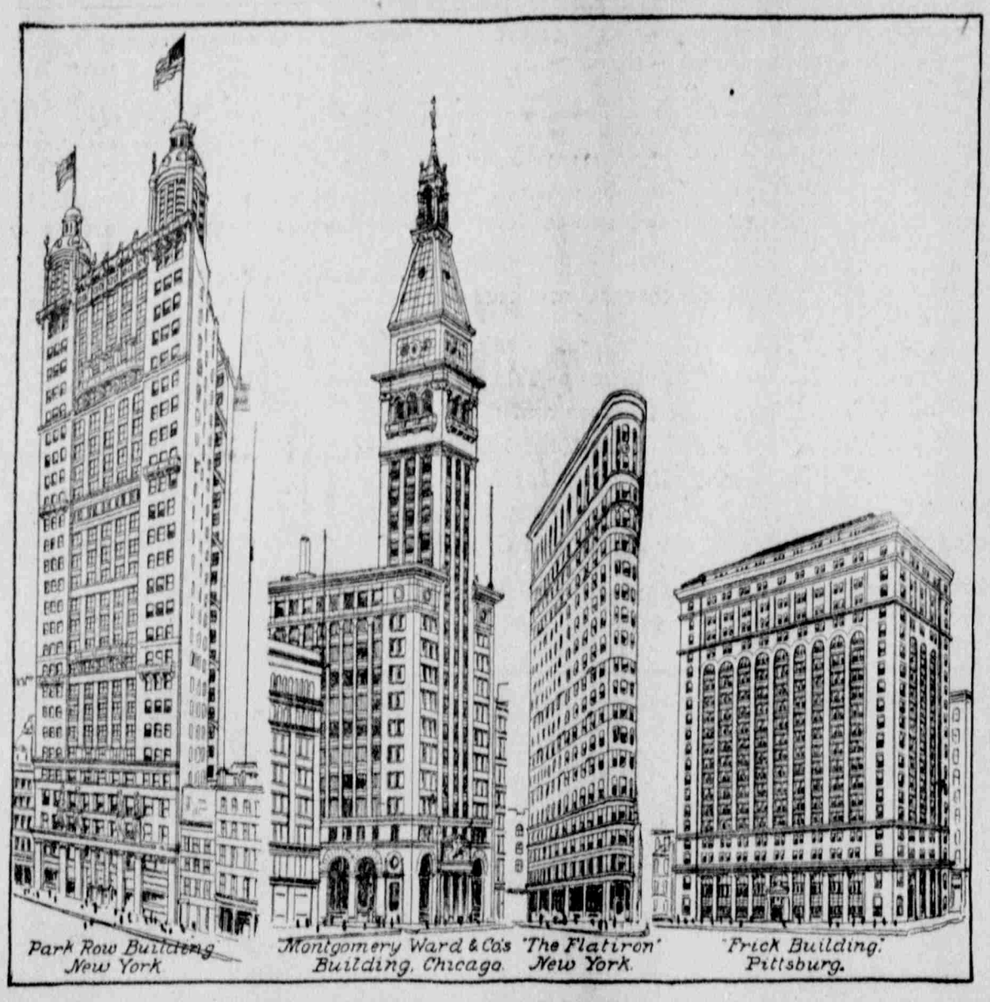
SOME UNIQUE features in SKYSCRAPERS

THE skscraper is an evolution, and a very recent one, from the comparatively modest structures of an earlier period. It is only fifteen years since the first of the type was planned, and it originated in Chicago, which city claims the Tacoma building, completed in 1889, as the first American skyscraper. In all our large cities, where foot front values are enormous and constantly enhancing, the "Chicago construction" idea, or the modern bridge built skyscraper, with its skeleton of steel and outer covering of stone, brick and glass (and which is riveted together so firmly that the Cyclops might roll it down hill like a bird cage, if they chose, without injury to its structural parts), at once leaped into favor. Other cities, notably New York, seized upon the idea, expanded and elaborated it, and then began a race as to which should build the tallest structures, the tendency ever upward and with "excelsior" as the motto.

Without any intended disparagement of other cities, it may be safely asserted that Manhattan now possesses more and larger skyscrapers than any other city in the world. A decade or so ago Chicago was in the lead, but now it is the great metropolis of the Empire State, with its structures of steel towering skyward by the score. It has gone so far in this respect that any one who knew the city fifteen years ago would hardly recognize it now, especially its lower portion from the Battery northward, if he were returning to it after an absence of that length of time. The sky line of New York, in fact, has changed most wonderfully in the past decade and has become as famous as the serrate outline of the Alps or the Pyrennees. And the wonderful work is still going on as shown by the building statistics for this year. The total cost of new buildings erected and in contemplation filed with the bureau of construction in New York, and the majority to consist of skyscrapers, amounts to more than $63,000,000.



Park Row Building, New York. Montgomery Ward & Co's Building, Chicago. "The Flatiron" New York. "Frick Building," Pittsburg.

The tallest office buildings in the world are to be found in this city of skyscrapers, and here are the heights of a dozen in the order of altitudes.

	Stories.	Feet.
The Park Row building	29	382
Manhattan Life	22	348
St. Paul	26	308
American Surety	23	306
American Tract	23	306
Empire building	20	282
Home Life	16	280
Washington Life	19	273
Bowling Green	19	272
Bank of Commerce	20	270
Standard Oil	15	263
Commercial Cable	21	255

It was thought the limit had been reached in the Park Row or Syndicate building, which, though nominally 382 feet in height, is 447 feet from the street to the tops of the flagstaffs on its twin towers and 501 from the base of its foundations. It is called the tallest office building in the world, its cupolas being 100 feet higher than the dome of the capitol at Washington and almost as high as the apex of the great pyramid. And yet this great structure, with its 950 rooms and accommodations for nearly 4,000 occupants, stands upon a foundation of sand. Its total estimated weight of 20,000 tons is supported upon a forest of 12,000 piles driven into the sand by the blows of a twenty ton driver. It cost $2,400,000 and is said to be a paying investment—in fact, there is hardly a skyscraper in New York, Chicago or any other city where realties are vastly valuable that is not returning a good rate of interest from its rentals. If it is not, then there is something the matter, the experts say, with its management.

The Park Row building is probably the largest structure that has been erected with an eye to its rentals, but a few years ago it was proposed to build a skyscraper to cost at least $100,000,000—a "city within a city"—with residence flats, a church, theater, offices, art gallery, etc., and to combine utility with structural beauty in a large degree. This scheme has not materialized, but another building to exceed the Syndicate structure has been proposed by the Etna Real Estate company to stand at the corner of Broadway and Thirty-third street on a lot about 100 feet square. This structure, to be known as the Obelisk, is architecturally harmonious in every feature, more resembling a monumental dwelling than an ordinary office building, and is projected to contain thirty stories and to be 455 feet in height. The total cost of land and building is placed at $4,000,000. The latest improvements in rapid elevators, refrigerating plants, a water service from artesian wells, etc., are to be incorporated in this up to date structure of the skyscraping period.

One of the most unique of skyscrapers, almost abnormal in its peculiarities, is the so called flatiron structure at the intersection of Broadway, Fifth avenue and Twenty-third street, New York. Viewed from the front it appears like the bow of an immense ship, being just wide enough at its edge for a narrow window, yet it is twenty-one stories high, rising 285 feet above the street, and each floor of this stone and steel structure contains 8,600 square feet of space. It cost $1,500,000. One of Chicago's latest and finest structures is Montgomery, Ward & Co.'s building. It contains twenty-one stories and measures 390 feet to the top of the weather vane and was built not only with an eye to its utility, but as an ornament to the city.

One of the most sumptuously fitted of office buildings is said to be the Frick skyscraper in Pittsburg, recently erected, which is twenty-two stories, covers an entire block, has a floor area of 500,000 square feet and cost, with the land it stands on, $4,250,000.

At the time it was going up not long ago the New York Mutual Life building was alluded to as one of the most remarkable structures in the world, although only sixteen stories high, owing to the engineering skill displayed in overcoming the various difficulties encountered. Its foundation rests upon bedrock 100 feet below the street level and fifty-five below the sidewalk, and in its construction alone 2,000 tons of steel, 10,000 cubic yards of stone, 5,000 of sand and 20,000 barrels of cement were used.

The erection of a five hundred foot skyscraper presents no greater difficulties to be overcome than that of a two hundred footer, for the structure itself, considered generically, is a cumulative growth to which the genius of years has steadily contributed. The building of skyscrapers is now an exact science, and doubtless a structure could be planned by our architects that could be extended upward as far as desired. It has required a rapid readjustment of the point of view to keep up with the growth of skyscrapers, and the really unique features have become, like the articles enumerated by the auctioneer, "too numerous to mention."

WALTER A. WIBERLY.

INOCULATION EXTRAORDINARY.

The government of the Punjab province of India, under Sir Charles Rivaz, K. C. S. I., has just undertaken what may be described as the biggest bacteriological enterprise the world has yet seen. Convinced that inoculation is the only effectual means of fighting the plague, it has undertaken the gigantic task of inoculating 7,000,000 of the people during the next five months.

Surgeon Major Bannerman, superintendent of the government laboratory at Bombay, has received instructions to be ready to supply plague serum at the rate of 50,000 doses a day.

HOW our winter FRUIT supply is PRESERVED

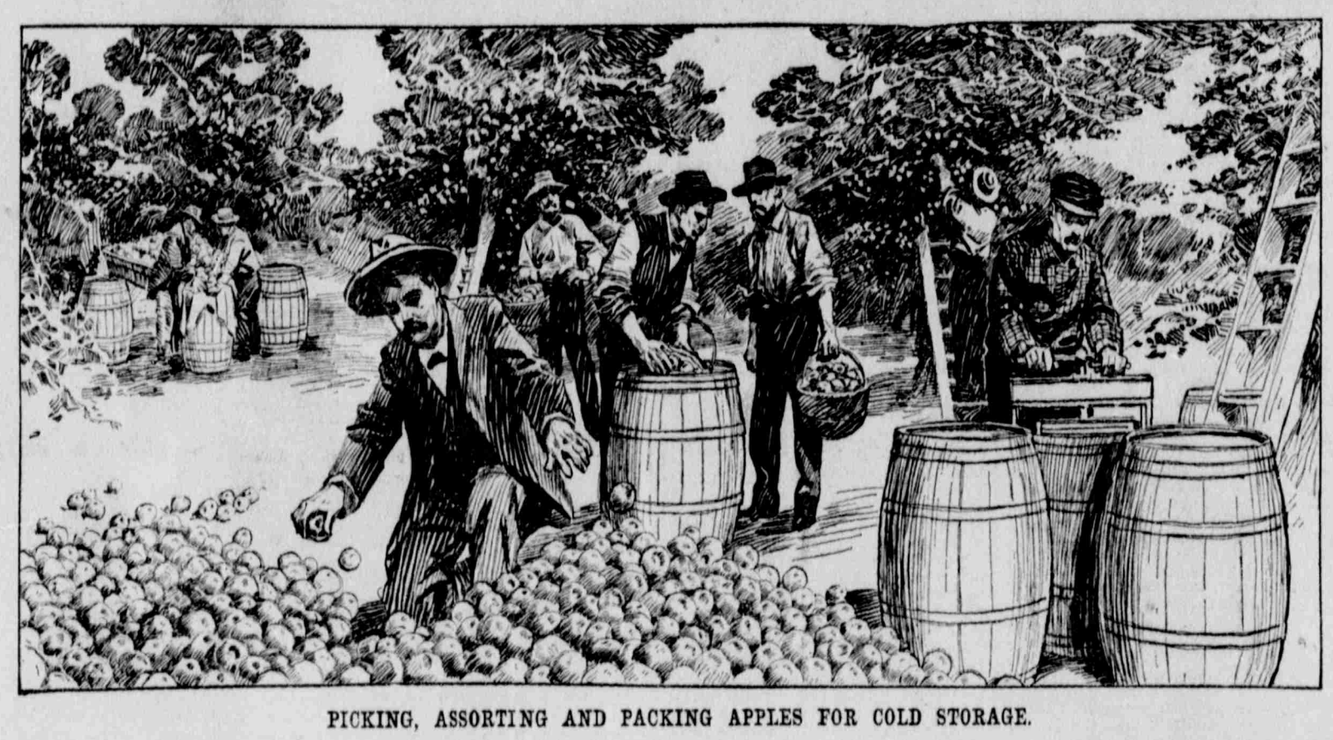
AMERICAN apples took the highest prize at the last Paris exposition, and the great superiority of our fruit over any raised in Europe has long been admitted. We have, especially in our northern tier of states, just the right combination of soil and climate for producing apples of the finest flavor, high color and good keeping qualities; but the northern grown American apple also owes its fame abroad to the great care taken in packing it for market. Rapid transit, low rates for freight and, above all, ample facilities for cold storage (by means of which fruit may be kept until well into the winter and toward spring, when prices are highest)—all have combined to make apple culture very profitable of late.

The apple gathering season is now at its height, and the growers are being visited by the agents of city packers, who are in the orchards as soon as the extent of the crop has been determined and ready to contract for the best fruit on the trees. It must be hand picked, ripe and sound, but not mellow. Selecting the grade contracted for, the packer's expert first lays two courses of apples at the bottom of a barrel, his assistant emptying in a bushel slowly without bruising, shaking them up smartly, another bushel and another shaking succeeding, until the barrel is two-thirds full.

The last and third bushel is packed in by hand, two courses being left above the top of the barrel. The problem then is to fit in the head in spite of the heaped up apples, and this is accomplished by means of a press, a simple but powerful affair constructed of two uprights made of one and a quarter inch steel bent at the ends to fit under the bottom of the barrel and resist the pressure which comes from a screw head fastened to the other end. At the bottom of the screw is a movable pressure bar the exact diameter of the barrel at the top, and beneath this the head is arranged above the apples. Gentle but persistent pressure is then applied until the fruit is forced inside the barrel and the head in place, when it is firmly nailed, and the apples are ready for storage.

For two or three months after packing there is sufficient resistance from within the barrel to hold the head in place, but after that the apples shrink, and at the end of six months, if still in storage, the packer opens the barrel and fills it as in the first instance. Expert packing makes the difference between a full and a "slack" barrel, which is also the difference between profit and loss when the fruit is auctioned off abroad, say at Liverpool, for the "slacks" bring only one-fourth to one-eighth the price of full ones.

The longer apples can be kept, other things being normal, the higher the price they bring. Six months is generally the limit, and in the interval between packing and reaching the consumer they are preserved in cold storage. The largest packers, who are at the same time wholesale dealers in fruits, own or control cold storage plants and in a good year like this rent additional space, usually in the cities or centers of distribution and at points widely distributed. Storehouses are erected in the producing districts, so that the fruit may be shipped as directly as possible, yet it often happens that a city consumer near the apple growing districts will receive fruit raised within a short distance of his home which has traveled many hundred miles to and from the cold storage plant where it was kept until taken out for market.



PICKING, ASSORTING AND PACKING APPLES FOR COLD STORAGE.

Pears are packed and held in the same manner as apples, but cannot be kept so long in storage. In some sections, as in California, both fruits are packed in boxes, but the same care is used, whether put up in this shape or in barrels. The apple crop is so large this year that there is promise of a dearth of barrels to meet the demand. A barrel costs the packer about 35 cents delivered at the orchard, the fruit to fill it $1 for No. 1 grade, the cost of sorting, packing, freight from orchard to storage and other incidentals bringing the total up to quite $2 per barrel. Freightage across the ocean, say from New York to Liverpool, varies from 40 to 70 cents per barrel, to which must be added the cost of commissions and incidentals.

The first American apples are said to have gone across the Atlantic with rare old Ben Franklin in 1758, and their flavor so appealed to the British taste that they were in great demand at fourpence each. More than fifty years ago the famous Newtown Pippins sold in London at $21 per barrel, the nobility scrambling for them at a guinea a dozen. Just at present the full flavored Baldwins and Ben Davis varieties are in high favor, foreign tastes running to color and shape as much as to fine eating qualities. In foreign shipments, above all, the keeping quality of the fruit is to be considered, as it is well known that a single "mushy" apple will spoil a whole barrel full.

The man with an apple orchard is in great luck this year, for from all over the country come reports of full crops, which mean small fortunes to those who have thousands of trees. From the long established orchards of the New England and middle states, from the middle west and the north Pacific coast—all through the great and ever extending apple belt, in fact—the cry goes up for barrels and boxes for the abundant yield.

When the American apple growers hold their congress at St. Louis next month, famous old "Johnny Appleseed," who scattered blessings and prosperity in his wake over a large portion of the country now teeming with its wealth of luscious fruit, should have a monument voted to his memory.

ELBERT O. WOODSON.

LAST LINK in the GIRDLE around the WORLD

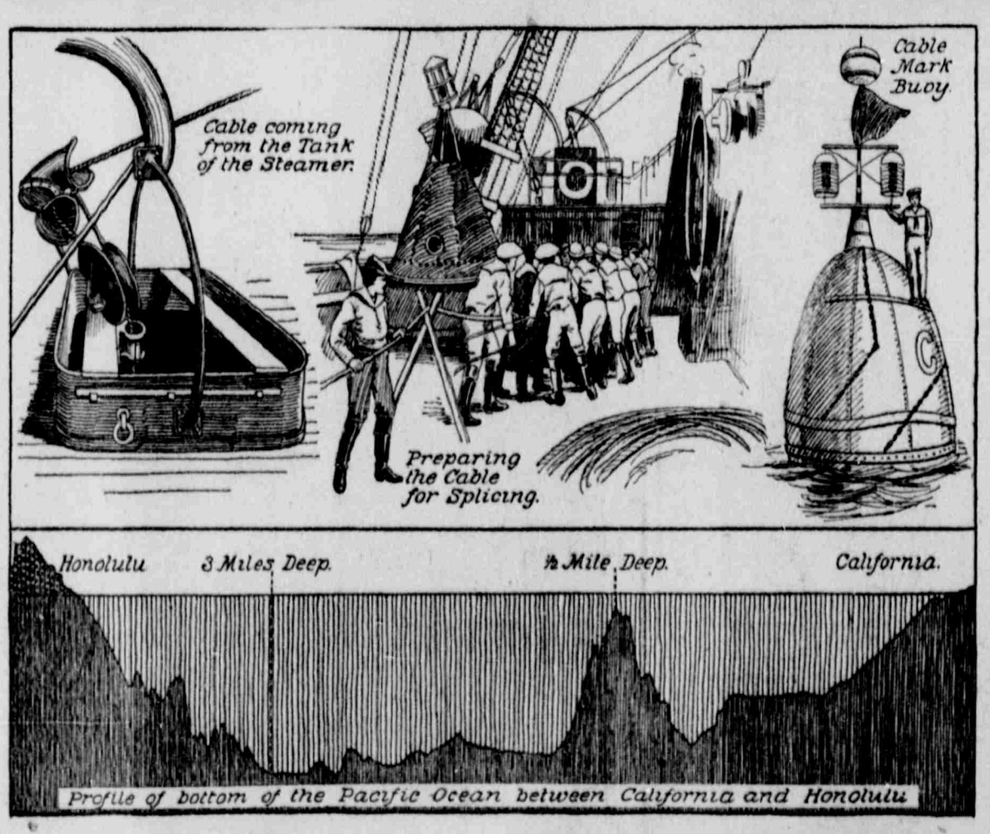
THIS year and next will witness at least two great events for which the world has long been waiting. The first is the laying of a telegraph cable between San Francisco and Honolulu, the two points to be in communication by next Christmas; the second the completion of a transpacific cable to the Philippines, promised for July 4, 1903. Eight thousand miles of cable are being woven in England at the rate of 300 miles a week, and at the present writing the good ship Silvertown is on her way to San Francisco via Cape Horn with 10,000 tons aboard for the Hawaiian section—2,413 miles—coiled within its gigantic tanks and all ready for laying. This cable is wound around three immense spools, each thirty feet in diameter, and the unwinding process is expected to begin early in December, immediately after the arrival of the Silvertown at San Francisco, where connection will be made with the shore approach, seven miles in length, and finished within two weeks thereafter. Owing to the improved machinery adopted and the recent inventions for paying out and regulating the tension on the cable, it is said that the steamer will be able to proceed at the rate of six or seven miles an hour.

The distance between the California coast at or near San Francisco and Honolulu is given as about 2,100 miles, but some allowance must be made for "slacks," estimated at about 15 per cent. The entire distance is estimated at about 8,000 miles, with all allowances for "slacks," and the two remaining sections, to cover the distance between the Hawaiian Islands and the Philippines via Midway island and Guam, will be taken out in the cable ships Anglia and Colonia, which are at present engaged in laying the all British Pacific cable between Vancouver and Australia. The British cable, which is a few miles longer than the American, will doubtless be the first completed, as it is already laid to or beyond Fanning island, which lies to the southeast of Hawaii. As it is intended to establish cable stations only on islands belonging to Great Britain, the first straightaway stretch of this cable exceeds 3,560 miles, the distance between Vancouver and Fanning, from which latter point it is 2,030 miles more to the Fijis, and thence 1,500 miles to New Zealand, which is 834 miles from Queensland. So it will be seen that the all American line has a distinct advantage in point of short relays, Midway island being only 1,300 miles from Hawaii, Guam 2,640 miles farther westward and 1,370 from the Philippines.

The length of the first section of the all American cable is just about the same as the shortest transatlantic, and as no peculiarly difficult problems present themselves to be solved it is not expected that there will be any obstruction to the continuous progress of the work, great as it is.

It was an American, as all the world knows, who conceived and brought to a successful consummation the first transatlantic cable, and it is an American company (though with English affiliations)—the Commercial Pacific cable—that has undertaken the gigantic task of spanning the Pacific gap in the telegraphic belt around the globe. Although the cable is constructed and laid by a private company at a total expense of from $10,000,000 to $12,000,000, the United States government has all the benefits of the service at low rates and exclusive use and censorship of dispatches in time of war. This is an advantage which can hardly be overestimated, especially in view of the fact that the British government is laying its own cable across the Pacific in order to secure an exclusive control of telegraphic communication all around the world.

The all American cable will cross the all British at a point about two-thirds the distance between San Francisco and Honolulu. The average depth between these two points is said to be about 3,000 fathoms, the deepest soundings in the Pacific having been found near Guam, of nearly five miles. To span the submarine valleys and withstand the terrific tension a cable of great strength was necessary. It will be only an inch or so in thickness, however, in the deep sea portion and about two and one-half inches thick in the shore and shallow water stretches. More copper will be used than in the old cables, the weight of copper wire being 500 pounds per knot as against 300 pounds in the old styles. By the relatively greater use of this metal the efficiency of the cable is increased and also its durability. The process of manufacture, however, is the same as heretofore, the copper wires for the conductor being twisted together by machinery, covered with an insulating material, as gutta percha or india rubber, and this core inclosed within a water and air proof envelope of jute yarn, steel wire and bitumen. The complete cable is coiled away in vast tanks in the hold of the cable ship and is run out over a large pulley at the stern. On its way overboard it passes over and under several "retarding wheels," then around a brake wheel, by means of which the speed is regulated, and then under a dynamometer, which indicates the amount of strain. The cable must be continually taut in order to take up the kinks and slacks, yet not subject to a strain approaching the breaking point. If it happens that a break occurs or all available cable has been laid, the end is hermetically sealed and, after being attached to a rope, is carefully lowered to the ocean bed, a buoy being attached to indicate its location.



Observations of latitude and longitude constantly made enable the commander of the ship to relocate the submerged cable and by means of electrical tests, continually going on, accurate locations of any break can be made as well as communication kept up with the shore.

It has been stated by Mr. George Gray Ward, the vice president and general manager of the Commercial Cable company, who has been connected with cable laying for more than thirty years, that the rate for messages to Honolulu will be about 50 cents per word, and if there are people in the United States who wish to send Christmas messages to the Sandwich Islands next December they will be enabled to do so at this tariff.

TRUMAN L. ELTON.

HOW HE SAVED HIS MONEY.

A story comes from South Africa of how an elderly English miner saved his little fortune from the hands of the Boers. When the war was on the verge of breaking out, he made up his mind to leave the Transvaal for Natal.

He had to carry all his money with him and knew that the Boers would certainly take every penny they could find from him. So he hammered his gold into clasps and clamps for his box, nailed them on and gave them a good coating of paint. As he expected, he fell into the hands of the enemy, and his box was thoroughly searched. But the trick was never suspected, and he got his $1,500 worth of gold in safety to British territory.

UTILIZING CHIMNEY SMOKE.

In Brussels, Malines and other Belgian towns a novel method of not only getting rid of smoke, but of turning it to good account, has recently been employed. The smoke is driven by a ventilating fan into a filter filled with porous material, over which a continuous stream of petroleum, benzine, alcohol or some liquid hydrocarbon flows. The result is that the smoke is entirely suppressed, while the filter yields a gas of great heating power, which can be used for domestic purposes and for driving gas engines. The filtering material itself also becomes a good combustible during the process.

SHORT AND TO THE POINT.

Russia will send her Siberian exhibit to the world's fair at St. Louis through the agency of the East Chinese railroad.

At Hammerfest, Norway, the sun does not set for twenty-eight times twenty-four hours. During that time the natives have only about four hours of sleep out of twenty-four and do not seem to want more.

In 1886 every child in the public schools cost Prussia $6 a year. Today the cost is $12. The total sum expended last year on public schools was 269,942,374 marks ($65,786,160).

It is probably owing to the wretched sleeping accommodations provided for sailors that 28 per cent of all deaths in German marine hospitals are caused by tuberculosis.

In southwest Missouri on a single peach farm there were employed 3,600 pickers this year. There are 137,000 trees on the farm, which yielded about five bushels to the tree. The box material purchased to [illegible] the crop cost $25,000. About 800 cars were shipped from this one farm this year.

Eagles fly at a height of 9,000 feet, crows up to 4,500 feet; the lark rises 3,000 feet.

There are 40,000 more children of school age than seats in the New York schools.

The Rocky mountain locust or grasshopper in 1874 destroyed $100,000,000 of crops in Kansas, Missouri, Nebraska and Iowa, and the indirect loss was probably as much more.

The hair on the heads of most of the hundreds of thousands of dolls exhibited in shop windows is made from that of the Angora goat.

The cathedral at Gothenburg, "the Swedish Venice," which threatens to share the fate of the campanile, is only a hundred years old. It burned down in 1721 and again in 1802.

Coal oil for fuel has come so generally into use in San Francisco that two incoming ships bringing coal in ballast recently were obliged to sell it at a loss.

A church census of Chicago shows that 14 per cent of the adult male residents attend church on Sunday.

The grounds of coffee after using the liquid are excellent to mix with the earth used in flowerpots. They keep the earth moist and, it is claimed, facilitate blossoming.

There is an authenticated record of ninety-six sheep being killed by a single lightning stroke in Colorado.

According to the census of 1901, the population of British India amounts to above 295,000,000 persons.