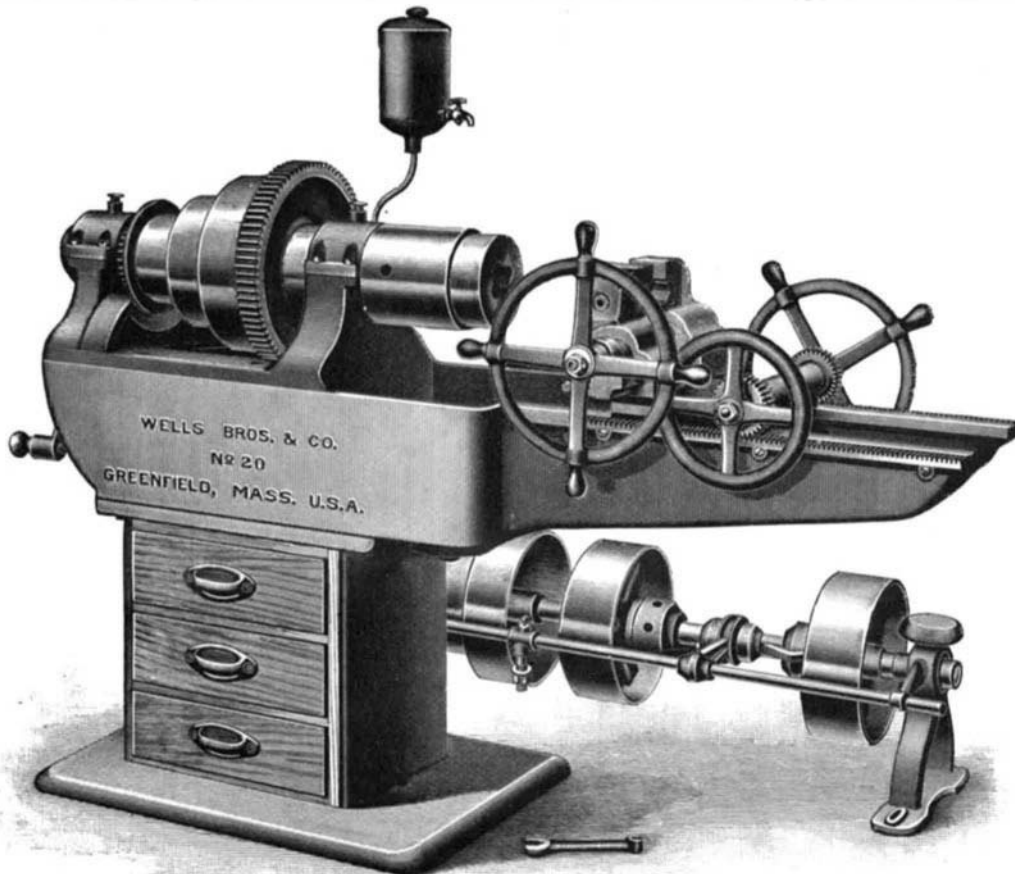
The New South was not satisfied with the inadequate display made of its industries at the Chicago Exposition of 1893; so that before the World's Fair closed it was virtually decided to hold a special Cotton States Exhibition at some city in the South. The project was warmly favored by the Southern press. Atlanta, Georgia, was selected as the site for the exhibition, and the result of the unabated zeal of the promoters is the Cotton States and International Exposition, which will be held during the winter of 1895-96. It will be opened September 15. An expenditure of over \$2,000,000 has been provided for, and the scope of the enterprise has been enlarged to include exhibits from all States in the Union and foreign countries. Atlanta is one of the most progressive cities of the New South, is a great railway center, and has a population of 65,533, according to the census of 1890. The president of the exposition is Mr. Charles A. Collier.

The exposition will be held at Piedmont Park, a site which possesses remarkable advantages. The park is situated about two miles from the heart of the city, and is approached by the Southern Railway and handsome drives. Piedmont Park includes about 189 acres, and \$550,000 will be spent in heightening the natural advantages by skillful landscape gardening and the creation of artificial lakes. Gondolas and launches will be a feature of the exposition. It is not intended to have the new exposition attempt to rival the Columbian Exposition either in architecture or industrial pretensions; but it will be a complete exhibit of the resources and industries of the New South. The old race track has been converted into a garden of Southern flowers, with an electric fountain in the center. This garden will be in plain view from all the buildings and from the high knolls on the borders of the park, and with the great lake behind it will make a beautiful setting for the architecture of the Fair. To the north of this central garden will stand the Government building, which is located between the Fine Arts building and a group of foreign and State buildings. The grouping is so artistic that no structure will be behind another. To

the east of the Government building and with the long side fronting on the garden is the Manufactures building. Between the garden and the lake there is ample space for the Woman's building and the Horticultural building. On the further border of the lake, which will occupy over 20 acres, will be grouped the Electricity, Mining, Transportation, Music, Machinery, Minerals and Forestry buildings. In the extreme southern ground, occupying a commanding position, are the Negro and Tobacco buildings. The circuit of the grounds will be completed by the Agricultural

about 900 pounds weight of silkworms' eggs were used in these towns and villages. The eggs used in Syria are of Corsican origin; the greater part come from France and a small quantity from Italy. As regards the Japanese varieties, these have entirely ceased to be imported. It is the merchants of Beyrout and the Lebanon who engage in the business of importing silkworms' eggs, and who sell them to the Syrian breeders. These merchants exercise the greatest care in all their operations, and some even go so far as to travel themselves to France to make their purchases.

All the eggs imported are subjected to a most rigorous examination, and in some cases they are examined by means of microscopical instruments. They arrive in boxes of about twenty-five grammes weight, and are sold at prices varying from three to six francs, according to quality and guaranty. The payments are made at once, or at the end of the harvest, in kind—that is to say in cocoons. In the latter case the amount due to the seller varies according to the district. For example, at Rachaya, in the villages of Ouadi-el-Adjam and Douma, one-seventh of the silk harvest is given; at Baalbek and Hasbaya a little more, and in the villages of Bekaa, one-twelfth. This difference is accounted for by the fact that the yield of eggs is by no means the same in all localities in which the silk industry is engaged in, on account of the greater or smaller amount of care and attention bestowed by the breeders—for the climate is favorable throughout the country. Attempts have frequently been made at the production of native eggs, but they have invariably been unsuccessful. This is generally attributed to the following causes: That



**A LARGE-SIZE BOLT CUTTER AND NUT TAPPER.**

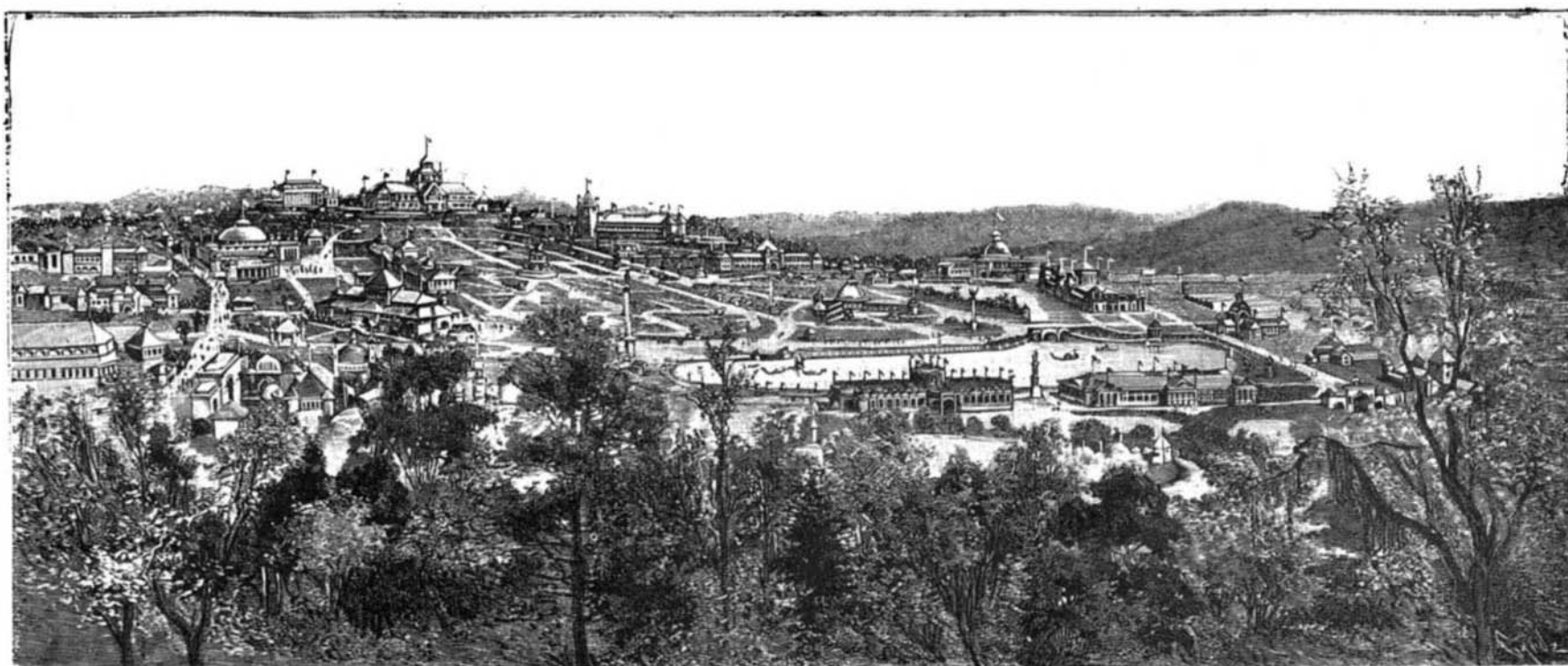
building, the Auditorium and the Theater. Other minor buildings will also be erected.

Cheap imitations of the Columbian Exposition's buildings have been avoided, and as much attention has been paid to the interior as to the exterior. The government promises to have one of the finest buildings on the grounds; the appropriation was \$200,000. The negro exhibit will be particularly interesting, and will illustrate the progress made by the race since their emancipation. The "Midway Plaisance" will be the Terraces, and only genuine attractions will be permitted.

**The Silk Industry in Syria.**

The production of silk in Syria has, says the Journal de la Chambre de Commerce de Constantinople, considerably increased of recent years. The towns and villages in which the greatest attention is devoted to the sericulture are the following: Baalbek, Serin, Ras, Machghara, Sahbine, Chtora, Hasbaya, Ain-el-Hraiche, Ain-Ata, Brit Lahie, Nabeh, Malonia, Giroud, Maara, Sidnaja, Essal-el-Ward, Douna, Khyara, Chafounie, Jaramana, Chabaa, Catana, El Hame, and Tsaxa. In 1893

the choice of the worms is made without due care and attention; that the eggs are not examined microscopically; the color and dimensions of the cocoons are mixed, and the eggs are not preserved until the moment of incubation, in favorable places. In Syria the weaving of silk is as old as the cultivation of the raw material itself. The silk weavers of the present day work principally for domestic production. The native manufacturers have had much to contend with from foreign competition, which made itself severely felt, and markets that were formerly controlled by Syrians are now disputed by European manufacturers, who, with their skilled artisans and with the aid of improved machinery, find competition with the older methods comparatively easy. The greatest specialty in the native silk stuffs, and in which Syria undoubtedly excels, is that in which cotton forms the warp, and in which the greater or lesser quantity of silk in the weft determines the quality. The principal silk manufactures are the Kaffehs, or headdresses, Aboyas, or Syrian cloaks, shawls, tobacco pouches, slippers, pillowcases, stuffs for dress goods and stuffs for upholstery.



**BIRD'S EYE VIEW OF THE COTTON STATES AND INTERNATIONAL EXPOSITION AT ATLANTA, GA., TO BE OPENED SEPT. 15 1895.**

### Books of the Ancient Mexicans.

At the 289th corporate meeting of the Boston Scientific Society, the principal paper was entitled *The Cortes Codex*, the speaker being Dr. J. Walter Fewkes. When Cortes landed in Mexico, he found a people who were about equal in civilization to the ancient Etruscans. It is true that they did not have the art of working iron, but they were a literary people and actually had books. A system of writing seems to have been common to all the peoples of Mexico and Central America, and in Yucatan, it appears, a much greater advance in the art had been made than in the other States. When the lieutenants of Cortes landed in Yucatan, the priests, imbued with the strong religious feeling of the age, declared these books to be instruments of the devil, and they were publicly burnt, very many of them being destroyed. But in some way four of them found their way to Europe, where they were placed in libraries, and it is now permitted to scholars to study them. These books are what are known as codices, and of them Dr. Fewkes spoke quite in detail.

The first and best of the codices is in Dresden. It is a book about ten inches in length and three or four in width; the material of which the paper is made is the agava pulp, and upon this characters are painted. The books open after the fashion of the Japanese screen, and both sides are used for the letters. The Dresden Codex has been closely studied by Dr. Foerstemann, who has published a volume on the subject. The second of the Maya books is in the *Bibliothèque Nationale*, in Paris, but it is small and poor. The two others are in Madrid and are known as the *Codex Cortesianus* and *Codex Troyanus*. Of the former, Dr. Fewkes spoke in particular, both fragments being considered, however, to have been originally parts of the same book. With the enlightened spirit of the age, the Spanish government published in 1892 a facsimile of the Cortes Codex, in commemoration of the discovery of America by Columbus. One of these facsimiles is in the possession of Dr. Fewkes, being a book of forty-two pages.

The characters which are to be found in the Codex are the same as those covering many ruins in Central America, figured on pottery and scratched on bone and shell, and if the books can be deciphered, there will be furnished the key to these old writings which have not yet been read. The characters may be broadly divided into three groups: numerical signs, pictorial elements and hieroglyphics; the latter group being divisible into day signs and hieroglyphs pure and simple. The most acute scholar in the numerical part is Dr. Foerstemann, who has shown that the people who made these books knew numbers, and very high numbers at that. Dr. Foerstemann deciphered the zero and the numerals which run into the millions, the higher ones of which have some relations to the planetary times of revolution.

The investigator who has done most to determine the exact character of the hieroglyphs was Brasseur de Bourbogne, who found the Cortesian Codex the symbols for the days, and concludes that it has significance in an astronomical or astrological sense.

The work of Dr. Fewkes in the matter has been in the consideration of the pictorial elements of the Cortes Codex. He has first assumed that the pictures are related to the other characters. In examining the pictures of the Codex, he has found that there are one hundred and twelve altogether—animals, men, and humans with monstrous heads or masks. What do the latter mean? Through his knowledge of the habits of the Moqui Indians, he was aware of the place of the personification of the different gods in the ceremonies, this being done by a man with a symbolical mask. Accordingly he had studied the different masks in the Codex and had been able to find among them the symbols which belong to certain of the gods—the god of war, a skeleton, the long-nosed god, the snake god, the corn goddess, and the like. In an interesting manner, aided by enlarged drawings of the Codex figures, he showed the reasons for connecting a certain picture with a certain god. All the figures, the animals excepted, can be thus referred to some of the gods, and they seem to have relation to the astronomical signs, although that matter has not yet been cleared up.

Dr. Fewkes was particularly interesting in the description of his investigations, referring incidentally to the customs of the modern Indians, relating an occasional legend and describing the secret ceremonies of the secret societies of the Moqui Indians, being himself a member of these societies and having witnessed their ceremonials. His paper was made the more interesting by the exhibition of facsimiles of the different Codices, works of great rarity and value, which he has acquired in his study of these antique bits of writing.—Boston Commonwealth.

### Cleaning Clothing.

Mullerson's preparation is a mixture of turpentine, 26½ parts; ammonia solution, 19 parts; methylated spirit, 25 parts; ether, 2¼ parts; acetic ether, 2¼ parts; and water, 25 parts; all by weight.

### Gold Production in South Africa.

The extraordinary growth of the gold mining industry in South Africa, and the consequent rush to invest money in a country which was hardly known five years ago, but which now takes rank second among the gold producers of the world, make a brief analysis of the reports available from the Witwatersrand District in the Transvaal, from which nine-tenths of the South African production is at present drawn, a matter of much interest. The material for this analysis is found in the reports issued each month by the Johannesburg Chamber of Mines, which give in detail the output of the district.

The rapid growth of mining is shown at a glance by a statement of the gold production for four years past, which was: 1891, 729,238 ounces; 1892, 1,210,868 ounces; 1893, 1,478,477 ounces; 1894, 2,035,970 ounces. The output for last year was thus very nearly three times that of 1891. A comparison of the years 1893 and 1894 may enable us to draw some conclusions as to the district and its future.

An important point in the returns for last year is the gradual and apparently steady decrease in the average returns per ton obtained. The total amount of ore worked last year in the mills was 2,827,365 tons, and the average obtained per ton by milling work was 0.46 ounce (0.37 fine ounce = \$7.65) per ton. This was a decrease of 3.4 per cent from the average reported in 1893. If we take the complete returns, including all gold obtained from concentrates and tailings as well as from milling, we find the average return on the ore mined in 1894 was 0.72 ounce (0.576 fine ounce = \$11.91) per ton, against 0.67 ounce (0.536 fine ounce = \$11.08) per ton in 1893. That this increase was only apparent, however, is shown by the fact that the quantity of tailings worked over last year was 2,674,673 tons, while in 1893 it was only 1,217,792 tons; that is, the output of 1894 included a considerable amount from accumulated tailings of previous years' workings. A fairer way of comparing the averages is to take each source of production separately, as we have done in the following table:

	1893.	1894.	Changes.	Per cent.
Ore milled.....	2,303,704 tons.	2,827,365 tons.	I. 623,661 tons.	28.3
Tailings reworked.....	1,217,792 "	2,674,673 "	I. 1,456,881 "	119.6
Yield per ton, ore.....	0.479 oz.	0.462 oz.	D. 0.017 oz.	3.4
" " tailings.....	0.250 "	0.223 "	D. 0.030 "	13.6
Total yield.....				
Milling ore.....	1,056,388 oz.	1,305,408 oz.	I. 249,020 oz.	23.6
Tailings.....	304,498 "	587,388 "	I. 282,890 "	92.9
Concentrates.....	82,737 "	84,579 "	I. 2,842 "	34.8
Other sources.....	54,853 "	58,595 "	I. 3,742 "	6.8
Total.....				
Fine ounces.....	1,478,477 oz.	2,035,970 oz.	I. 557,493 oz.	37.7
Value.....	\$24,448,096	\$33,666,900	I. 445,994 "	37.7

In giving the fine ounces and the value throughout we have taken Witwatersrand gold as 0.800 fine, this conclusion being derived from the statements of its value uniformly given. It is much to be regretted that for this—and indeed for every—district the returns are not made in fine ounces.

Several points are brought out more clearly by this table. Fully as large and perhaps a larger part of the gold was saved in milling last year; for while the proportion of mill gold was 64.1 per cent of the total in 1894 and 71.5 per cent in 1893, the difference is more than accounted for by the large increase in quantity of tailings. The amount obtained from concentrates, chiefly by chlorination, shows some increase in the pyritic contents of the veins as the workings increase in depth, but not in any large proportion. Taking the ore and tailings together, we find that there was an increase of 60.8 per cent in the tonnage handled to obtain an increase of 37.7 per cent in the gold output; but these proportions will hardly hold good in the present year, when the proportion of tailings worked to ore milled will probably be much less than it was last year.

The important data as to the cost of working on the Witwatersrand are lacking. The amount paid in dividends has been large, but there are many companies which have paid nothing to their shareholders. The cost of supplies and fuel is gradually decreasing, owing to the improvements in transportation and the development of the coal resources of the Transvaal; but these savings may be offset by the increasing demand for labor, and the difficulty of obtaining it. So far we have nothing on which any close estimate of the average cost of mining in the district can be based, and only the fact that many companies are paying dividends on returns of \$10 or \$12 per ton seems to show that these low grade ores can be handled at a profit. More detailed information as to costs would be of the greatest interest to the mining world.

As to the future production of the Witwatersrand no predictions can safely be made. The old accumulations of tailings are nearly exhausted, so that the addition to the output from this source will be somewhat less hereafter. The confidence of the large companies in the future is shown by the fact that they are adding to their mill capacity and the 2,400 stamps now at work will be increased by nearly one-half within the next six

months. While the ore shows a tendency to decrease slightly in value with depth, there are no indications of its exhaustion. Moreover, there is a considerable area, through which the great banket vein is believed to extend, which has been hardly touched as yet. On the other hand the general belief in the richness of the vein at great depths rests thus far on the indications of a few borings, and none of the "deep level" companies which are now sinking exploration shafts will be in a position to report results for a year to come.

It is fairly safe, however, to expect a large production from the Witwatersrand for at least several years to come; and when the mines of that district begin to show signs of inevitable exhaustion, the new fields of Matabeleland and Mashonaland will probably be producers, so that South Africa will continue to be a very important factor in the gold supply of the world.—Engineering and Mining Journal.

### Dishonesty the Nation's Peril.

Anybody who has been but a casual observer of events in this country must have been forcibly impressed with the recent growing tendency to dishonesty and downright villainy in politics, official life, corporate responsibility and private business obligations. There may be as many honest men in all these relations to-day as at any period of the country's history, but it looks as if there were certainly an augmenting number of rank rascals.

This is seen first in the almost entire lack of honesty, honor and patriotism among politicians, the men who run the political machinery, from the township organizations to State and national conventions. Politics has become a word to which nobody but an ignoramus or a sophisticated office seeker attributes any element but that of dishonesty and fraud. It means a scheme of designing men to get the offices and thereby the chances to deceive and rob the people. In the older days of the republic men who sought office claimed and were accorded some degree of honor and sense of responsibility to their constituencies. They were to a large degree, at least, actuated by a patriotic desire to

acquit themselves so as to be considered patriotic citizens, with a good name to preserve and hand down to posterity. Probably that feeling and motive is somewhat rife in the rural communities at the present time; but in the larger cities, if any of it remains, it is neither conspicuous nor emphatic. Men now seek office "for what there is in it" to them, and with small regard to the good of their constituents. They connive and combine to get the support of the worst elements in the community, because those elements represent the greatest number of votes. They cajole and fool the ignorant, the debased, and the victims of demagoguery for the sake of votes, and the selfish partisans among the so-called better classes fall into line so as to be on the winning side. Officials thus elected cannot be expected to administer public affairs with much reference to anything but their own selfish interests. It cannot be expected that they will be much better than their constituencies. The effect of this debased motive in politics is to prostitute legislation to partisan ends, which are usually those of compromise with cliques which conspire to rob the people and fatten the conspirators. It also enables a lot of mediocre or low grade, unprincipled men to get into office, and thus the body politic is permeated with dishonesty and, what is almost as bad, brainless, conscienceless incompetency.—N. W. Lumberman.

### The Late Crown Prince of Siam.

In accordance with Siamese custom the body of the late prince, after being very tightly bound up, with the knees brought up under the chin, was introduced into an iron urn, which again was put into a magnificent urn of gold, studded with precious stones. This has been placed on a golden, four-sided, truncated pyramid, about 9 feet high and 12 feet square at the base, in a small room in a building adjoining the grand palace, and known as the Phratanang Dhusidth Neahaprasadh. The room is suitably adorned with mourning emblems; one wall contains the late prince's orders, etc., in glass frames. A large body of Buddhist priests chant appropriately in an adjoining room night and day, and several of the king's brothers are in constant attendance round the catafalque. And there the body will remain, probably for a whole year, to be then consigned to the flames with extraordinary pomp on an enormous funeral pile.