# MAKING A BICYCLE.

## AN INTRICATE AND COSTLY PROCESS.

### Five Hundred Parts in a Wheel.

Bicycle manufacturing depends for its success chiefly upon skilled labor. When you skim along lightly and rapidly on your wheel you are apt to think that it is the strength of the component parts that enables you to do this. The strength of the parts is one element, the putting of them together is a far more important element, and one that requires the greatest skill.

The price of a wheel in every instance represents the amount of skilled labor in its construction. The materials themselves cost but little. Probably $15 to $20 will represent the cost of material. The rest is labor. So when you buy a high-grade wheel you buy the best that intelligent artisanship can produce. There are but few, or possibly a dozen, high-grade wheels made. The cheaper grades are legion.

The various parts of the bicycle must be absolutely perfect and capable of standing exactly their proportion of the whole strain. They must be adjusted with the nicety of a watch in order to get the most out of them. There are 500 parts in a bicycle, counting each spoke separately and the 150 and odd miniature steel balls in the bearings. The rivets of the chain, the links, nuts and bolts number 138 separate pieces. The old saying of a chain being only as strong as its weakest link holds good in the bicycle. The chain is naturally a most important feature, ranking in importance with the tire and the rims.

The frame and most of the metal parts of a bicycle of the high grade are made of Swedish steel, on which, of course, Uncle Sam collects a good, generous tariff. There is an English steel which is also good, but the Swedish has the call. Both are made by secret process. This steel is imported in the form of tubing, and is cut into parts of various lengths, which are brazed together to make the frame. The brazing is all-important to the rigidity of the frame. Without rigidity a wheel would never stand cross country riding. The bracing is done under enormous heat, and the testing is repeated again and again.

In a bicycle factory, spokes, rims, sprockets, frames, etc., are all tested before they are adjudged to be ready for use. Each of these parts sustains a strain that has been figured out to a nicety. The testing machine can exert a tension or compression of from a few ounces up to 100,000 pounds. When the full power is turned on its great jaws can tear apart a solid bar of steel as easily as a child peels a banana.

Each spoke has to stand so many pounds, the frame must do the same, the rim, the chain, the sprockets, hub, the front fork, pedals, cranks, handle bar and even the ball bearings must show that they are absolutely right. The coasting ability of a bicycle depends upon the "true" character of the bearings. To show how finely they are measured it will only be necessary to say that in the largest factories there is a machine which makes all the parts "true" down to one-tenth thousandth of an inch. This is getting bicycling down to a fine point, but the race for precedence among the big makers is fierce, and seemingly out of keeping with the general hilarity of the sport.

An interesting thing about a high grade bicycle is what is known in mechanics as the safety factor. Thus in the great high pressure modern guns the safety factor is twenty, or in other words, the gun is made twenty times stronger than the strain to be put upon it. Ordinarily guns have a safety factor of ten; boilers of six, bridges of five and other mechanical products about four. The bicycle of the old style weighed sixty pounds; the high grade machine of to-day weighs eighteen pounds, and the safety factor has been reduced to only 1.25.

This extraordinarily low safety factor is in deference to the demand for lightness, which just now is being carried to an extreme. Another year the tendency will be to make fewer light machines. The figure 1.25 above means that if any part of the wheel is imperfect to the extent of one quarter of its calculated strength, the machine may be crippled suddenly and the rider may have a bad fall.

It is doubtful if more than one or two manufacturers make the entire wheel. Some of them claim that they do, however. The fact is that the tires, the wood rims, the chains and the saddles, and also the lanterns are in most instances made by specialists. This cannot well be otherwise, because the four first mentioned require special knowledge, being really the most important elements of all good wheels. There are any number of tires, but a greatly less number of rims. The wood rim is one of the great discoveries. The wood is preferably white ash or hickory. Some firms use three or four pieces, glued and pressed together—laminated is the trade word—and then curved. The connecting ends are fastened in various ways. It has been found that wood rims have more resiliency—that is, power of resisting shock—than have steel rims. It took years to find this out. Now there is talk of paper rims. But whether made of steel, wood or paper, no rim ever made is able to withstand a collision if it is struck under speed.

### Suicides of Europe.

Germany leads the suicide list of Europe with 2.71 a year out of each 10,000 inhabitants. In the German army, however, the ratio rises to 6.33 out of every 10,000. Austria has only 1.63 suicides out of 10,000 people, while in her army she has twice the suicide death rate of any other European country—12.53.

The happy inhabitants of sunny Italy seldom commit suicide. Less than one person in every 20,000 Italians dies in this manner. The army of Italy has 4.07 deaths by suicide out of every 10,000.

Spain and Russia, both in their armies and in their civil life, have the smallest number of deaths from suicide, so it is not therefore possible to explain these figures by any comparison between the Latin and Slavonic races.

## CANARIES FOR CONVICTS.

### Michigan Prisoners Keep Them for Comfort and Profit.

Convicts in the Michigan State prison have many more favors than those of almost any other penitentiary in the United States, and it is the belief of the management of the institution that for this reason there are fewer outbreaks of lawlessness than are found elsewhere. Among the favors granted to them here is that of keeping and caring for birds. There are fully 600 feathered songsters in Michigan's principal penal institution, all owned and cared for by the convicts, and as soon as daylight approaches on bright mornings their sweet notes are heard in striking contrast to the natural feelings of their owners.

Many of the most hardened criminals, who from their general appearance and history would not be expected to care for anything of a refining nature, tenderly care for and caress their little pets.

More than three-quarters of the cells in the prison contain one or more canaries, and they are also found in various shops throughout the institution. During the day the cages are hung outside the cells to give the birds light and air, but as soon as the convict returns from work at night the cage is taken inside.

This practice has been carried on in the prison for years, and the officials say that instead of any detrimental effect being noticeable the little songsters have proved a benefit, as they not only give the cells a more homelike appearance, but they also wield a decided influence in the way of humanizing the most reckless and hardened criminal.

Beside being permitted to keep the birds for the sake of their company and influence, the convicts are also allowed to raise them to sell, and many a dollar is credited to the accounts of the prisoners from this source. Of course the convict handles none of the money realized from the sale of the birds until he is discharged, but it is placed to his credit in the prison bank.

It is interesting to walk up and down the prison corridors and note the different kinds of canaries in the cages, and more particularly to note the different methods adopted by the convicts in caring for their pets. All styles of cages are to be seen, and while one bird is provided with a veritable palace of a home and all the luxuries known in the bird world, the one in front of the next cell will have simply the plainest wood or wire cage and only the ordinary seed and water holders. This is also true in the shops, and the character of the convict can in almost every instance be safely estimated by the care he gives his feathered friends.

Through the day the music of the birds is hardly noticeable, although it can be heard more or less at almost any time, but on a bright morning the songsters are pleasingly noisy. One of the officials who has been connected with the prison for years says that when he first came to the prison the music of the birds in the morning made him wild, but he has now become so accustomed to it that the place would be terribly silent without it.

## THE CITY DEPARTMENTS.

### Under Reform Administration.

Will the taxpayers read over the bills that were passed by the Board of Aldermen on Tuesday, August 6, 1895. Here is a speciman of one of the bills: R. W. Carman, disinfectant, $249.55, for what? This is enough of disinfectant to disinfect the whole of Long Island City. Here are other specimens. A. Vaughan, incidental expenses, $5.60, for what? William E. Stewart, $12.96, for what? M. J. Goldner, sundry expenses, for what? F.H. Batterman, expenses, $7.50, for what! All of these named we believe are drawing good salaries of the taxpayers. What right has the taxpayers to pay for disinfectant for the City Hall cellars? How long must the taxpayers stand this, or in the words of Alderman McGee, mints an extravagance. And surely any taxpayer that will glance over the last batch of bills passed by the Board of Aldermen must agree with Alderman McGee's remarks on Mints extravagance and the loose manner the Department of Public Works is managed. Well may some make it their braggadocio that they have $25,000, when but only a little over two years ago they did not have that many cents. But in the words of that eloquent orator and brainy man, City Treasurer Knapp, who said without fear, "there is a day of judgment coming when the people will know all," and Chinfoo said there is a day coming when some fellow who did not have his car fare to ride with a few years ago and had to ride on shanks mare, and that some fellow may have to tell where the fast colt came from and a few more little matters the public may ask to know. Time will tell all and the people will have to confess they were damnably fooled in reform administration.

## DR. EDWARD BEECHER.

### He Was the Associate of His Brother, the Great Plymouth Divine.

The Rev. Dr. Edward Beecher was when he died in his 92nd year. The venerable clergyman had enjoyed good health all his life and sank gradually into a state of coma, which continued for ten hours before his death, as in the case of his most distinguished brother, Henry Ward Beecher.

Edward Beecher was the third son of the famous Dr. Lyman Beecher by his first wife, and was born at Easthampton, L. I., on August 27, 1803. He was prepared for college under his father's care, and was graduated from Yale in 1822. For the four following years he was tutor in the Hartford High School and at Yale.

All through his life he was an ardent advocate of physical culture and healthy athletics, and while a tutor at Yale he incurred the criticism of his superiors by engaging in a game of quoits with the pupils. Later on an article from his pen in the Christian Spectator on "The Duty of an Equitable Culture of All the Powers," in which he made a strong plea for healthy physical culture, attracted wide attention and gave a marked stimulus to the cultivation of college sports.

THE LATE DR. EDWARD BEECHER.

Dr. Beecher began his career as a minister in 1826 as the pastor of the Park Street Congregational Church in Boston. He retired from this charge in 1830 to become the President of the Illinois College at Jacksonville, where he remained for fourteen years. In 1844 he accepted a call to the Salem Church in Boston. His second Boston pastorage terminated in 1856, when he took charge of the Congregational Church at Galesburg, Ill. He remained there until 1862, when he came to Brooklyn to assist his brother, Henry Ward Beecher, in the editorial management of the Christian Union.

While engaged on the Christian Union he organized several Congregationalist churches in New Jersey. In 1785 he again put on the ministerial harness, and took charge of the little Congregational Church at Parkville, L. I. From the time of his arrival in Brooklyn in 1872 his home was in the Mason street house in Brooklyn, and in spite of his advanced agehe made almost daily trips to Parkville to attend to his pastoral duties. One night in April, 1889, while returning from Parkville after prayer meeting services, he was run over by a train at the Culver station at Ninth avenue and Twentieth street, and had one leg so badly crushed that it had to be amputated. To the surprise of the doctors he survived his injuries, and within a few months was restored apparently to his usual robust health. His widow was a Miss Jones, and they celebrated their sixty-fifth wedding anniversary on October 27, 1894. Their two sons are the Rev. Fred. W. Beecher, of Angelica, N. Y., and Eugene F. Beecher, of Brooklyn.

### The Town of Heidelberg.

Heidelberg is in natural location a curiously situated place. The town is built at the point where the Neckar River, shortly before it empties into the Rhine, emerges from a winding defile in the mountains. The river abuts so close to the mountain edge there is scarcely room for a town, so that the houses have been stretched out along one principal street. This is the so-called Hauptstrasse, or Main street, which is, of course, neither wonderful nor beautiful. It is simply a winding roadway, where one may observe various phases of German village life. The shops are nearly all located here, where not only the natives trade, but where are found all those various novelties and souvenirs which are distinctly of the place, and which tourists are so addicted to carrying home with them. The other leading street, and the one most frequented by foreigners, is the so-called Anlage, a broad, earth path beneath a double line of trees, adjoining at one end a small park. This is the aristocratic quarter, where nearly all the hotels are situated.

In common with all German towns and cities the soldier life on this street and elsewhere is very much in evidence. A regiment, with its stirring music, goes marching through the town once or twice a day to keep alive the martial spirit of the people, and to impress them with the power of the Government It would seem that there might be in Germany one or two particularly pretty little towns, such as this is, perhaps excluded from the military jurisdiction, where those people might resort who are not so fond of the army. The German Government, however, trusts so little in the innate goodness and reliability of the individual that such a course has never commended itself to it.

# MOCKING BIRDS.

## HOW THEY ARE CAUGHT FOR THE MARKETS.

### A Curious Industry Described by One Who Has Devoted Years to It. Methods Employed to Capture the Singers.

The most famous and successful hunter of mocking birds in this country is John Jacobs. He goes to Texas every spring and captures from 2,000 to 3,000; his average for a season is about 2,500. Long experience has made him familiar with the strange ways of these interesting feathered creatures. Said he yesterday:

"The most remarkable thing about a mocking bird is its way of laying out a range. In the autumn it goes South and establishes itself for the winter on a patch of ground that will yield berries and other food enough to last until the following spring. The tract is determined respecting boundaries with as much accuracy as a mining prospector would use in staking out a claim. Perhaps it may be only 50 yards square, or it may have a length and breadth of as much as 100 yards. The space depends mainly upon the food supply in sight; but the mocking bird is a great glutton, and wants ten times the quantity that would be necessary to keep him alive. Having laid out his range, the owner will defend it with his life, and no other fruit-eating bird is permitted to enter it.

"In this manner vast areas in Southwest Texas are thickly occupied by mocking birds, each of them holding his range against intrusion by neighbors whose tracts immediately adjoin his. Perhaps a boundary line will run through the middle of a bush, and, if it is disputed, you will see the pugnacious proprietors trying to settle the question by a conflict after the style of the duello. But the main anxiety of the feathered real estate owner is about tramps. There are always mocking birds without a location and eager to grab a suitable farm and settle upon it. The price of security for those who possess the claims is unceasing vigilance. Every bird has his watch tower on the topmost twig of the tallest tree in his domain.

"If a stranger is seen winging his way across the country, the first mocking bird who spies him utters a keen and very peculiar cry, which says, 'Look out! Here comes a tramp!' Immediately every mocking bird in the neighborhood echoes the shout and flies to his own watch-tower. If the tramp attempts to pause for a moment, the owner of the territory attacks him and drives him away. On entering the next range he is assailed by its occupant, and thus he is passed on out of sight. Eventually he finds a place where competitors are not so many and where he is able to secure a claim for himself.

"When very young, after leaving the nest, the mocking birds keep together in bunches, feeding along the river courses. At that stage of their career they have speckled breast feathers, which they shed after a while. When they are old enough to look out for themselves they are driven off the home range. After shedding they separate, and each one attends exclusively to his own affairs. Their most important business is to locate claims of their own. The tramps are usually young birds looking for homesteads.

"In winter the mocking bird doesn't do anything but eat and look out for tramps. Once in a while an interloper will steal into the range unobserved and feed under the cactus, keeping as still as death. The chosen food of the species consists chiefly of the fruit of the cactus, mistletoe, mesquite and poison ivy. The mistletoe is a parisitic plant that grows on trees, and it is propagated by the birds, which eat the little white berries and drop the seeds upon the branches of the tree. Thus they may be said to plant their own farms. The country I describe is very dry, and you will find mocking birds 50 miles or more from any water; but what they need in the way of moisture is obtained from the cactus and other juicy fruits.

'Some mocking birds are taken from the nest, but ordinarily they are captured by means of traps and decoys. For a decoy I use either a male or a female mocking bird, confined in a cage. The cage has a trap attachment. I put the cage anywhere in the range of a mocking bird. He regards the decoy bird as an intruder, and marches around the cage until he finds an entrance. He walks in for the purpose of attacking the captive bird, and the trap closes behind him. I come along at my leisure, take out one of the birds and set the cage in the next range. It is very easy. The birds I catch are males; a female mocking bird is of no use, inasmuch as it does not sing."

## CLEARED FOR ACTION.

### How the Chinese Vessels Got Ready for the Yalu Fight.

In an account of the Yalu sea fight between the Chinese and the Japanese vessels, written for the Century by Philo McGiffin, Commander of the Chinese man-of-war Chen Yuen, the writer says: From the outbreak of hostilities, officers and men had worked incessantly to put our ships into as efficient fighting trim as possible. Profiting by the lessons taught in the Tsi Yuen and Kwang Yih's hapless encounter with the enemy off Baker Island, Korea, on July 25, all boats were left behind, save one six-oared gig for each vessel. In case of disaster, quarter was not expected, nor was surrender contemplated. The fate of the ship was to be the fate of the crew. The Tsi Yuen's boats had been shattered and set on fire almost immediately, and had been extinguished only after much trouble, and after they had been rendered totally unserviceable.

The heavy steel gun-shields, one inch thick and over thirty feet in diameter, which covered the two pairs of 35.5 centimeter (12.2 inch) Krupps on the ironclads, were also removed. As they revolved with the guns a shot might easily jam them, and, being too thin to keep out any but light machine-gun missiles, they would have served only as man traps, since shells which might pass directly over the barbette and on when meeting no resistance, if intercepted by these shields would have penetrated and, bursting, have filled the entire closed space with flame and fragments. Subsequent experience proved the wisdom of this removal, for many a shell passed close over the heads of the gunners.

All unnecessary woodwork, rigging, etc., were taken away, the side wings of the bridge cut off, all hand rails and ladders removed, and rope or wire life-lines and "Jacob's ladders" substituted when possible. The shields on the 6-inch guns, bow and stern, were kept on to protect the gun-crews from the blast of the heavy guns where firing ahead or astern. The ships had been painted an "invisible gray." Hammocks were placed as a small protection to the men at the quick-firing guns, and within the superstructure sandbags were piled along the sides about three feet deep and four feet high. Lying inside of these on deck were kept some dozens of 100-pound shot and shell for the 6-inch guns, to promote quick service. Much of the glass was unshipped; the rest the Japanese unshipped for us in time. Coal in bags was also utilized for protection where possible. This protection by coal and sand-bags served admirably, a number of projectiles and fragments having been found in them after the battle. When the bugles sounded "action" but little remained to be done save to lower to the deck the ventilators, or wind sails (which obstructed the fire of the guns), to close scuttles, watertight doors, etc., and go to stations.

## THE OSAGE INDIANS.

### A Picture of Them By an ex-Trader.

"There are about 1,000 Osages," said John Florer not long ago to a Star writer. Mr. Florer was for almost 30 years one of the traders of the Osages, and owned a big Indian store at the camp of Gray Horse, in the Osage nation. "Of the 1,000 individuals," continued Mr. Florer. "some 400 are half breeds. The outfit has a reservation embracing about 1,500,000 acres of the richest land on earth, rolling prairie and water course, and here the unfettered Osage works his glad sweet will. He may fence it, plow it, graze it or let it alone. There are no strings on an Osage.

"As a historian to whom truth is precious, I must admit that the average Indian is very zealous at letting things alone. Work is not attractive to an Osage. As an agriculturist the Osage is considerable of a fake. I see a good deal of it when among the Indians. Oh, I'm very popular with them—what you might call widely known and loved by my guileless customers.

"It's easy enough to get along with the Indians once you understand them. They are a peculiar people, and one wants to figure on their being tremendous egotists. Nothing on earth is ever so important to an Indian as himself. To himself an Indian is always a tremendous affair—nothing else ever is. As illustrative of the innocent egotism of my blanket friends, I recall how one day an old Indian came panting up to the store, and remarked, with a woe-ridden look in his face:

"'Oh, my son, I am indeed near dead.' Here he laid his head on one side and rolled his eyes, as though it were surely his last appearance.

"'My heart is very heavy for my uncle,' I said in the Osage tongue. 'Will he not tell me what has caused this case of Katy-bar-the-door?'

"'Oh, my son,' said the Osage, in accents of weary dejection, 'I hired a white man to plow for me, and he is very wicked. If I leave him for a minute he will not plow. So I must stand by the field in the hot sun and watch, or nothing will be done. I have been obliged to stay there all day, that this white man should work, and now I fear I shall die.'

"Of course, my poor overworked Osage friend did not die. He lay down on the floor and rested his head on a sack of coffee. Then I gave him a stick of cinnamon to chew, which he denominated 'big medicine,' and after a while he recovered.

"The Osage," continued Mr Florer, "as I said, is not much of a husbandman. Wrapped in his red blanket, he scorns labor, and defies it. Were you to offer him his choice between a combined mower and reaper and a deck of cards he would reach for the deck of cards.

"Once in three months the Great Father goes down in his pocket for the poor Indian. Then it is 'payment day.' But this is not exactly largesse on the part of the Great Father. The fact is, he has in his inside pocket over $9,000,000, the bank roll of the Osage nation, which he keeps for them. So in this instance it is only the poor Indian receiving his own."

The cattle plague is prevailing in many parts of Russia.

## FASHION NOTES.

### Short Jottings of Interest to Our Lady Readers.

The Oriental stripes and cashmere designs so popular now in silks appear in the new wools.

A waist, which is a part of a white mull gown, made over pale green silk, has two wide frills of mull over the sleeves.

The latest French gowns are cut from the shoulder to the hem like a Princess dress, except in front, where they open over a printed vest and skirt of lace or silk.

Black and white striped parasols are very popular, and also black parasols trimmed with white, and they have the advantage of harmonizing with every gown.

Pretty gowns for morning wear are of finely striped blue and white or black and white linen, made with a short jacket fluted around the waist.

The fancy for buttons with odd devices is revived for very elegant gowns, especially those with waistcoats of satin, brocade or fancy silks, and these vary from buttons of cut metal to styles as costly as real gems.

The capes for late autumn will be made of Persian trimmed jetted plush, satin trimmed kersey, fur trimmed plain velvet or plush, braided Persian cloth, wide wale boucle cloth, and fine ladies' cloth in black and colors.

White alpaca with white silk facings on the coat, worn over a yellow satin vest, trimmed with string colored applique, arranged to form a point at the belt, is a very charming gown for garden parties as well as the races.

Dresses of ecru, batiste or linen, are lavishly trimmed with Scotch plaid ribbons. One of the most stylish of these is a dress of batiste with ribbon belt with loops and a ribbon collar. The popular collar of the moment does not fit the neck so closely as heretofore, but is drawn down and somewhat shaped to the neck of the dress. Very wide ribbon or two rows of ribbon are used, or silk or some thin fabric, such as crepon or silk muslin.

Very close shirring is again seen as a finish for waists. This sort of trimming is especially desirable for thin silk and non washable fabrics. Puffs on wash goods are too troublesome to be received with much favor.

With the autumn are promised waists of the most elaborate and elegant materials. Brocades of the richest description will be used for this purpose, and fancy velvets are to be popular.

Dove-colored slippers worked in fine jet are much admired.

A novelty is a black mohair cord, running through a colored wool crepon.

Broadcloths come in pretty shades of red and brown and green and pinkish tints.

Mohairs or alpacas are still playing a conspicuous role among the season's stuffs.

The newest sailor hats have high crowns in a color contrasting with that of the brim.

Black lace and insertion on sheer white costumes is a new wrinkle in fashion's domain.

Beautiful made up ribbon bretelles and girdles, arranged over elastic to remain in shape, are a novelty.

Although feathers are in use, flowers continue to be the most popular trimming for all kinds of millinery models.

Buttons of a white enamel set with a single tiny brilliant are beautiful for trimming white and ecru linen gowns.

Narrow lay down collars and cuffs of hemstitched linen or cambric are the latest thing for accessories on dark cloth costumes.

Undoubtedly the dressmakers will display trimmed skirts next season; whether they will be accepted or not time alone can tell.

One of the conspicuous fads of fashion are the plaid striped and flowered ribbons. They are the main feature of many thin gowns.

Blue is at present the important color in millinery and gowns.

### Big Fly Wheel of Wire.

Among the most recent and novel applications of wire, perhaps none has greater interest to the mechanical world than that presented by the wire fly wheel lately erected at the Mannesmann Tube Company's Works, Germany. Heavy fly wheels, driven at high velocities, obviously present dangers of breaking asunder from the great centrifugal force developed. The wheel at the factory mentioned consists of a cast iron hub or boss, to which two steel plate disks or checks, about 20 feet in diameter, are bolted. The peripheral space between the disks is filled in with some 70 tons of No. 5 steel wire, completely wound round the hub, and the tensile resistance thus obtained is far superior to any casting.

This huge fly wheel is driven at a speed of 240 revolutions per minute, or a peripheral velocity of about 2.8 miles per minute (250 feet per second, approximately), which is nearly three times the average speed of any express train in the world. The length of wire upon such a constructed fly wheel would be about 250 miles. The use of paper is also regarded with favor as a face for large fly wheels, the tensile strength of paper being enormous, and it is quite possible that some of the new big fly wheels will be built up with a paper rim.