

Our Growing Trade in China.

American products seem to be gaining favor more rapidly in China than those of any other nation. The report of the Inspector-General of Customs of China for the year 1898, just received by the Treasury Bureau of Statistics, shows an increase of nearly 40 per cent in imports into China from the United States, while the increase in total imports is less than 5 per cent. Our imports into China in 1898 were 17,163,312 Haikwan taels, an increase of 4,723,010 taels over 1897, while those from Great Britain, our most active rival in Oriental trade, fell from 40,015,587 taels in 1897 to 34,962,474 taels in 1898, and from the Continent of Europe the 1898 imports also showed a reduction of nearly 1,000,000 taels. The imports through Hongkong are largely of European origin and amounted in 1898 to 97,214,017 taels, against 90,125,887 taels in 1897. Even if all the imports into China from Hongkong and Macao are of European origin, combining them with those from Great Britain and the Continent of Europe, they show a gain in European products imported into China in 1898 of less than 1 per cent, while those from the United States, as already indicated, show a gain



Fig. 4.—A BICYCLE BUILT FOR A HEAVYWEIGHT.

of nearly 40 per cent. The value of the Haikwan tael, according to the latest estimate of the Director of the United States Mint, is 71 8 cents.

Our principal exports to China are cotton goods, kerosene oil, flour, provisions, railway material and engines, manufactures of iron and steel, manufactures of wood, and manufactured tobacco. The Chinese customs service, as is well known, has been for many years administered by Englishmen selected for that service by the Chinese government because of their familiarity with customs laws and commercial methods throughout the world. Their reports relating to the commerce of the year 1898, comparing it with that of previous years, contain many interesting statements showing the gains which American products are making in the import trade of the empire.

The Statistical Secretary, Mr. F. E. Taylor, in his general report on the Commerce of China for 1898, says: "The value of the trade in cotton piece goods has remained practically stationary for three years, but there are certain movements in the trade which deserve attention. Dutch goods are rapidly losing ground; Dutch sheetings have disappeared; they cannot keep pace in price or quality with those of the United States. Manchester can no longer compete with the United States in the exportation of drills, jeans, and sheetings, owing to the lower prices at which the latter country can land this class of goods in China. White and refined sugar and American flour are being bought more freely, which, as indicat-

ing increased ability to purchase luxuries, may be taken as a sign of prosperity."

Customs Commissioner Huges, of Kiukiang, speaking of the progress of the kerosene oil trade, says: "The American oil still maintains its supremacy, and judging by our figures of the last two years, seems to be leaving its Russian rival farther and farther in the background." Customs Commissioner Moorehouse, of Amoy, writes: "Imports of American flour increased considerably, 98,898 piculs (133½ pounds) being consumed, as compared with 52,089 in 1897. American flour can be laid down at a less cost than flour ground locally from native wheat." Customs Commissioner Walter Lay, of Newchwang, writes: "Both American drills and American sheetings have come into great favor here, the demand for them having become quite phenomenal." Customs Commissioner Hippisley, of Tientsin, says: "The imports show a net value of 32,600,000 taels, or 2,400,000 taels over that of 1897. Cotton piece goods advanced from 14,750,000 to 16,000,000 taels, all of which is practically due to increased receipts of American makes, which now represent about one-half of this branch of the trade."

All of which clearly indicates to American manufacturers and exporters the truth of the maxim that "nothing succeeds like success." The success of the American navy in Pacific waters last year is doubtless largely responsible for bringing our national being more emphatically before the half-wakened buyers of the Orient. Now, while we are on an upward wave, is the time for those having goods suited to that trade to bring them into active competition with those of Europe. And it should ever be remembered that China does not yet know what she wants, simply because she does not know what exists. There are countless articles of our production that will there find an enormous market if their utilities are once explained to them, of which the Chinaman is to-day in absolute ignorance of even the need for.

An Ancient Barrel Organ Unearthed.

Barrel organs were formerly quite frequent in English churches, and one has recently been unearthed in a church near Rochester, England. It has six stops and six barrels and is capable of grinding out sixty tunes in all. Among them are such archaic specimens as "Job," "Old 11th." The organ was operated by the sexton.

A Novel Apparatus for Teaching Geology.

Strange to say, there are few pieces of apparatus which can be obtained in the world to-day which will assist in teaching geology. One of the most interesting we have seen was designed by Professor G. A. Lebour, of Durham College of Science, Newcastle-on-Tyne, and which was published in Nature. The machine is for making folds of rock, and as may be readily understood, a large number of fold forms of rocks can be reproduced, and their consequences, such as thrusts, faults, etc., can be demonstrated.

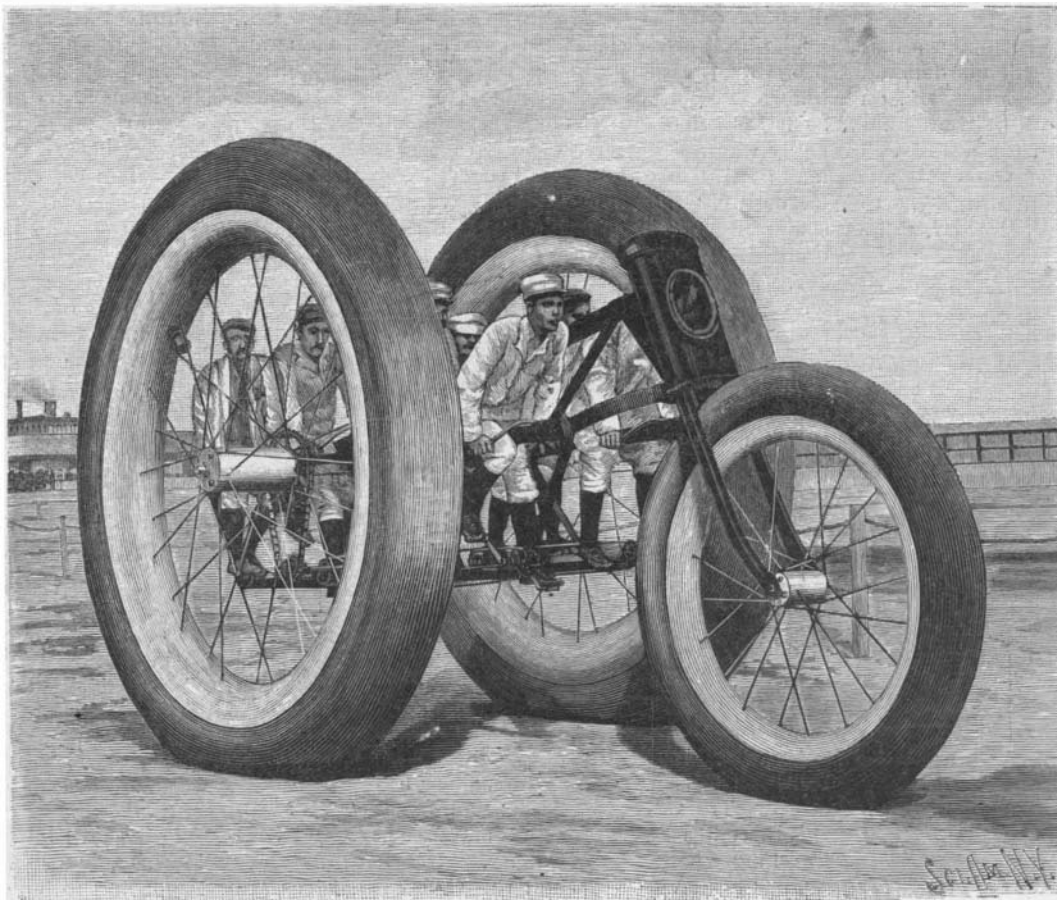


Fig. 2.—THE LARGEST TRICYCLE IN THE WORLD.

It consists of two parallel wooden rollers about 3 feet apart and 4 inches in diameter. A shaft at right angles turns the two rollers in opposite directions by means of toothed bevel wheels, the shaft itself being driven by a worm-wheel and worm. One turn of the handle causes only ¼ of the turn of the shaft and roll-



Fig. 3.—A BICYCLE BUILT FOR TWO.

ers, so that a very slow motion can be imparted to the latter. A sheet of India rubber is firmly attached by a slot and screwed to each roller. This completes the arrangement, the rollers being wound through about one entire revolution and the India rubber being thus stretched, and layers of cloth, clay, paste, or other material are laid upon it. The handle is then turned in the reverse direction and the India rubber is gradually released. Folds are in this way shown slowly growing, the broad elastic band simulating the contraction of a portion of the earth's course and producing various geological forms. Various weights may be applied and different effects can be obtained, thus giving an idea of the results which have actually been produced in nature under great pressure, that is to say, at great depths.

GROTESQUE FORMS OF CYCLES.

We illustrate herewith, from Lectures pour Tous, some curious things in the way of cycle advertising that were to be seen at a "Great Cyclist Meeting" (as the programme of the affair styled it) that took place recently at Holburn Viaduct, England.

Fig. 1 represents a gigantic bicycle that was displayed by Messrs. H. A. Lozier & Company, the manufacturers of the Cleveland bicycle. It was, of course, constructed simply for show and as an advertisement of the firm's machines. Each wheel is 19½ feet in diameter and was provided with pneumatic tires 8 inches in thickness. The saddle is large enough to accommodate eight men. The size of the machine can be judged of by comparison with the bicycle of ordinary dimensions that is seen leaning against the front wheel.

Fig. 2 shows a huge tricycle constructed for the Wovenhoe & Rübler Company, of Boston, in order to serve as an advertisement for the new rubber tires of the Vim system. It was capable of carrying eight cyclists. The two driving-wheels are 13 feet in diameter, the steering-wheel 7½ feet. The wooden rims were provided with rubber tires 14 and 16 inches in thickness. Each driving-wheel hub is 16 inches in length. The steel spokes are one-fifth of an inch in diameter. The whole machine weighed 2,236 pounds.

Fig. 3 represents a bicycle called "The Sociable," devised

by a German, Herr Karl Jatho, and ridden by himself and sister. Its driving-wheel is 8.2 feet in diameter and covers a distance of 19.6 feet in one revolution. The steering wheel is 16 inches in diameter. The weight of the machine is 112 pounds.

Fig. 4 shows a bicycle especially constructed to withstand the weight of the heaviest bicyclist in the world—a man named Grimes, who is said to tip the scales at 567 pounds, and who is 6 feet in height, with a girth of 62 inches around the chest and 22 around the calves. His muscles are said to be as hard and firm as those of a well-trained athlete. He rides a specially built wheel.

Tischendorf and the Sinaitic Manuscript.*

Tischendorf (privat-docent at the University of Leipzig in 1840) went down in 1844 to Mount Sinai searching for Bible manuscripts, finding, in something like a waste-basket, forty-three cast-off leaves from an Old Testament manuscript apparently of the fifth century and now, as "The Codex Frederico-Augustanus" (after the then King of Saxony), the property of the University of Leipzig.

The study of the find whetted his appetite; and, in 1853, he returned to Sinai, looked as carefully as permitted through the whole monastery, but found no trace of further manuscript (the monks having meantime waked up to the possible value of his first batch). He did not dare magnify values; hence would not ask for them. He therefore departed, having seen used in the binding of a book only two or three little bits of a continuation of his original find.

The publication of his first forty-three leaves created a tremendous stir in Europe and aroused the jealousy of other paleographers to its extreme pitch: so that his failure in further discoveries in the trip of 1853 he attributed to some Englishman's or Frenchman's having forestalled him. Years passing and the scientific societies' journals maintaining silence, he determined on a return; this time bearing a large sum of money and full credentials from the Emperor of Russia, the temporal head of the Greek Church, to which belonged the monastery at Sinai and its mother monastery at Cairo, Egypt. Reaching Sinai early in 1859, he studied the monastery's architecture and searched it thoroughly for leaves of the expected manuscript, finding nothing. Despondent, he ordered his camels; but on the eve of departure, invited to the monastery steward's cell, the steward took from his shelf a book, rolled together and tied in a red silk handkerchief, and handed it to Tischendorf as "something he had found lying about." Tischendorf discovered it to be the manuscript he had been fifteen years hunting, examined it rapidly, saw before him the whole of the books of the New Testament, the letter of Barnabas and that of the Shepherd of Hermas. Prior to that time the letter of Barnabas had not been found complete in Greek.

How the monks voted down the proposition of Tischendorf to surrender to him the Sinaitic manuscript; his journey to Cairo and the repetition of his demand to the mother monastery there; the transmission, on the latter's order, from Sinai to Cairo of the manuscript; Tischendorf's copying it, with the aid of two Greek scholars, under surveillance of the Cairo authorities; his final request for the original as a gift to the Emperor of Russia—is matter of history. The death of the archbishop delayed proceedings; the action sought demanded completeness in the monkish fraternity as an organization; and ten months from the finding of the manuscript they had elected a new archbishop and were ready to give the precious document, which was done, with due solemnity, in the presence of the consul-general of Prussia and the monks. As a return gift the Emperor of Russia awarded, by mutual agreement, five thousand and two thousand rubles, respectively, to the monasteries at Cairo and Sinai, besides conferring decorations on the chief monks.

For three years Tischendorf almost ate, drank and slept this Codex Sinaiticus—a treasure such as the Church had not known before, the first great uncial writing containing the whole of the New Testament. He went over line after line, column after column, page after page, making a fac-simile print, wherein he used five different sizes of letters made to correspond to sizes found in the manuscript, over which he worked from 1859 to 1862, when the four volumes were published in Leipzig under the auspices of the Emperor of Russia. He printed a title page for their appearance at the celebration of the millennial year of

* Abstract of a lecture at Haverford College, Haverford, Pa., by Prof. Caspar Rene Gregory, of the Theological Faculty of the University of Leipzig.

the Russian empire; but jealousy circumvented this use of the volumes. Three of the volumes contained the text proper; while the fourth included many plates—beautiful fac-similes of the different kinds of writing found in the Codex Sinaiticus. In the first part of the fourth volume he went over it line by line and letter by letter; and wherever there was any peculiar reading, any double writing—when a man had scratched out a letter with his knife and written another letter on top of it—he would say, "On this page and this line you will see that letter; and that letter was originally this letter, and that was scratched out and this was put in."

In 1863 Tischendorf made a smaller edition of the New Testament part. He also made an edition in 1865. The original Codex Sinaiticus to-day rests in the Russian Imperial Library.

When he had published the Codex Sinaiticus, he applied to the Pope for permission similarly to edit the Codex Vaticanus—a manuscript probably from the fourth century—that for centuries had lain in the Vatican Library, and access to which had been denied to all. He published about 1867 a partial edition of the Vatican manuscript.

The Sinaitic manuscript is made up of leaves 18 inches broad and about 18 high, each page having four narrow columns about 2 inches broad. The Vatican manuscript has three columns on a page. Books were formerly inscribed upon rolls, which in all probability were used until long after the time of Christ. Books with leaves were probably invented about the beginning of the fourth century. The Christians, in connection with their Jewish learning with reference to the Old Testament, were probably the



Fig. 1.—A GIGANTIC BICYCLE.

first men who wanted to make quick references, to a very great extent, to a large number of books; and this doubtless impelled one of their number to devise the present form instead of the cumbrous rolls, 40 to 50 feet long (and not all the books of the Bible could be put upon one roll), which they had been obliged to roll up and unroll whenever they wanted to compare different passages (e. g. Matthew i. and Matthew xvi.)

The Codex Sinaiticus and the Codex Vaticanus are probably the oldest books with leaves of which we know. The text is nothing like the Greek Testament as it is read to-day, which has been polished up in many ways. The scribes did not always write off the manuscripts just as they had them before them. One might say, "I know better about that. I have heard something more about what Jesus said at that time;" or, at the beginning of the second century, one would say, "My father told me something else about that." Thus the text was changed in one way or another, and thus these old manuscripts show what we call an old text.

The old manuscripts were written altogether in capital ("uncial") letters straight ahead, without any division between the words, the reader taking time to make the division as he read. There are no Greek manuscripts, but the very youngest, that are good about dividing the words exactly from one another. We have one or two manuscripts in Greek written in connection with the Latin manuscripts; and they were careful to put a point in between each two words. Those were for men who knew just as little as possible, or nothing at all, about Greek; and it would happen occasionally to a scribe copying a manuscript that he put a point right in the middle of a word, thinking the word had stopped. This Codex Sinaiticus became, then, after Tischendorf had edited it and had carefully tabulated all these errors, one of the mainstays of New Testament criticism; and from that day to this there has been no Greek manuscript found that has, in any way, taken its place.

The Codex Vaticanus and the Codex Sinaiticus are the two manuscripts to which we are obliged most to

refer respecting the New Testament. Both contain errors. Should we take such a manuscript and print right straight off without textual criticism? The manuscripts of the classical authors can be counted on the fingers as a rule; but in the case of the New Testament we to-day have some three thousand Greek manuscripts as its basis; and there probably exist in the world to-day some two or three thousand more of manuscripts that we have not yet collated. A Christian wants to have his New Testament just as scientific as he can. We have Browning, Dante and Shakespeare societies. People want to know whether their favorite author wrote this word, or that word, in this way or that way, and whether Shakespeare has been misrepresented in certain passages. So, as to a Scripture writer, we ask whether he said this Greek word or that Greek word; we ask whether this fits into the matter of the text or not; and we are working very hard to get the proper text of these books. A Christian must be at pains to have the very best possible text of the New Testament; he must not be satisfied with an "i" that is not dotted, with a "t" that is not crossed; he must not be satisfied to have any word in that Testament other than as good and as accurate as it can be made.

With the advances of palæography and philology, it is possible for us to make a New Testament text better than any text which existed after the New Testament text had passed fifty years from the original—after it was no longer possible to take the words from the original—to read them from the original page.

The History of Appendicitis.

The entire literature of appendicitis down to the year 1899 numbers no less than 2,500 articles, books, etc., and in a recent number of *The Medical Record* Dr. George M. Edebohls, A.M., M.D., has a most interesting review on the "History and Literature of Appendicitis." He says its early history cannot be traced owing to the fact that it was confused with other diseases. Probably the first reference to it dates from 1642. As late as 1838 the knowledge of the existence of appendicitis was by no means general. In 1846 cases began to be reported. The inauguration of modern surgical treatment of appendicular abscesses did not come until 1867, and the first recorded operation on the appendix was planned and executed on August 24, 1883. The early operations commonly ended in failure. The first successful removal of the appendix was performed on May 8, 1886. Since that time the number of successful operations has greatly increased until, while now it is regarded as a serious, it is by no means a fatal operation. There is much popular misconception as to the origin of appendicitis, and Dr. Edebohls gives interesting accounts of some things which have been found in the vermiform appendix, from which it will be seen that the grape seed is by no means the commonest form of injury. Coproliths have been found by everybody who has had much to do with post mortem investigations or with operations on the appendix. Next to them pins have been the foreign bodies most frequently met with. Other things found are grape seeds, melon seeds, a chocolate nut, a grain of oat, cherry stones, raspberry seeds, prune seeds, orange seeds, date seeds, tomato seeds, fruit stones, huckleberry seeds, blackberry seeds, hazelnut shell, a piece of chestnut, peanuts, hair, bristle, a glazier's point of zinc, a globule of solder, a gelatine capsule, a piece of bone, a piece of screw nail, a rifle cartridge and the fin of a fish. This paper also shows that four per cent of all women have appendicitis, and they are a very little more liable to the disease than men.

To Our Subscribers.

With the present issue, the SCIENTIFIC AMERICAN closes the fifty-fourth year of its existence. It is only fair that we should call the attention of our readers to the fact that the sending of the paper is discontinued at the end of the subscription year. We therefore beg those whose subscriptions expire with this issue to remit promptly in order that the paper may be received without interruption.

Readers of the SCIENTIFIC AMERICAN who are still unfamiliar with our other publications can receive sample copies upon request. When the SCIENTIFIC AMERICAN and SUPPLEMENT are taken together, a special discount is made which places the two papers within the reach of all.

It is said that in Japan extensive preparations are being made for lighting railway cars by acetylene gas. According to *The Railway Review*, the carbide is to be manufactured by a native concern.