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Spalding's Official Bicycle Guide

EDITED BY S. A. NELSON

Hints on Training

1897

Complete Records

Portraits of the Leading Riders, Information for Cyclists, etc.

PUBLISHED BY THE
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A. G. SPALDING.

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GEO. D. GIDEON,
Chairman L. A. W. Racing Board.

THE 1896 BICYCLE CIRCUIT.

NEVER since the inauguration of circuit chasing have there been such whirlwind finishes, such close wins and such a sharp fight for championship honors as characterized the circuiting of 1896.

The National Circuit opened at Oakland, Cal., on May 1, and ended at Washington, D.C., October 5. The work of the men from Oakland to San Antonio on June 5, comprising seven meets, was not of much importance, none of the real crackerjacks having yet entered. The stars up to this time were W. Edwards, Coulter and McFarland. At San Antonio Gardiner and Ziegler put in an appearance, the former gaining the mile open and the latter finishing second. At Laredo Gardiner again won the open, while Orlando Stevens landed the handicap. A two-day meet at Galveston's new track was next on the programme. There were five open races and no handicaps, of which Ziegler got two, while Gardiner, Jack Coburn and Stevens had to be content with one each.

From Galveston the money-chasers went to New Orleans, where Gardiner, Ziegler and McFarland were first over the tape in three close finishes. Little Rock's meet followed and Gardiner (twice), Clark and Stevens were the winners. The meet at Hot Springs was chiefly noticeable for the fact that Gardiner here met his first defeat, Ziegler succeeding in doing the trick. Terrill and McFarland won the two other races Gardiner again won the open at Kansas City, where a local man had a runaway in the handicap.

The three big meets of the year were Louisville, Springfield and Peoria, and the men next met at the last-named to do battle for the rich prizes the management had hung out. Peoria has always been a great racing town, but this year it excelled itself. In the three days of racing, June 27-29, every race was hotly contested, and the attendance reached as high as 10,000 a day. Cooper and Sanger joined the circuit here, and scooped in most of the open events, Cooper winning four firsts and one second, while Sanger took three firsts and a second. Poor

R. LINDSAY COLEMAN,
President National Board of Trade of Cycle Manufacturers.

Griebler, who died about one month afterward, took three firsts and a third. At Galesburg, Cooper and Sanger tied in one race and Tommie took the other. Davenport's meet was of little importance, no stars being there ; Woodlief, Starbuck and Hofer were the winners.

Two days at Appleton was the next circuit-chasers' gathering, and Bald disposed of those who claimed he was a "has been" by winning five races over Sanger, Ziegler and Gardiner. Bald again won the open at Chicago's meet and little "Pye" Bliss got one of the handicaps, Sanger at the same time winning an unpaced, for time, race. At Battle Creek Cooper and Bald met for the first time on the circuit, and each succeded in winning one race and getting a second to the other's first. Loughead and Mertens took the handicaps. At Windsor Cooper and Bald again broke even in two races and Harry Clark took the handicap.

At Lima, on July 29, occurred the first serious accident of the year, when Joseph Griebler, a speedy and popular rider of St. Cloud, Minn., met his death in one of the races. Cooper succeeded in winning the half-mile open, while Bald landed the mile, with Cooper second. Kimble captured the handicap. The indoor meet at Nashville was of little importance, Jay Eaton winning the majority of the races there.

August 13-15 was the date of the greatest National meet the League of American Wheelmen has ever seen. So much has been told about these contests that little more can be added, except that Cooper won the quarter, third and two mile championships, Tom Butler the half and one mile, and Becker the five mile. The latter race was the greatest exhibition of jockeying the American people had yet seen, and as a result, Cooper, who finished first, was disqualified, and the place given to a "plugger." It is doubtful, though, whether Cooper was any more to blame than others were. Bald at this stage was a great disappointment, seemingly having lost all his old fire. Of the other races, Tom Butler, Gardiner, W. Coburn and Nat Butler were the winners. Incompetent judging spoiled the finishes and heats of many races. C. C. Ingraham was the star amateur present. He had no difficulty in winning from the others as he wanted.

The racing from Louisville to Springfield went through Erie, Rochester, Binghamton, Saratoga, Bridgeport and Meriden. It resulted in the winning of six firsts for Tom Butler, whom none of the others seemed able to touch. The remainder of the events were divided between ten riders, Becker, Kimble and Kennedy being the only ones to score more than one win.

Whatever may be the city selected for the National assem-

TOM COOPER.

blage, Springfield always stands out as the banner meet. The two "Toms," Cooper and Butler, divided here the open events, Butler winning the first day and Cooper the second. Cooper captured the record race, the biggest race of the year, with Fred Hoyt, who had just left the amateur ranks, second, and Sanger third. Bald again made a failure, not winning a single race.

Boston's meet had the largest attendance of the year, 16,000 people going to see Reynolds, Tom Butler and Schrien win the three races on the card. Tom Butler had walk-overs at Manchester and Keene, but Loughead succeeded in beating him out in the mile open at the first-named place.

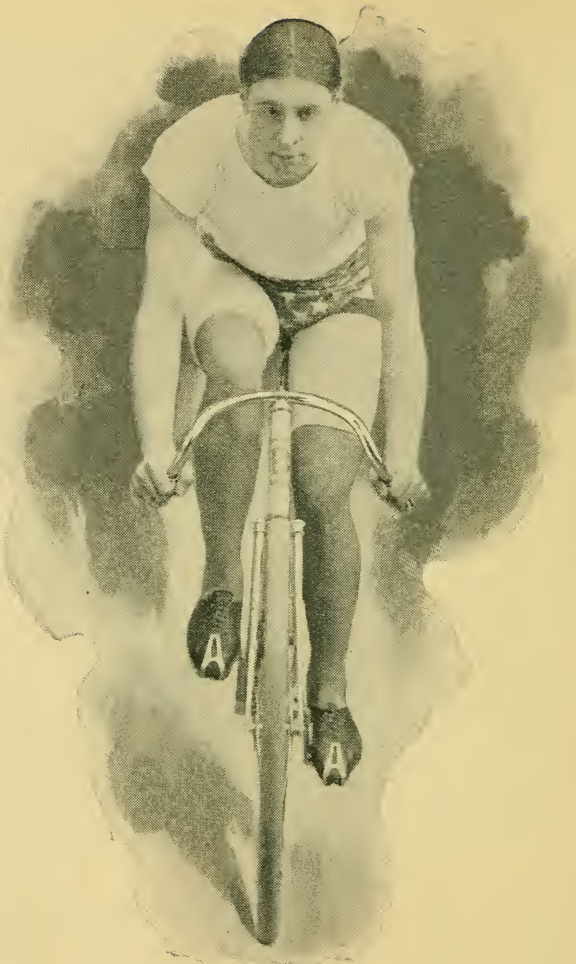
At Philadelphia, on September 12, little Earl Kiser beat out all the great stars in a race for a $250 first prize. Ziegler and Clark won the two handicaps. At Wilkesbarre, Bald and Ziegler each won a race. Sanger left the circuit here. The snappiest meet of the year took place at the Manhattan Beach track, New York, on September 18 and 19. Bald won the half mile handicap after one of the most sensational finishes of the year. Michael narrowly escaped defeat from the hands of Starbuck in the hour race, while the one mile invitation race, run in heats, resulted in each of four men winning a heat; it was necessary to postpone the race on account of a terrific rainstorm, with Cooper and Johnson only eligible for the final heat, Bald having been disqualified. In the run off at Waverly, Cooper won the open race, while Bald took second in a handicap won by Mertens.

At Plainfield, Bald and Cooper each won a race and Church took the handicap. At Newark, Bald took the open and a local rider the handicap. At Trenton, Gardiner and Cooper were the winners, the latter scoring in a handicap.

The season went out in a burst of glory at Washington, where Cooper, Gardiner and Bald entered in each of the three races. Bald won both open events, while Cooper was content with landing the handicap, in which the three scratch men came in one, two, three. So ended the circuit of 1896.

The number of firsts, seconds and thirds scored by riders on the National Circuit who have more than ten points follow:

Name.	1st.	2d.	3d.	Points	Name.	1st.	2d.	3d.	Points
Cooper	18	4	3	65	Coulter	3	4	4	21
Bald	15	8	4	65	Loughead	2	6	2	20
Gardiner	10	11	9	61	Kennedy	2	3	5	17
Butler	15	2	3	52	Mertens	3	2	3	16
Ziegler	7	8	10	47	Becker	5	0	1	16
Sanger	6	6	5	35	Parker	3	1	3	14
McFarland	3	7	4	27	Wells	2	2	2	12
Clark	5	3	4	25	W. Coburn	2	1	3	11
Stevens	3	5	7	26	Allen	0	4	3	11
Kimble	3	5	3	22	Baker	0	5	1	11



E. C. BALD.

Off the circuit, the pricipal meets were the Chicago Fourth of July gathering, where Cooper scooped in all the first prizes; Buffalo, August 3-5, where Ziegler, Bald and Butler won the big prizes, and the Coliseum, Chicago, during September, where Jay Eaton was the star. At indoor short distance racing Eaton has shown himself the peer of any other American rider.

If you take each man's record individually you will find Cooper has done the best work, with Butler and Bald not far behind. The number of races that the five crackerjacks entered on the National Circuit are as follows: Butler, 23; Cooper, 35; Sanger, 38; Bald, 43; Gardiner, 54. It may thus be seen that Bald entered eight more races than Cooper, so it is only fair to suppose that if the latter had entered as many races as his great racing opponent, he might have at least gained sufficient points to have given him the sole ownership of the top rung of the famous ladder.

Bald began the season well and ended it magnificently, but the majority of his intermediate work was of the commonplace sort. No one would be correct in declaring that Bald has lost any speed, since from the way he finished the season, beating every other star in the last few meets, it can be seen that his failures in midseason were due more to inability to take care of himself than to lack of sufficient speed. Granting all this, however, the fact remains that Cooper beat him in nearly 65 per cent. of the races in which they met.

Tom Butler's riding stamps him as the phenomenon of the year. This young 128-pound rider was on the circuit only six weeks, but in that short time he managed to beat out every other rider of note. He finished about even with Bald and Cooper in races in which they met. With a little more head work this youngster should next year be the strongest of competitors for top rung honors.

For good, steady work throughout the year one must not overlook Arthur Gardiner and Otto Ziegler. Gardiner was the first of the crackerjacks to join the circuit, and with but short absences he made the complete round of the circuit. Gardiner is speedy, but he has hardly proven himself as fast as Bald, Cooper or Butler. Ziegler's bad luck still stuck to him, and when the season was drawing to an end, and he had better than a fighting chance for championship honors, his arm was broken at Trenton, thus throwing him out of the game. Ziegler, as one of the squarest riders, deserves better luck.

Walter Sanger ("Wooden Shoes") was a disappointment. Zim's old opponent possesses speed, but he is inclined to make his jump at the finish a bit too soon, and is, in consequence, beaten at the tape, the other riders using him as a wind shield.

TOM AND NAT BUTLER.

Of last year's amateur talent, McFarland, Clark, Loughead, Kimble, Newton, Hoyt and Stevens proved to have the most speed, with Loughead and Hoyt seemingly the best of the lot. —W. M. S. in *The Wheel.*

The Bald-Cooper Controversy.

At the end of the season Cooper claimed absolute supremacy over his rivals, and in an interesting interview scored many telling points. He said:

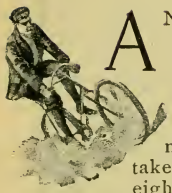
"There is a great deal on the inside of racing which never gets to the public, but when the dispute is decided by Chairman Gideon, I think that I will be four points in the lead. You see, the compiler of the so-called points and percentages only counts the races run on the National Circuit, and I did not pay much attention to them, taking part in only twelve National meets, as I have been racing where the money was to be found. For instance, on Fourth of July Bald rode at a National meet and won $125, while I went to Chicago and won $875. So it has been throughout the year. My actual winnings amounted to $5,620, which is over $2,000 more than Bald won or any other racer in the country. I never paid any attention to the point system and only at the last moment was told that I was near the top.

"To be candid, I do not think much of the system, as it does an injustice to many riders and is worked to the advantage of others. At Manhattan Beach it took five heats to decide a race, and I won three thirds and a final. Bald was disqualified in one heat, but not for the race, as I think he should have been. The compiler in making up the table, made it one race for points and five in the percentage table, which, of course, helps Bald. A race at Philadelphia will serve to illustrate how the system is worked. The conditions were that heat winners only could qualify for the final. I won my heat but Bald lost his, and in the final I was third. According to the system, my percentage went down, while Bald's was not affected.

"If all the races we ran during the year were tabulated, I would be far ahead, having won 41 firsts, and Bald 27. We have raced against each other 36 times, and of these I have won 24, which ought to serve as a guide to the year's work. Suppose that I had been winning from Bald at various meets, and then we struck the National circuit for a day. If he beat me it would count in the table, but my previous winnings would not be considered. The races of the year are considered to be at Louisville and Springfield, and at the former meet I won four National championships, and at Springfield, the record race, which is considered the race of the year."

JOHN S. JOHNSON.

HILL CLIMBING.



A NOTED English hill climber, F. L. Wale, contributes an interesting chapter to cycling on scientific hill-climbing, as follows:

"'Why cannot I climb hills?' is a question so frequently addressed to me, and so much useless advice is from time to time given to novices on the subject, that I feel called upon to take up the pen for a few remarks, the result of eight years' experience in hill contests.

"The tourist in a pith helmet on a solid-tired tricycle, who never climbed a gradient of 1 in 15 in his life, and is great on 'strains,' is usually imbued also with the idea that hill climbing requires the strength of a buffalo. Now, there is no athletic sport in which skill stands so pre-eminent over simple force, as in hill climbing on the bicycle. I have seen a lady properly positioned and instructed ride up the Castle Hill at Dover with supreme ease, while her brother, a magnificent young athlete, possessing twenty times her strength, could not climb 150 yards of it, until I had similarly coached him into style.

"The American advice, 'Don't sit on your wheel like a lump of innocuous desuetude, it hurts the wheel, somehow,' is particularly applicable to hill climbing. I remember in my young days I once tried to climb a steep hill by sitting back and pulling on the handles, an authority, whose sole recommendation being age and total ignorance, having told me not to drive with my weight, because it would strain the machine. The machine was a roadster, weighing 43 pounds. I sat on it like a sack of coals, and acting under instructions, endeavored to ride by muscular force alone, with the only result that I twisted the handles up and tore the crank bracket out of the frame, not having climbed half the hill. Since then I have gone up the same ascent scores of times on a path racer weighing 22 pounds, without damaging it in the least.

"Every boxer knows how impossible it is to deal an effective blow, unless the whole bodily weight seconds the stroke, and precisely similar is hill climbing. You cannot climb hills

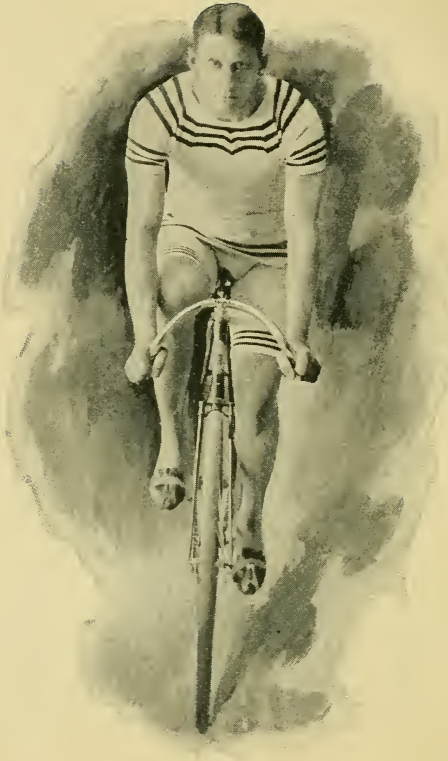
WALTER SANGER.

unless you bring your centre of gravity over the falling pedal. In these days of exceedingly rapid pedaling, racing men are not nearly so attentive to ankle action as formerly, but the hill-climber must be, since, without it, the machine will stop when the pedals come to the dead centre. It must be borne in mind that on a hill there is no momentum, and the machine will only run just as far as you can shove it. Therefore, as the pedal rises, the heel must be dropped and a forward push made, assisted by a little pull at the handles; a pull which draws the rider forward and downward, so that his centre of gravity is kept exactly over the moving crank. Only experience can gauge how far forward one must lean to do this. If the saddle is pitched well over the cranks, very little leaning down is required, but then the forward thrust at the commencement of the stroke becomes correspondingly difficult. Generally speaking, the extreme back of the saddle should be about eleven inches behind a plumb line dropped through the crank axle, and the handles seven inches in front, and about level with the saddle. To have them very far forward or low down, is the stamp of a novice, and will probably result in the rider being dragged out of the saddle in pulling on them, his centre of gravity thrown in advance of, instead of over his pedal, and he himself unable to sit upright for a rest when fatigued. Change of position from time to time is essential on a long hill, or the rider will become exhausted.

"Do not roll from side to side in order to get your weight upon the pedals, or shift about in the saddle. All that is necessary is to lean exactly over them, and, if going slowly, to incline forward as they move forward.

"This is the object of that constant nodding movement observable in all champion hill climbers.

"Sometimes a hill will be encountered of such steepness that the rider cannot, while remaining in his saddle, get any of his weight upon the cranks. This is the crucial test of hill riding, for it then becomes necessary to leave the saddle and ride by standing upon the pedals and gripping the handle bar. In this attitude, unless the ankle action is perfection, one pedal being pushed forward before the other has got to the end of its stroke, the machine will invariably wobble, and then stop dead; so that when the cyclist can ride a steep ascent in this fashion, he may conclude that he has nothing more to learn. Though necessarily tiring, I frequently use it on ordinary hills for the sake of resting other muscles, it being a completely different action. It is very useful—indeed, essential—in driving a high gear, and though the ancient lights I have before mentioned, always informed me that it would rack a machine to pieces,



J. COBURN.

and was 'bad form,' I have been riding a path racer in this 'bad form' for three seasons on the road, and haven't noticed any 'falling to pieces' about it.

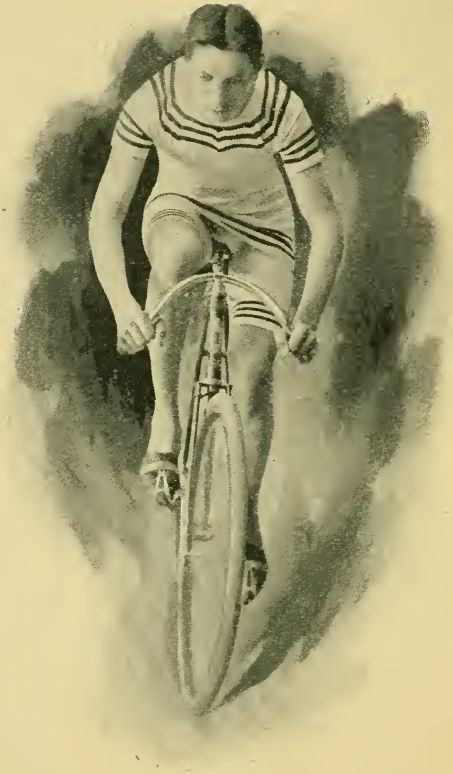
"Needless to say, stamping and jumping on a machine is of no use at all, except to bend the pedal pins.

"As to cranks, I have tried every length from 4½ to 9 inches, but always went fastest down hill and easiest up with a crank of 7 inches, and from this I gather that best length of crank is exactly one-fifth the length of the rider's leg, mine being 35 inches. Other riders, who have had an opportunity of trying for themselves, bear me out; and the style of riding that requires exceedingly short cranks, and the saddle a long way back, can be set down as irretrievably clumsy; so clumsy, indeed, that modern competition has knocked it off the race path.

"In conclusion, while granting that great speed uphill does require strength, I would have it understood that the average rider of a first grade machine would, if he liked to learn to ride, find it decidedly easier to ride than to walk up almost any mainroad hill to-day. And for habitual and really stylish climbers, I can conceive no hill that is open to horse traffic, being beyond their powers." F. L. WALE.

BRAKES.

Owing to the many fatal accidents this year caused by the absence of brakes, the brake question has aroused much discussion. Now, one of the first points to be regarded in appraising the virtues of a bicycle is the possession of a good brake. The best of machines lacking this is but a trap for the possessor; indeed, the better the machine in other particulars—the more delicate the adjustment of its bearings and the freer its running—the more need of a controlling power which shall keep those qualities well in hand; for, like fire, they are excellent servants but bad masters, particularly on the downward slope of an uncertain hill. The brake, to be thoroughly effective, should be strong enough to bring the machine to a complete standstill on any hill which a sane person would ride. If there be much "way" on the machine, particularly if the grade be steep, it is too much to expect that the brake should pull the machine up "dead"; indeed, the attempt to do so might not improbably cause the rider to perform a somersault over the handles, but within two or three yards, at most, it should be brought to a complete standstill, and any brake which will not do this must be branded "inefficient."



W. COBURN.

COASTING.

ONE of the leading daily papers in Chicago organized an open coasting match; that is, open to all riders, if they conformed to the rules as regards weight of both machine and riders, etc., and the machines were all to be regular stock, as marketed by the manufacturers. The result of this race, as well as another of the same kind held shortly before in another city, caused the writer considerable thought, as he had won many of the coasting races in the good old "high wheel" days, when the tires on all the machines were of solid rubber and there was no particular advantage in one tire over another.

Under the present conditions, a coasting race is not really a test of the running qualities of a machine as many suppose and as mentioned in newspaper articles that often appear, for the bearings of the majority of the machines have bearing cones and cases that are so nearly alike that the running qualities of them are not in the least affected by the slight differences in form or angle of the ball contacts, especially when the machine is being ridden down hill, with no strain whatever on the bearings except that of the weight of the rider and the machine itself. It is rather a test of the resilient qualities of the tires on the machine, as the speed of the wheel, when coasting and the distance it will go after it has reached the lowest part of the decline, depends almost entirely on the condition of the tires used.

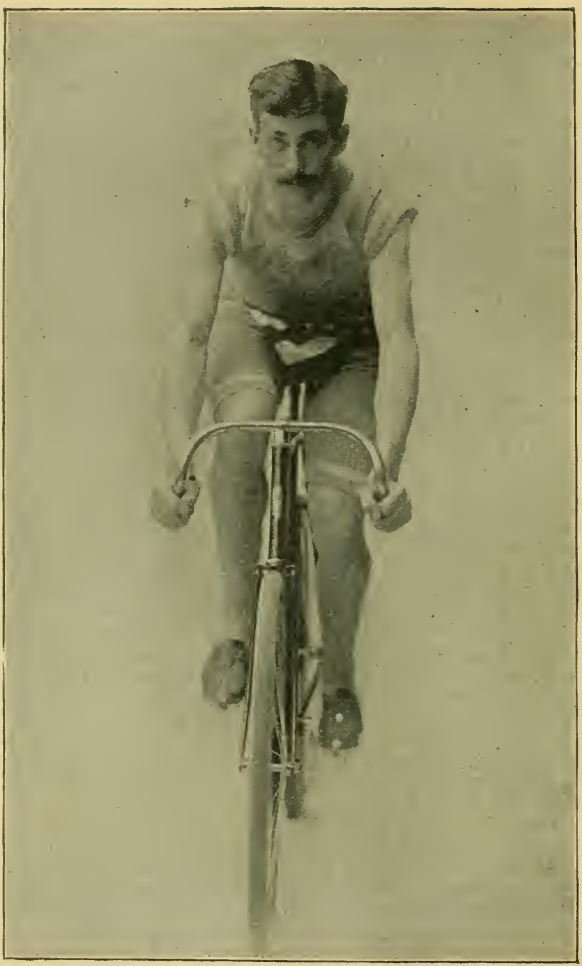
The writer took his own machine and coasted the hill with others who intended to enter the race, and did not make any changes in the details of the machine, finding that with the regular road tires the machine would coast as far as the average of the others on the hill. After taking the machine apart and thoroughly cleaning the bearings, but still with the same tires, there was found to be but a slight difference in the running or the distance the machine would coast. Then the tires were changed for lighter ones and the extra distance the wheel

JAY EATON.

coasted was very much greater than shown after the bearings were cleaned. The tires were again exchanged for others that were larger in diameter and still thinner in fabric and rubber, with still better results. It was proved in a convincing manner to those who saw the experiments that the tires on that particular machine were practically all that made the machine coast farther and better than others of the same make on the hill. Still another fact regarding the tires that made considerable difference was that they ran perfectly true, and when a lead pencil was placed on the frame near the tire and the wheel revolved fast, there was not a single place in the whole circumference that was one sixty-fourth of an inch out of true. This, of course, would make the wheel run much smoother and not tend to make it bound and thump along the street, as altogether too many tires do that are supplied as regular equipment on bicycles.

When the race took place, it was gratifying to note that the machines that won all the best places were all fitted with very thin, light, racing tires of a large diameter, blown up as hard as they would stand without exploding, and they were found to be as true on the outside as it was possible to make them; in fact, much more true than ever seen in any other tire, unless it may be a sample pair used to sell from. The machines that won the race were protested on the ground that they were of special construction, and were held after the race to be examined by a board of mechanical experts, of which the writer was a member. After taking them apart and examining the parts closely, they were found to be no different from the regular output, with the exception of the tires, and as these tires were made as a standard article and supplied to anyone calling for them, the protest was not allowed. The result of the investigation, however, was proof enough of the reason of the wheels running so much better than other makes that were all fitted with tires of standard sizes and weights. The bearings in the winning machines were of the same general form as in most others, with the exception that they may have been made a trifle more carefully than some.

Another noticeable thing during the race was that many of the riders carried weights on their backs in the form of bags filled with shot, and they may have found it an advantage, but it is impossible to see where the advantage comes in, under the circumstances, as at the bottom of the hill the street began to rise again, and the extra weight carried must necessarily be raised again when going up the incline. If the bottom of the hill terminated in a level the result would be different, as the additional weight would have helped to propel the machine



J. F. STARBUCK.

against the air resistance and overcome the friction of the bearings, on account of the momentum received when going down the steep part of the hill. At the critical point in the hill the machines were going so slow that it was almost impossible to keep the balance, and the momentum obtained by the use of weights did not amount to much.

The writer weighs about 155 pounds, and he weighted himself up to nearly 200 pounds before the race, when experimenting, as that was the limit that was allowed in the weight of the riders. With the weights on he could not go nearly as far as with them off, and after making several trials took them off again. This same result was found by many others who tried the experiment, and they did not use the weights in the race. In the weight of the machine, however, a different result was obtained, and as the limit in weight was 30 pounds and the writer's machine only weighed 28 pounds, he applied weights to the frame to make up the difference. Then the weights were changed to other points and the advantage gained did not amount to very much. It then occurred to him that if the weight were all placed in the rims of the wheels, the result might be better. The tires were taken off and a strip of lead the same width of the rim was placed around the same, and bent into a grooved form, after which the tires were cemented in the lead strips in the same manner as they were formerly in the wood rims, after which the machine was found to coast much faster and farther, also more steadily than before, when using the same tires. After completing the experiments, the latter method was found the only one that showed any advantage in adding weight to either the machine or the rider, and strange to say, this method was not adopted by anyone on the course.

As one of the principal things that must be taken into consideration is the air resistance, there were many positions taken by the riders that were more effective than graceful. The position generally adopted, and which gave the best results, was one in which the rider places the heel of his left foot against the forward part of the seat pillar tube and the toe on top of the lower diamond tube, both points being rested on the top of the other one. The knees are kept as close as possible to the upper frame tube and the rider leans as far forward as is possible and retain the last dinner. The head is kept low down, near the handle bar, and it is such a strained position that it is almost impossible to see where the machine is being steered. The saddles were placed as far forward as they could be without the rider striking his knees against the handle bar, and some even turned the bars around so that the handles were brought far forward of the handle bar post, as in this manner the weight

W. E. BECKER.

was more evenly divided on the two wheels of the machine, which is a great advantage in coasting. A few tried two steps on the rear axle and placed one foot on the rear step and one one on the front fork, supporting the weight of the body against the saddle, without sitting in it, but gave up the plan. Others placed both feet on the rear steps and leaned forward over the saddle, but these two latter methods brought too much weight on the rear wheel and the machine would not coast as far as when the rider was in the saddle and the weight more evenly distributed. The arms were kept close to the sides of the riders and every possible thing was done to reduce the area of the body on a line with the resistance of the air when in motion. This idea was carried out even in the dress, as the riders who did the best wore full tights and racing shirts with sleeves, and many wore no caps, which gave them an advantage over others who wore baggy bloomer suits or long trousers and open, flowing coats.

The bearings of the machines were adjusted a trifle loose, and the chain was very loose, so it caused no more friction than could be done away with. Of course, the handling of the wheel by the rider had considerable to do with the success of the coast, as, if the machine were not steered very steadily, it would not go so far and the course taken in the street must be followed without causing the machine to be swerved to one side or the other suddenly, or part of the momentum would be lost.

After taking all these precautions, as stated before, it appeared to make no difference with the distance the machine traveled unless the tires were much lighter than those used ordinarily on a regular road machine, and if the race is intended to show which machine will really coast the farther, there should be a clause inserted in the rules of the race that will specify that the tires on all the machines are to be the same diameter and of the same weight, or inside of certain limits, unless, as stated before, the race is not to be one of machines, but a proof of the resiliency of tires.—ONONDAGA, in *The Referee*.

Cross railway lines at a considerable angle (the greater the better). Light your lamp the moment it is fairly dusk.

When riding in city streets, or where there is much traffic, always keep a finger on the brake lever.

Never dispute the right of way with a water-cart or a steam-roller.

A. C. McDONELL.

TOURING.

A veteran English cyclist gives the following advice on Touring: "I assume, of course, that the intending tourist has already had some experience in riding; but even in this case, unless he is in full practice, a certain amount of preparation will be necessary before either he or his mount will be fairly ready to start. The best machines demand a certain amount of adjustment to the needs of a new owner, and it is only made right by degrees, as experiment shows the points wherein it is relatively defective. Further the rider himself has to get into condition. A rider contemplating a tour should prepare himself by ten days' steady practice, beginning with five or ten miles, and increasing from day to day until he feels that he can travel with ease a longer distance than he actually purposes as his maximum. For the last day or two his rides should be in full marching order, *i. e.*, carrying the full amount of weight in the way of luggage, etc., that he proposes to take on his tour. Naturally, the question of dress arises. Much must remain indefinite on this point because of the widely varying requirements of different riders. My own kit for a week's summer tour is: In actual wear—lounging jacket, breeches, flannel shirt, woolen stockings, necktie, shoes, gloves, cap and handkerchief. In bag—vest, trousers, flannel shirt, woolen socks, nightshirt, soft slippers, handkerchief, soap, comb, hair brush, toothbrush, collars and cuffs, pair kid gloves, court plaster, nail scissors, pocket testament and a few simple medicines. In handle bar bag—a waterproof cape, a few tablets of chocolate, a flask of cold tea, maps and guides. These articles may seem somewhat numerous, but it is surprising into how small a space they can be packed.

"We ride an average of thirty miles a day, extended to forty or fifty should the exigencies of travel demand it, or cut down to twenty or less when the attractions of the route suggest a longer halt than usual. We breakfast a little before eight, get into the saddle by nine, and halt for luncheon (a good square meal, but plain, without beer or pastry) somewhere between one and two; lounge about for an hour or so (not long enough to be chilled), then take to the road again, and ride (gently for the first hour or so) until the day's distance is completed, finishing up either

RALPH SAMBERG.

with a regular dinner or a meat-tea, as appetite may prompt. While the final meal, whatever it be, is preparing, we enjoy the luxury of a good rub-down, then put on fresh underclothing. Socks are substituted for stockings, and trousers for breeches; the invaluable clean collars are donned, and—presto!—the warm and dusty cyclist disappears, and enters (in his stead) a cool and well-appointed tourist, fit for the most unexceptionable hotel.

"By adopting the above plan we depart as little as may be from our ordinary habits, and get all our riding over by daylight—a desideratum on unknown roads. It is, however, unwise to lay down any hard-and-fast rule in this particular. In very hot weather it may be advisable to divide the hard work of the day between the early morning and the cool of evening; and apart from temperature, the tourist may now and then be glad to devote the middle portion of the day to sightseeing on foot in some region of interest."

Intercollegiate Championship of 1896.

The twenty-first annual struggle for the intercollegiate bicycle championships took place on the Manhattan Beach track in May. It was an ideal day for racing and the track was in fine condition. The entries in the different events were numerous and the finishes were close and exciting. The scoring in each of the five events was computed on the regular basis of five points to first, two to second and one to third. The points were then lumped together and the five events counted as one toward the championship. Columbia scored a total of twenty points out of the possible forty. Yale came second with eight points. The University of Pennsylvania and the Columbian University of Washington divided third honors with total scores of five each; while Harvard was fourth with two points. On the basis of computation, Columbia takes five points in the championship score, Yale two points and the University of Pennsylvania and the Columbian University each half a point. Summary:

One-half mile (final heat)—Won by W. H. Fearing, Jr., Columbia; E. Hill, Yale, second; J. T. Williams, Jr., Columbia, third; time, 1:19 2-5.

Quarter mile (final heat)—Won by J. T. Williams, Columbia; G. B. Underhill, Columbia, second; H. K. Bird, Columbia, third; time, 32 1-5.

One mile (final heat)—Won by G. E. Ruppert, Columbin; J. S. McFarland, Yale, second; W. H. Fearing, Jr., Columbia, third; time, 2:27 3-5.

One mile tandem—Won By A. C. Eglin and J. P. Williams, University of Pennsylvania; E. Hill and J. S. McFarland, Yale, second; W. P. French and J. S. Butler, Yale, third; time, 2:21 3-5.

Five mile—Won by F. A. L. Schade, Columbian University, Washington, D. C.; J. F. Wood, Harvard, second; E. Hill, Yale, third; time, 13:04 4-5.

EARL W. PEABODY.

BICYCLE SADDLES.

BICYCLES have taken this country and the world generally by storm and are fast coming into universal use. That they have accomplished no end of good, none will dispute; that they have brought with them certain evils, though not perhaps understood by people in general, is distinctly recognized by medical men. This does not result from any defect necessarily inherent in the bicycle, but from faults in its construction, particularly in the saddle employed. Speed has been quite generally the object primarily aimed at, the health of the rider being given very little consideration.

From a medical standpoint, bicycle saddles are, as a prominent New York physician expressed it in a recent article: "physically and morally injurious. The entire weight of the body comes on the soft tissue of the pelvic floor. The sensitive tissues, subject to such pressure and irritation, must suffer, and the evil cannot yet be estimated."

This is a very important consideration, and one that should be distinctly and generally understood, to the end that the use of defective saddles be discontinued, and rational ones, made with reference to the peculiar formation of the human body, substituted in their place.

As all physicians are well aware, few persons afflicted with urethral, prostatic or bladder trouble, are able to ride a bicycle without materially increasing the difficulty. This must be distinctly charged to defective saddles, and the same cause will produce disease in perfectly healthy people. Hence, the importance, the absolute necessity, of using a proper saddle cannot be exaggerated.

The evil effects of excessive horseback riding, particularly with no saddle, or, what is worse, a bad one, has been pointed out from the most remote ages. Whole tribes, like the ancient Scythians and the modern Pueblo Indians of New Mexico, have, from this cause, become physically weak and degenerate. The subject is a somewhat delicate one, but is none the less

C. R. COULTER.

important from the standpoint of a physician. A defective bicycle saddle produces all the evil effects of excessive horse-back riding, and should be absolutely tabooed.

While the ordinary saddle is bad for men, it is particularly so for women; indeed, anything more injurious for the sex can hardly be suggested. It develops diseases and often leads to the gravest results. Indeed, evil consequences, the nature of which cannot properly be more than hinted at, daily result from the use of saddles not constructed to conform to the body of the rider.

As the writer referred to aptly expresses it: "A perfect saddle for either man or woman is one that will maintain the body in an easy and proper position. It should have, like an army saddle, a hole in the centre, to relieve any injurious pressure. This will prevent urethritis, prostatitis, prostatic abscess and cistitis. The saddle should allow pedaling without needless friction. The rider should have a firm yet elastic seat."

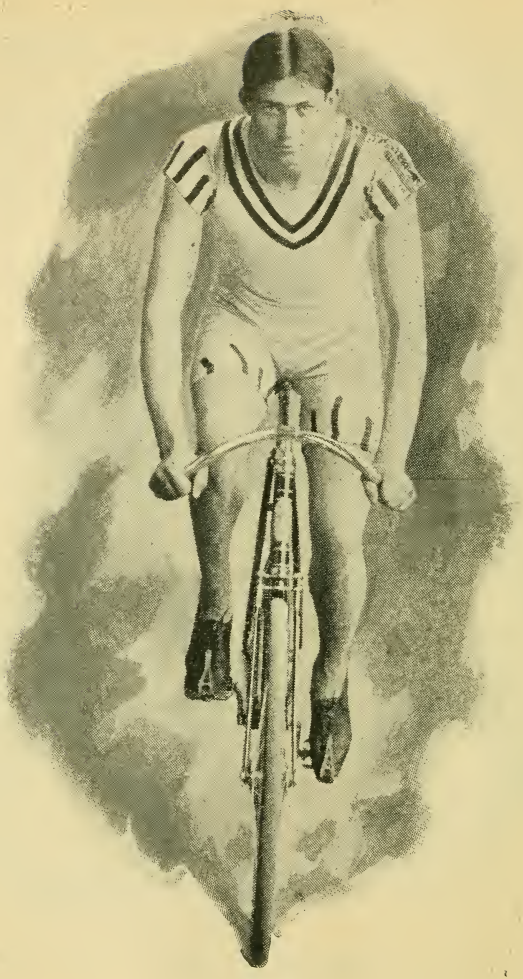
The anatomical saddle fully meets all these demands and satisfies at once all medical and scientific requirements. As will be readily seen, when in practical use, the anatomical saddle entirely overcomes all the objections to bicycle saddles that can be urged from a medical standpoint, and that without losing any possible advantage in other directions.

It is moulded in strict anatomical conformity to the parts of the body with which it comes in contact; comfortable, yet firm cushions are employed and so adjusted as to properly receive the bony prominences of the pelvis. These cushions, which are removable, rest upon a perforated base, and, with a free circulation of air through the horn of the saddle, insure a cool seat, a most important consideration from the standpoint of comfort as well as hygiene. The frame is made of metal and maintains its correct position under all circumstances. The saddle is easily adjusted at the proper angle. Numerous testimonials from eminent surgeons declare this saddle to meet all medical requirements, while eminent riders give it the highest praise.

Keep a sharp look-out on the roadway in front of you. A brick in your path is not of the smallest consequence, *unless you don't see it.*

Never travel without sufficient cash in your pocket to take you and your mount home by rail in the event of a break-down.

Meet chaff with chaff, or, better still, with silence ; anyhow, keep your temper.



O. L. STEVENS.

LONG DISTANCE RIDING AND METHODS

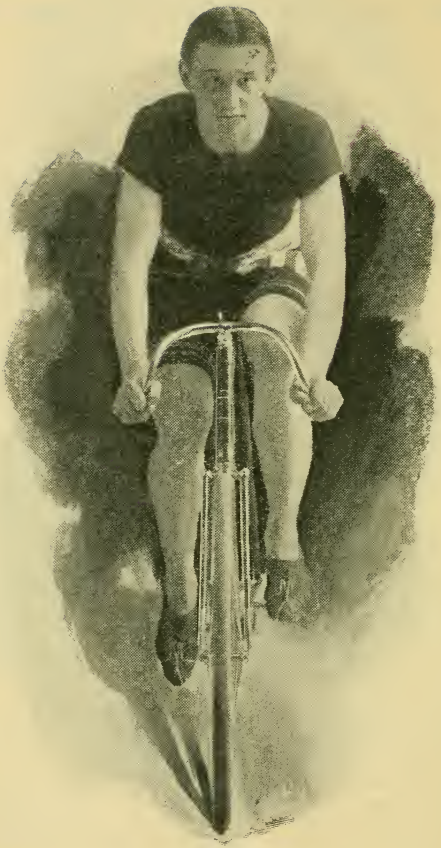
By F. J. TITUS.

Among the twelve foremost riders in America there are but two capable of taking part in sprint and distance racing at the same race meet and they are liable to obtain first, second or third honors. These men are Harry Maddox, of Asbury Park, and Nat Butler, of Boston. In order to be capable of equaling the present records for long distance work it is absolutely necessary to train for such work conscientiously under the supervision of a competent trainer, one who has common sense and is careful not to permit his charge to overwork while in training and one who, when the time comes for the trial, is directive and has under his thumb a manageable set of pacemakers capable of going at any pace required steadily and with judgment, men who have trained just as well in their pace and pick-ups as the aspiring record-breaker. In France and England, where the long-distance race is the proper thing, the men confine themselves to this style of racing—that is, they do not take part in the short-distance racing, but only ride at their favorite distances, which may be five, ten, twenty-five or one hundred miles.

The success of the "Little Wonder," Michael, in France is due to the fact that he made a specialty of distance work, while his competitors kept changing from sprint racing to trials of endurance. He was trained to stand the punishment and knew when to rest and when to go. A man may be ever so good, well trained, etc., but he can never equal or come near the record if the pace is not the best. One may ask what I mean by the best.

At the present day machines with two men up (tandems) are not capable of equaling the one-hour professional world's record of a little over twenty-nine miles, not even if you have all the tandems in the country. What is needed in the way of machines for pacing are triplets, "quads," quintettes, sextettes —say one sextette, three "quads," three triplets are about right to give a rider the world's one-hour record and capable of doing over thirty miles an hour.

To those who do not know the meaning of the above terms, I will tell them. The tandem, as we all know, is a wheel for



A. C. MERTENS.

two; the triplet, for three men; the quadruplet, a bicycle for four men; the quintette, a bicycle for five men, and a sextette and a multi-cycle for six men. You may have heard of the Californian nonpulet, a cut of which appeared in a daily paper on November 3, 1895. This was only a myth, not a reality, a vision of some imaginative Californian, and was supposed to carry nine men at the rate of a mile in twenty-two seconds, which, as is shown by the following figures, to be impossible, by applying the natural laws of air resistance and the power of man.

The fastest time ever made by a quadruplet is 1:35; the best possible unpaced mile by a nonpulet would be 1:22, according to actual progression and percentage gained by each man. The laws of air resistance are well known. Take two riders moving along, say twelve feet apart, the second man receives twenty-five per cent. less air resistance than the first man, hence the benefit of pace. At a mile in 1:35 more than sixty-five per cent. of his weight goes for air resistance. The resistance of the wheel on the road is plainly proportional to the speed and a small factor. The chain resistance is a great factor. The average work of a healthy man is fifty-five foot-pounds a second, that is, to raise one pound one foot in one second. For a short time the same man can do 100 foot-pounds and under excitement 140. When W. C. Sanger rides a mile in two minutes the air resistance is 80 foot-pounds. His chain resistance 40 pounds, machine resistance 10 foot-pounds; total, 130. At a 1:35 gait his resistance to the air increases to 135 foot-pounds; chain, 50 foot-pounds; machine, 15 pounds; total, 200 pounds. Thus, one can see that it is impossible for an ordinary athlete to ride an unpaced mile in 1:35. The air resistance alone is more than the average athlete can perform for 95 seconds, but let him be paced, his air resistance is reduced from eight per cent. to fifteen per cent., according to the closeness with which he follows the pacemaker and we only have 110 foot-pounds air resistance, which gives a total of 175 foot-pounds nearer the possible performance of an athlete.

To go a mile in 22 seconds on the nonpulet would require each rider to exert nine horse power, of which eight horse power would be air resistance. The Empire State Express, going a mile in 33 seconds, exerting 200 horse power, had to spend 60 horse power for the air resistance; at a mile in 20 seconds the engine could not develop steam enough for the train to overcome the resistance of the air, without any other resistance being accrued.

It is no small thing for an athlete ordinarily capable under

FRED LOUGHEAD.

exertion to perform one-fourth horse power, to perform nine horse power for 22 seconds, as is asked of him on the nonpulet, is the wildest kind of an absurdity. The strongest athlete can perform but one-half horse power for 10 seconds at the maximum."

From above we can understand why it is necessary to have good pacing by large and fast machines. This is known and applied by our European cousins, as is shown by their record table, which in trials of endurance surpasses the figures on the slate of all others. It cannot be that their men can surpass the ability of all others if they did not have the benefit of almost perfect pacing. In order to prepare for and overcome the severe punishment attached to a ride lasting one hour, at an average pace per mile of 2:05, it is best to ride two months in all kinds of races and on all kinds of tracks, gradually increasing the distance of the races. Set much of your own pace. This gives endurance. Try an unpaced mile once a week, doing your best at each trial. This will enable you to observe your improvement. Finally, about two weeks before your trial, have pacemakers at the track you are training on begin training in conjunction with your own. Stop taking part in all races at any distance and confine yourself to the ride in view. Ride ten miles in the morning, first two or three unpaced, then have the pacing machines drop in and pick you up. Cover the seven or eight remaining miles at a 2:08 or 2:09 pace. Have the pacemakers practice making the pick-ups. In the afternoon cover some twenty miles at a time, paced most of the way at the rate of 2:07–2:15, finishing with a quarter mile sprint, endeavoring at the time to best the pacing machine at the tape. Always have a thorough rub after each ride, use cold water sponge occasionally above waist to harden the muscles. The legs must be soft and pliable. See that the legs do not cramp, and if they do tell the trainer where and let him rub plenty of goose-grease on that part at night after taking a hot bath, rubbing plenty of liniment on in the morning, wiping clean with a rough towel. Have him pay special attention to the parts that are cramped.

No one knows what a severe test it is to body and mind to ride for one hour without having first tried it. When I say ride for one hour I mean at record speed. If one feels a little nervous before the trial it will aid him to endure much, as he will ride on his nerve and probably succeed in his attempt, with good pacing. The one great difficulty in this country and the only reason we cannot equal the foreign long distance records, is because we have not paid enough attention to pacing facili-

HARLEY DAVIDSON.

ties. The success of a trial depends upon the quality of the pacemaking. The pace must be, in order that a man lasts for one hour, very steady. I mean by this that if twenty-nine miles are to be done in the hour each mile must be at an even gait, about 2.05. If a man cannot do twenty-nine miles in the hour his schedule must be slower in order that he should finish.

In my last one hour's record ride, at Springfield, Mass., the pacing was very inferior, ranging from 2:01 at the sixth mile to 2:22 at the eighth mile. Such a jerky pace is sure to weaken the rider and may prevent him from accomplishing his object.

No stimulants are needed while riding. The excitement acts as a strong stimulant. All the attention of the trainer should be given to the making of good connections by the pacemakers. He should have signals known by the pacemakers that they may be slowed up when the pace is getting too fast, or more faster when too slow—in other words he must see to it that the pace is absolutely even and that the man has nothing to worry about.

After the ride is over a little stimulant can then be taken if needed. The man should be immediately covered by blankets, each part dried perfectly, keeping the cold air well away from the chest and other parts. Get the man dressed as quickly as possible, away from the track and curious eyes, to quiet, and thus give his nerves a chance to settle, not permitting him to eat his dinner for at least an hour and a half, getting him to bed earlier than usual.

I trust that the few suggestions above mentioned may be of some service to young riders of ability, as coming from one who has had actual experience in cycle racing at long distances for the last two years.

It is an established fact that there is no particular rule or stipulated routine that could be universally recommended for the guidance of a cyclist in training. The prime reason of this is that no two men are built exactly on the same lines, and the treatment suitable to one may entirely upset the constitution of another, so it is a case of suiting the physic to the patient's taste. However, there are a number of facts known to modern trainers which every man must stick to in order to be successful on the track.

In the spring—the period a cyclist starts to train—it is absolutely necessary to take a good physic. By this we mean six or seven prescriptions of any reliable purgative recommended by a doctor. This process will rid the stomach of any superfluous bile and consequently the blood will be cleansed and purified. Good blood makes good muscle and strong bone.

F. P. PRIAL,
American Cycling Authority.

The cyclist should be especially careful not to overwork himself when beginning the season. It is this overworking that ruins so many ambitious young riders. They are stale and weakened before they know what is the cause and it takes months to undo what could be easily bridged over by a little caution or judicious management.

The tyro should commence with easy, light exercise and keep gradually increasing the length of the daily ride. The first week three or four miles will be sufficient at, say a 3:30 gait, morning and afternoon. With the increasing power the pace should be quickened until the mile can be covered in 2:50. Finally, find your "sprint," "let out" at the end of the journey for 100 or 200 yards. Follow this plan for a couple of weeks, after which the rider will be in a condition to do harder work.

It is a good plan to work two hours after eating.

It is prudent to work into your sprint slowly, as a rider is less liable to strains.

The great secret, in my mind, to be a good rider, is to have plenty of rubbing with liniments, because with a correct massage treatment, stiffness and soreness will leave as if by magic.

I have frequently seen a rider come in after a hard race, his energy gone and groaning with cramps. I have seen his trainer take hold of him and perhaps in ten minutes trot him out again without being half rubbed, with the always repeated injunction to win or die.

The position a rider takes on his machine is another vital point. A great many ride too low a reach, or else too long, or too far forward or too far backward. There is a happy medium. Turn the cranks of the machine so that they are parallel with the top of your saddle. Then take a plumb-line and move your saddle forward so that the peak is just about 2½ to 3 inches forward of the pedal.

So much has been said and written about the staple articles of diet suitable for an athlete or bicyclist in training that any advice here would be entirely out of place.

The human body is such a true machine, that a trainer who does not study his subject will eventually, prove a failure. A great many of these self-styled oracles who call themselves trainers, pay no attention whatever to the upper portion of the human frame, and this is a great mistake, for here is centered the human machinery.

W. C. Sanger also gives some valuable information about preparing for a season's campaign on the path.

"Before doing any work at all, the stomach must be got into shape by a thorough physicking, which relieves the system

CHARLIE MURPHY.

of all bilious and troublesome matter. This leaves the body in a very weak condition, and it must be strengthened gradually by keeping very quiet and eating light food, such as milk toast, soft boiled eggs, etc., for a few days, after which time more strengthening food may be taken.

"The first three days very little exercise is sufficient; for instance, three to six miles a day, at about a 3:20 to 3:30 gait. This is gradually worked down day by day, until at the end of a few weeks the pace is brought down to about 2:50. The third week will show a more rapid change in the condition of the man, the miles will be rolled off at about a 2:30 to 2:35 clip, and the distance by this time will be lengthened to about nine miles each day. A little faster work may now be indulged in, and about one-half mile can be reeled off at about a one minute clip (paced), to show the condition of the man in regard to endurance. If he is found wanting, he must again return to plugging, while, on the other hand, if he has the required amount of endurance, he may start to sprint a short distance.

"During all this time great care should be taken not to reduce too rapidly, as this will cause the skin to become feverish, but the superfluous flesh should be turned into solid muscle rather than removed altogether. In short, no attempt should be made to reduce the man's weight below a medium point, so that at the beginning of the racing season he will have a little flesh to work on, as he will gradually be worked down during the hard season's campaigning.

"It is at this point that the trainer should get in his fine work, turning the superfluous flesh into muscle. After each work-out the man should have a thorough drying with coarse towels, followed by a most thorough massage, every muscle being worked and manipulated. The flesh on the stomach, back and loins is rolled in the fingers until the whole body seems to be covered with but a slight layer of flesh sheeting over the muscles. Care should be taken too keep the muscles of the legs soft and pliable, as there is no speed in a muscle that becomes hard.

"After the body and muscles have been put in fine condition, the sprints are gradually lengthened, until the rider is able to cut a full quarter of a mile at top speed and finish strongly. Being able to do this, he is in condition to begin the season's campaign, which opens the latter part of May, and lasts until the end of October, when the record season begins.

"A trainer cannot spend too much time with his man, especially after races. Every moment in this work will doubly repay rider and trainer, as the more the muscles are worked the more flexible they become and the less liable to stiffen up

ARTHUR GARDINER.

or bind after a sprint. The racing man cannot give himself too fully into the hands of his trainer or rely too much on the latter's judgment, provided the trainer is a competent man, as the trainer is working for himself as well as the rider, and the record of the latter's victories and defeats is the record of the trainer's work. The man in training should avoid eating pastries and all kinds of rich food. A little fruit eaten in the morning does more good than harm, and the less coffee or water taken the better.

"This course of training will not apply to all men, as the constitutions of all men are not the same, but this is the course which I follow very closely."

TRAINING.

TRAINING is an exhaustive subject, but the principles of training are simple. The object of training is two-fold—1. To produce perfect general health; 2. To develop special powers in individual organs. To the last named branch belongs the training of the racing man, but the first is of interest to all riders. Briefly summarized, the rules for a healthy life, as propounded by a distinguished physician, are:

1. The hour of rising should be moderately early—say 7 in Summer and a little later in Winter.

2. A cold bath should be taken (all the year round, unless delicacy of health prevents it), preceded in Summer and followed by a quarter of an hour's exercise with dumb bells or Indian clubs. After the bath, rub down briskly with a rough towel.

If a swimming bath is available, a ten or fifteen minutes' swim will supply both bath and exercise. If there is a walk to the bath, a crust of bread and a cup of milk, or a bowl of oatmeal porridge should be taken before leaving the house.

Breakfast about 8 o'clock to consist of a chop or steak, ham or bacon, and bread and butter, *thoroughly masticated*. A soft boiled egg may be taken occasionally. Potted meats and spiced dishes should be avoided. Coffee is preferable to tea.

Walk to business, if possible, and when doing so it is not advisable to hurry, for too active exercise immediately after eating is injurious.

Dinner—to be taken about 1 o'clock—a plain substantial meal of fish or meat, with vegetables and a moderate allowance of plain pudding or fruit tart. Veal, pork and all shell fish (except oysters) are to be avoided as indigestible. Among

A GROUP OF SAN BERNANDINO, CAL., CYCLISTS.

J. Andresor, Jr. Walter Hubbard. Clyde King. Geo. Lauterboom

vegetables, potatoes, the flowery part of fresh cut cauliflowers and young carrots or asparagus, when in season, are recommended. Turnips, and also cabbage, unless very young and freshly cut, are to be avoided. Water should, for young men, be the only beverage.

Walk home from business when you can. Tea, with bread and butter, and fish, if desired, to be taken about six o'clock. After tea a couple of hours of active exercise in rowing, running, cycling, gymnastics or drilling, according to the taste of the individual. Supper of cold meat and bread, and to bed soon after 10. On Saturday afternoons and holidays, additional active exercise as opportunity may permit.

The quantities of food recommended for daily consumption are as follows:

SOLIDS:	Oz.
Meat, cooked and free from bone =13 to 15 oz. of the uncooked joint.	10 to 12
Bread	16
Potatoes, 10 oz., or cauliflowers	12
Pudding or pastry	6
FLUIDS:	
Coffee and milk at breakfast, about	18
Water (at dinner and supper)	22
Tea	10

And as little as possible drinking between meals, unless after strong exercise. Tobacco and alcohol are to be strictly avoided, both being poisons to young men, especially those in frail health. In later life, they may, in strict moderation, be used with advantage.

A young man strictly following the above rules will, after a little perseverance, find himself in thorough general health, and in a condition to enter upon the severer course of training by which alone men can hope to fit themselves to achieve eminence in any branch of athletics. With this further preparation we have nothing to do; neither have we space to quote the scientific arguments for the rules above laid down. We may, however, mention, for the information of non-athletic readers, that the formulator of the above rules was not a mere medico, putting forth theories on a matter of which he had no practical knowledge, but was also one of the most distinguished English bicyclists of his day, having held no less than four championships (one, five, twenty-five and fifty miles) in a single year—1879—and three of them in the succeeding year. He speaks, therefore, with both scientific and practical authority, and every line which he has written on this subject is of vital interest to all who value that greatest of blessings—a sound mind in a sound body.

CLYDE KING.

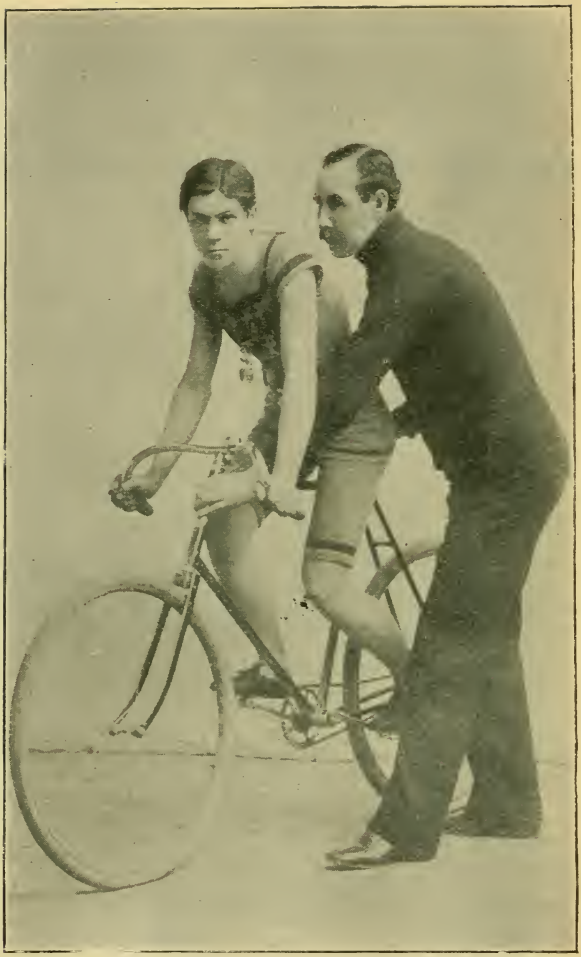
ON THE SELECTION OF A MOUNT AND ITS CARE.

IN the selection of a bicycle, select one that is suited to your weight, height, strength and requirements. The best bicycles are made in three weights, three heights of frame and a variety of gears. Have the frame suitable to your length of leg, and do not, if tall, ride a low frame machine with saddle post projecting six inches or more; or, if of medium stature, do not attempt to ride a frame entirely too long in the reach, as either evil means discomfort and inconvenience to the rider. Also remember that high gears are not synonymous with great speed, as any increase in gear means a corresponding increase in power required to propel the machine, and the selection of gears should be made with proper consideration for the physical qualifications of the rider.

When purchasing a machine, obtain all the information possible from the agent. No matter how familiar you may be with bicycles in general, many valuable points may be picked up from time to time in this way, some of which may save you time, money and inconvenience.

The care of a bicycle is a general term, and the first fact to be impressed upon the user of a bicycle is that it is a piece of machinery constructed with great nicety, and as such must receive the same intelligent care that any nicely adjusted and carefully made machine should receive at the hands of its user. In the absence of this care, a bicycle will not give satisfaction; but if properly cared for, it will last indefinitely and give a good account of itself. Bearings must be oiled and kept properly adjusted, nuts and bolts kept screwed up tight, and if appearances count for anything, nickel and enamel must be kept clean. As nickel will rust if allowed to remain wet, do not leave a wheel in the rain or fog. If, by accident, it becomes wet, wipe the dampness off thoroughly at the first opportunity, and keep the wheel in a dry place.

It is a fact that a well-groomed wheel runs well, looks well, wears well and speaks well for the man who rides it.



MILTON R. BROWN

A well-known rider of Passaic, N. J.

As to equipment, every high grade bicycle is equipped with a tool bag and the following tools, etc.:

One adjustable wrench for screwing on pedals and adjusting all nuts and bolts; one wrench for adjusting the steering head nut and crank axle nut; one oil can; one hand pump for inflating tires; one repair outfit for mending punctures in tires.

When the time arrives for the assembling of the machine remember that should you receive your machine in a crate, first remove the handle bar, then the machine from the crate, being careful in taking off the slats of the crate, to leave no projecting nails to mar the finish or puncture the tires. Next tear off the paper bag, remove the tools, pedals and lamp bracket from the metal box that is attached to the top of the crate, and you are now ready for business, as follows:

To put on handle bar loosen the nut on handle bar binder at the top of the steering head. Slip the handlebar post into the steering tube, and if the machine is equipped with a brake, slip sliding rod into the brake plunger tube. Adjust handle bar to proper position, being careful that at least two inches of the post is inserted into the steering tube. See that line of handle bar is at right angles to the front wheel, and parallel with front axle. Tighten the handle bar binder nut until the bar is rigid and cannot be moved in the steering tube. Rigidity is absolutely necessary at this point. Line up brake shoe with tire, and tighten brake tube binder nut, after adjusting brake shoe and lever as desired.

In attaching the pedals, the pedal axles are marked "R" and "L." The pedal marked "R" is for the right side, and the pedal marked "L" is for the left side of the machine. The left pedal screws in with a right hand thread in the usual manner, but care must be used in attaching the right pedal, which screws in with a left hand thread. In other words, to screw in the right pedal, turn the wrench to the left. Screw the pedal axles up to the shoulder, *and be sure that they are tight.*

The saddle is readily adjustable for height by loosening up the binder bolt nut on the frame. Saddle should never be raised higher than to permit heels to touch the pedals, and a shorter reach will suit many. Ordinary saddles should be placed in position with the top about level. The anatomical saddle should have a forward tilt, the degree of which must be determined by the rider's experience. For the average rider, the correct position of the saddle is with the centre of the top directly over the post. However, tastes will vary, and no one position will suit all; it is a matter of individual preference.

The best bearings are carefully made, and are properly oiled

RAY DAWSON.

before leaving the factory, but however light the friction on a ball bearing may be, it is yet a frictional bearing and requires lubrication from time to time. There are seven points for oiling, as follows: The upper head bearing, the lower head bearing, front wheel, crank axle, rear wheel, pedals and chain. These are the frictional points and should be oiled often, say once in one hundred miles. Do not flood bearings with oil, but use "little and often."

For the adjustment and oiling of head bearings remember that head bearings should be tight enough to prevent all rattle and yet permit easy rotation of head. To adjust head, loosen check nut by turning to the left, and screw down top head collar to the right, then set down the check nut tight. Oil through small duct in top collar at both top and bottom head bearings.

In the adjustment and oiling of front and rear weeel bearings, bear in mind that both the front and rear wheel bearings are adjustable from the left side of the machine. To adjust, loosen nut on left end of axle, turn the knurled cone to the right to tighten, or to the left to loosen. Adjust bearings until *after* the axle nuts are tightened up—there is just a small amount of side play in the wheels. Do not jam bearings up tight; if you do, trouble will result. In tightening front axle nut, be sure that wheel is in centre of the fork. Oil through hole in centre of hub, and be sure that oil reaches both bearings.

The crank axle bearing is adjusted from the left hand side. To adjust, turn binding nut to the right to loosen, as the thread on the axle is a left thread. Screw up knurled cone to the left until bearing is sufficiently adjusted to permit of the rattle, yet not tight enough to bind. Then set binding nut tight, and be sure that it is tight. Oil through the cup on top of the crank hanger barrel. These bearings should be kept well oiled.

The care and adjustment of the chain is an important factor. The chain is adjusted by two worm adjustments on the rear wheel axle. To adjust chain, loosen axle nuts on right and left sides of machine. Turn worm-screw under the bottom of the rear frame connection until the chain is pulled to a proper tension, but do not get the chain too tight. There should always be at least one inch up and down play in the centre of the chain. Be particular to keep the wheel in the centre of the two rear braces. When proper tension has been secured, screw up axle nuts tight.

A chain, to run smoothly and wear well, must be *lubricated,* cleaned occasionally and properly cared for.

A chain is subjected to two kinds of friction, internal and external, each requiring entirely different methods of lubrica-

THE ALLEN BICYCLE TEAM OF ALLENTOWN, PA.

N. E. Danner. H. H. Seaton, Trainer. H. J. Apple.
G. W. Danner. H. I. Koch. W. S. Readinger. R. L. Arner. J. Rems.

tion. By internal friction is meant that arising from the constant moving of the chain blocks on the cross pins or studs. External friction is that caused by the contact between the chain blocks and the teeth of the sprockets. To lubricate a chain properly, remove it from the machine, clean thoroughly with benzine or kerosene, then immerse in some moderately heavy oil—sperm or lard. After allowing sufficient time for the oil to soak in and lubricate the internal bearings, remove the chain from the oil and wipe thoroughly. Replace chain on machine and lubricate chain blocks and sprocket teeth with stick plumbago.

Instead of immersing the chain in oil, it may often be satisfactorily lubricated by oiling each link between centre block and side bar.

Don't leave oil on the outside of the chain. It catches dirt; and *don't* attempt to ride with a stiff chain.

In the care of tandems, as they are similar in construction to the regular wheels, the assembling, care and oiling are about the same, with the following exceptions:

The two steering connecting rods should be tight in steering a tandem, holding the steeling chain closely down on the sprockets over the front fork crown and on the rear steering post. If these connecting rods are not tight, steering will not be steady, and, if too tight, steering head will bind.

In the adjustment of the front chain of a tandem, loosen the two bolts under front crank axle hanger, and turn eccentric by means of projecting stud until the proper tension of chain is obtained. This chain should be somewhat tighter than the rear wheel chain, but not tight enough to bind. When proper tension is obtained, tighten the two bolts to prevent turning of the eccentric crank barrel.

To oil front bearing of the crank axle, remove screw from end of axle and oil through the holes. Oil rear bearing through oil reservoir on top of crank hanger tube.

Follow closely directions contained in each repair kit for the repair of tires, and do not attempt any original methods of making repairs.

In general, a few words of caution may not be amiss:

Don't lend your bicycle. The man who breaks it may be sorry, but this does not always repair the machine.

Don't put handle bars down in the head so far that a "cat on a wall" position is necessary.

Don't screw up small nuts or bolts with a ten-inch monkey wrench and then wonder why they break. Use the small wrench furnished with the machine, and when you have screwed the nut up to the shoulder, *stop*.

Don't take your wheel to pieces when it is not necessary. The story of the small boy with the watch should be remembered, and like him, you may not be able to get it together again, and if you do, the chances are it will not be as well put together as it was originally.

Don't wait for nuts to drop off the machine. Go over it once in a while and see that everything is tight and shipshape.

Don't forget that it is not the light wheel which runs the easiest. A bicycle to run easy must be well built.

Always note carefully the location and position of every part before removing or adjusting same, and be particular to replace every part removed exactly as originally found. Be sure you are right before going ahead.

THE RULE AND LAW OF THE ROAD

THE term "Law of the Road" relates chiefly to the passage of travelers on the public roads, and the object of its rules is to prevent collisions and to facilitate travel on the highways. In England, this branch of the law had its origin in custom, which has been incorporated into judicial decision, while in the United States it is largely the result of legislation. In the former country the rules of the road are just the reverse of the American law. For instance, in meeting in the old country, each party shall bear to the left; in passing, the passer shall do so on the right; in crossing from a side street the driver shall bear to the left and pass behind the other vehicle. The law in this country broadly is "keep to the right, pass to the left; in crossing, use discretion as to best course."

The English rules apply to horses as well as to carriages, while in the United States a horseback rider may exercise his own notion of prudence and turn to the right or the left. In the absence of statute, it seems that the last would be a reasonable rule to apply to cyclists when meeting other and heavier vehicles on a country road—the wheelman yielding the traveled track when safety permits.

It is the law in most States that when one is ahead he need not, unless he chooses, turn out at all to let a man pass, if there is room enough on either side. If, however, there is not sufficient room, he must turn out. There seems to be no redress in most States for one who is prevented from passing another on the road, unless special damage or injury result.

The statute of Michigan regulating the conduct of travelers on the highways, fairly represents the average road law when it says:

"Whenever any persons shall meet each other on any bridge or road, traveling with carriages, wagons, carts or other vehicle, such person shall seasonably drive his carriage or other vehicle to the right of the middle of the traveled part of such road or bridge, so that the respective vehicles may pass each other without interference. Every person offending against the provisions of this statute shall be fined not exceeding $20, and shall be liable to the party injured for all damages sustained."

It has been held in Massachusetts that parties do not "meet" when one is traveling along and another comes into the road from a crossroad at right angles to the first man.

The word "road" in this statute applies to streets as well as highways. Streets are public roads, and while the Legislature confers upon municipalities power to regulate their use and to control the highways in their boundaries, they can only pass laws which are not contrary to the road laws of the State.

The language of the statute includes bicycles, and while it is not probable that it was intended to embrace the wheel, and no doubt the very legislators who framed the law would object strenuously to turning out of the road and sharing it with a bicycle, such is the law of Michigan, and being the only statutory right that wheelmen enjoy, when necessary to their safety and convenience, they should enforce it and demand part of the road.

By the term "seasonably drive" is meant that travelers shall turn to the right in such season that neither shall be retarded in his progress by reason of the other occupying his half of the way, when he may have occasion to use it in passing.

In addition to this statute it is a customary law that in cities, vehicles shall travel only on the right-hand side of the street, and unless this rule were observed in crowded districts, accidents would be the rule rather than the exception. Public safety would be increased were this rule put into the form of an ordinance and strictly enforced.

It is true that a man who drives on the wrong side of the road is not liable to prosecution, but he is bound to stricter care and must keep a closer lookout, and Angell, in his work on highways, tells us that if a man, not on his own side of the road suddenly meets another and injury results, he who is voluntarily in the wrong, must answer all damages, unless the other individual could have avoided the accident.

SOME USEFUL HINTS.

The usual way of cleaning the bearings is to drop paraffin into them from an oil can. But a quicker and more effectual plan is to force the paraffin in with a squirt. It is, perhaps, better on the whole, to use benzoline than paraffin; but if benzoline is used, care must be taken to avoid accidents, to which end it should only be handled by daylight. The benzoline must be kept from the tires, but more especially from any patches or solutioned joints.

The following is said to be an excellent method of prolonging the life of a new chain: Coil it up and place in a small tin canister or box. On the top put pieces of any good candle, and place before a hot fire. The wax will melt and run all over the chain, and find its way into the links and blocks. Then put aside the tin and contents to cool, and, when wax has solidified, wipe off any superfluity. After this treatment it will be found that grit and dirt can only with difficulty get into the blocks.

Although the squeaks and other noises which a bicycle at times makes are sometimes annoying, the power of the machine to squeak when in pain is very valuable, for otherwise the rider would often not be aware that there was anything wrong. Almost every noise, except a faint hum and slight "purring" of the chain, is an intimation that the machine is not in perfect health and is asking to have something done to it. Noises are often difficult to locate, but it will be some assistance if the rider notes whether they recur with every revolution of the wheels or with every revolution of the cranks, or with every revolution of the chain, or whether they are only heard when the machine passes over rough bits of road.

After considerable wear and tear it is not infrequently found that the pedals of a machine work loose in the sockets. The reason for this may be readily found in the manner by which the thread of the screw has become so much worn that it no longer bites. A repairer could, no doubt, cut a new thread, but a quicker and quite as efficient a manner of keeping it steady is the following: Wind the stem closely with coarse thread or darning wool, and coat with the ordinary gum arabic. Then screw on the nut as firmly as possible, and it will be generally found to hold securely. If it does not, a small drop of liquid plaster of paris will keep the nut in its proper place, although it is far more difficult to remove than the gum.

Gear Combinations.

In speaking of the gear of a wheel, imagine we are riding a high wheel, or that at every revolution of the pedal we are carried the same distance that a high wheel would carry us. For example, when we speak of a 68-inch gear we mean that at every revolution of the pedal we are carried the same distance as we would be on a wheel 68 inches in diameter. To get the gear of a wheel, multiply diameter of the rear wheel in inches by the number of teeth in front sprocket and divide by number of teeth in rear sprocket—this will give the gear you are riding. For convenience we give the following table of gears:

Teeth on Sprocket Wheel. Crank.	Hub.	Gear 28-inch Wheel.	Feet per Revolution.	Revolutions per Mile.
17	7	68	17.80	296.63
17	8	59 1-2	15.66	337.16
17	9	52 8-9	13.84	381.32
18	7	72	18.85	280.25
18	8	63	16.49	320.19
18	9	56	14.66	360.16
19	7	76	19.89	265.46
19	8	66 1-2	17.40	300.34
19	9	59 1-9	15.47	341.19
20	7	80	20.94	252.14
20	8	70	18.32	288.04
20	9	62 2-9	16.14	327.13

Riding and Breathing.

There is little doubt that, morally and physically, most people would be the better for keeping their mouths shut a good deal more than they do at present, but the observation applies with special force to the cyclist. A beginner, learning to ride, usually keeps his mouth open, with the idea apparently of taking in as much air as he can. Unfortunately, the plan cuts both ways, for he expires as freely as he inspires, and between the two processes his mouth and throat are speedily as dry as the proverbial lime-kiln. Soon follows an unquenchable thirst, a thirst which even the deepest and coolest potations fail to relieve for more than a few minutes. It cannot be too strongly impressed on cyclists always to ride with the mouth shut, and to breathe through the nostrils only. The adoption of this plan not only prevents in a great measure the painful thirst above mentioned, but materially economizes the strength of the rider. A little determination is necessary at first, but the habit is quickly acquired, and, like other habits, soon becomes second nature.

SOME WELL-KNOWN RIDERS.

The following sketches were kindly furnished by the Palmer Tire Company :

A. C. McDONELL.

A. C. McDonell is a clever young Rochester road rider who holds the record for 25 and 100 miles.

J. F. STARBUCK.

J. F. Starbuck is a long-distance rider of wide reputation. His friends, during the past season, wanted a match for him against Michael, the Welshman, for a large stake.

RALPH SAMBERG.

Ralph Samberg is a Michigan rider who is said to be a coming champion.

JAY EATON.

Jay Eaton's cleverness on flat indoor paths has won him the reputation of King of the Indoor Tracks.

W. E. BECKER.

W. E. Becker is the National five-mile champion.

TOM AND NAT BUTLER.

As racing men no two Americans were more heard of in 1896 than the Butler brothers, who have won enviable reputations as speed merchants.

EARL PEABODY.

Earl Peabody is a young Chicagoan who rides as an amateur in winning form. He is of the University of Chicago and won thirty firsts during the summer.

CHARLIE MURPHY.

Charlie Murphy is called the "old war-horse," for he has seen his best days on the path and has grown reminiscent.

We are indebted to Morgan & Wright, Chicago, for the following sketches of the members of their racing team:

O. L. STEVENS.

O. L. Stevens has, during the past season, raced on the National circuit and has shown up to good advantage. Previous to his entering on the National circuit, he gained a reputation for himself by establishing several new world's records at unpaced work. And at the present time there stands to his credit the one-quarter, one-third and one-half mile world's records.

TOM COOPER.

Tom Cooper has the credit of winning more races during the past season than any other racing man, and by some he is given the credit of championship honors, while others give the credit to Bald.

J. COBURN.

J. Coburn hails from St. Louis, and has been prominently dentified with racing on the National circuit up to and including the National meet, since which time his racing has been more of a local character.

C. R. COULTER.

C. R. Coulter recently established a new record for the unpaced mile, covering the distance in 1:59 1-5, and by his wonderful ride has practically secured a cinch on the Morgan & Wright trophy offered for the fastest unpaced mile. This trophy has a melting value of $650.

W. COBURN.

W. Coburn is a very promising racing man, and during the past season he rode well up with the top-notchers, and at the Louisville meet he won a mile open event which was one of the principal races of the meet. Also in the championship events he was well placed.

A. C. MERTENS.

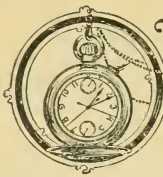
A. C. Mertens, who, prior to the season of 1896, was looked upon as a crack road rider of the Northwest, showed some considerable speed on the track, and joined the circuit at the Illinois State meet in Peoria, since which time he has followed the racing circuit up to the closing meet at Washington. He has placed to his credit several well-earned races, and is looked upon as a very promising rider for 1897.

FRED LOUGHEAD.

Fred Loughead made an exceptionally good showing during the past season on the National circuit. Prior to this season, Loughead, through his riding, had won for himself the title of Champion of Canada, and which he still holds. Since the close of the circuit he has established some new Canadian records on the Toronto track.

HARLEY DAVIDSON.

Harley Davidson holds nearly all the Canadian records. His principal racing was in Canada during the past season, he having raced but a very few times in the United States.



ON THE TRACK

BICYCLE RECORDS.

Accepted by the L.A.W., December, 1896.

PROFESSIONAL RECORDS.

FLYING START—PACED.

Distance.	Time.	Holders.	Track and Date.
⅔ miles....	.58 3-5....	W. W. Hamilton...	Coronado, Cal., March 2, 1896
¾ "	1.17	Peter J. Berlo.....	New Orleans, La., Dec. 20, 1895
1 "	1.39 1-5....	W. W. Hamilton..	Coronado, Cal., March 2, 1896
2 "	3.43 1-5....	Peter J. Berlo.....	Louisville, Ky., Nov. 13, 1895
3 "	5.30 4-5....	"	New Orleans, La., Dec. 13, 1895
4 "	7.50	"	" "
5 "	9.51 2-5....	"	" "

FLYING START—UNPACED.

¼ miles....	.28 2-5....	Otto Ziegler, Jr....	Laredo, Tex.,	June 8, 1896	
⅓ "	.34 1-5....	W. W. Hamilton...	Coronado, Cal ,	March 2, 1896	
1 "	1.59 1-5....	Clinton R. Coulter,	Denver, Col.,	Oct. 2, 1896	
2 "	4.29	A. F. Senn.....	Louisville, Ky.,	Nov. 2, 1895	
3 "	7.11	"	"	Nov. 10, 1895	
4 "	9.36 4-5....	"	"	Nov. 18, 1895	
6 "	14.25	"	"	"	
7 "	16.30	"	"	"	
8 "	19.15 2-5....	"	"	"	
9 "	21.42 3-5....	"	"	"	
10 "	24.10	"	"	"	
11 "	26.38	"	"	"	
12 "	29.08 2-5....	"	"	"	
13 "	31.38	"	"	"	
14 "	34.37	"	"	"	
15 "	36.36 1-5....	"	"	"	
16 "	39.07	"	"	"	
17 "	41.38	"	"	"	
18 "	44.11	"	"	"	
19 "	46.44 3-5....	"	"	"	
20 "	49.20	"	"	"	
21 "	51.35 4-5....	"	"	"	
22 "	54.31 2-5....	"	"	"	
23 "	57.10 2-5....	"	"	"	
24 "	59.54	"	"	"	
25 "	1.02.37 2-5....	"	"	"	

FLYING START—COMPETITION.

⅓ miles....	.45	F. E. Echefski.....	Santa Monica,	Cal., Feb,	22, 1896
½ "	1.00 4-5....	Otto Ziegler.....	New Orleans,	La., June	13, 1896
⅔ "	1.25	Tom Cooper.....	Cincinnati,	O., May —,	1896
1 "	2.10 4-5....	Arthur Gardiner...	New Orleans,	La.	

TANDEM—FLYING START—PACED.

Distance.	Time.	Holders.	Track and Date.
1 mile.....	1.50 1-5....	Crooks-Weinig.....	Louisville, Ky., Oct. 25, 1895

TANDEM—FLYING START—UNPACED.

½ miles....	.52 3-5....	Terrill-Taylor.....	Coronado, Cal., March 21, 1896
¾ "	1.25 3-5....	Evans-Patton.....	San Jose, Cal., May 28, 1896
1 "	1.54 2-5....	"	" May 29, 1896
2 "	4.04 2-5....	"	" "
3 "	6.17 1-5....	"	" "
4 "	8.26	"	" "
5 "	10.53 3-5....	"	" "
10 "	22.17	"	" "

AMATEUR RECORDS.

FLYING START—PACED.

¼ miles....	.24 2-5....	J. S. Johnson.....	Oct. 13, 1895
⅓ "	.34 1-5....	A. W. Porter.....	Waltham, Mass., Nov. 2, 1894
½ "	.53	"	" "
⅔ "	1.14 1-5....	Amos B. Hughes..	Denver, Col., May 23, 1896
¾ "	1.22 4-5....	" ..	" "
1 "	1.47 1-5....	" ..	" "
2 "	3.56 3-5....	" ..	" "
3 "	6.30 4-5....	Geo. N. Adams...	Jacksonville, Fla., July 17, 1896
4 "	8.43 1-2....	" ...	" "
5 "	10.35 1-2....	" ...	" "
6 "	13.14 1-2....	" ...	" "
7 "	15.25 1-2....	" ...	" "
8 "	17.42	" ...	" "
9 "	19.53	" ...	" "
10 "	22.31 3-5....	" ...	" "

FLYING START—UNPACED.

¼ miles....	.25 1-5....	A. B. Simons.....	Deming, N. M., May 26, 1896
⅓ "	.33 3-5....	"	" "
½ "	.59	Harry C. Clark....	Denver, Col., Nov. 20, 1893
⅔ "	1.26 1-5....	J. D. Park.....	Denver, Col., Nov. 24, 1894
¾ "	1.37	F. B. Stowe.....	Springfield, Mass., Oct. 20, 1894
1 "	2.05 1-5....	Harry C. Clark....	Denver, Col., Oct. 17, 1895
2 "	4.38 3-5....	" ...	" Nov. 11, 1895
3 "	7.03	O. B. H'ck'nberger.	Denver, Col., Dec. 13, 1895
4 "	9.31 2-5....	" .	" "
5 "	11.56 4-5....	" .	" "
10 "	25.26 4-5....	A. F. Senn.....	Utica, N. Y., Oct. 20, 1894
25 " 1.05.30	"	" " 23, 1894
50 " ....2.29.00 4-5....	Wm. Becker.....	Freeport, Ill., Oct. 17, 1895

COMPETITION—STANDING START.

¼ miles....	.29 3-5....	G. F. Royce.....	Paterson, N. J., July 4, 1894
⅓ "	.43	Geo. Packer, Jr...	Denver, Col., July 13, 1895
½ "	1.01	Frank M. Byrne..	San Jose, Cal., Sept. 9, 1895
⅔ "	1.25	Earl Bovee.....	Binghamton, N. Y., Aug. 4, 1896
1 "	2.00 2-5....	F. F. Desmond, Jr.	Denver, Col., Aug. 8, 1896
2 "	4.26 1-5....	Otto Maya.....	Latrobe, Pa., July 20, 1895

Competition—Standing Start.—Continued.

Distance.	Time.	Holders.	Track and Date.
3 miles....	7.05 3-5....	G. A. Maxwell....	St. Louis, Mo., Oct. 24, 1894
4 "	9.42 2-5....	A. A. Hansen.....	Minneapolis, Minn., Aug. 15,'95
5 "	11.49 1-5....	J. C. Mitchell.....	Louisville, Ky., Sept. 14, 1895
6 "	14.36	A. A. Hansen.....	Minneapolis, Minn., Aug. 15,'96
7 "	17.00	"	" "
8 "	19.29 1-5....	"	" "
9 "	22.00	"	" "
10 "	24.18 2-5....	"	" "
11 "	26.43 1-5....	"	" "
12 "	29.10 2-5....	"	" "
13 "	31.27 1-5....	"	" "
14 "	33.49 4-5....	"	" "
15 "	36.11 2-5....	"	" "
16 "	38.35 1-5....	"	" "
17 "	40.54 2-5....	"	" "
18 "	43.22 1-5....	"	" "
19 "	45.49	"	" "
20 "	48.08 1-5....	"	" "
21 "	50.39 2-5....	"	" "
22 "	53.05 4-5....	"	" "
23 "	55.30	"	" "
24 "	57.59 3-5....	"	" "
25 " ....1.00.30 1-5....		"	" "
26 " ....1.02.54 2-5....		"	" "
27 " ....1.05.22 4-5....		"	" "
28 " ....1.07.45 1-5....		"	" "
29 " ... 1.10.08		"	" "
30 " ....1.12.34 1-5....		"	" "
31 " ....1.15.04 2-5....		"	" "
32 " ....1.17.26 1-5....		"	" "
33 " ....1.19.42 3-5....		"	" "
34 " ....1.22.13 2-5....		"	" "
35 " ....1.24.34 4-5....		"	" "
36 " ....1.27.15 1-5....		"	" "
37 " ....1.29.49 2-5....		"	" "
38 " ....1.32.35 1-5....		"	" "
39 " ....1.35.08 3-5....		"	" "
40 " ....1.37.34 2-5....		"	" "
41 " ....1.40.24 1-5....		"	" "
42 " 1.43.07		"	" "
43 " ....1.45.54 2-5....		"	" "
44 " ....1.48.17 1-5....		"	" "
45 " 1.51.40		"	" "
46 " ....1.54.30 2-5....		"	" "
47 " ....1.57.26 3-5....		"	" "
48 " 2.00.20		"	" "
49 " ....2.03.29 1-5....		"	" "
50 " ....2.06.30 1-5....		"	" "
51 " ....2.09.32 2-5....		"	" "
52 " ....2.12.37 1-5....		"	" "
53 " 2.15.44		"	" "
54 " ....2.18.50 3-5....		"	" "
55 " 2.22.00		"	" "
56 " ....2.25.15 1-5....		"	" "
57 " ....2.28.50 2-5....		"	" "
58 " ....2.32.47 1-5....		"	" "
59 " 2.36.11		"	" "
60 " 2.39.01		"	

COMPETITION—STANDING START—PACED.

Distance.	Time.	Holders.	Track and Date.
2 miles....	4.15 2-5....	Forest H. Wilson..	Chicago, Ill., Sept. 22, 1896
3 "	6.22 3-5....	" ..	" "
4 "	8.34 3-5....	" ..	" "
5 "	10.48 2-5....	" ..	" "
6 "	12.58 2-5....	" ..	" "
7 "	15.07 2-5....	" ..	" "
8 "	17.24 3-5....	" ..	" "
9 "	19.34 3-5....	" ..	" "
10 "	21.47 4-5....	" ..	" "
11 "	24.01 4-5....	" ..	" "
12 "	26.07 4-5....	" ..	" "
13 "	28.18	" ..	" "
14 "	30.24 2-5....	" ..	" "
15 "	32.40 1-5....	" ..	" "
16 "	34.39	" ..	" "
17 "	36.54 3-5....	" ..	" "
18 "	39.07 1-5....	" ..	" "
19 "	41.21 3-5....	" ..	" "
20 "	43.37	" ..	" "
21 "	45.53	" ..	" "
22 "	48.03 3-5....	" ..	" "
23 "	50.13 1-5....	" ..	" "
24 "	52.24 1-5....	" ..	" "
25 "	54.35	" ..	" "

TANDEM—FLYING START—PACED.

¼ miles....	.25 4-5....	H'g'erty-Williams.	Waltham, Mass., Nov. 2, 1894
⅓ "	.34 2-5....	" .	" "
½ "	.52 1-2....	" .	" "
1 "	1.52 3-5....	" .	" Oct. 27, 1894

TANDEM—FLYING START—UNPACED.

¼ miles....	0.24 4-5....	Rogers-Faries.....	Decatur, Ill., Oct. 27, 1896
⅓ "	.35	D'visw'th-M'chell.	Louisville, Ky., July 4, 1896
½ "	.56	"	" "
⅔ "	1.17	"	" "
1 "	2.03	Benson-Downing..	San Jose, Cal., Oct. 23, 1895

AMERICAN ROAD RECORDS.

A compilation of American road records, as accepted by the Century Road Club, of America, is as follows:

NATIONAL RECORDS.

5 miles...	11.11 2-5	...Geo. Hamlin....	San Francisco,	Nov. 17, 1895
10 " ...	24.14	...L. N. Walleston..	Newburyport,	Oct. 4, 1895
15 " ...	36.24	... " ..	"	"
20 " ...	48.58	... " ..	"	"
25 " ...	51.55	...A. B. McDonell..	Buffalo,	October 19, 1895
50 " ...	2.15.00	...L. C. Wahl.....	Colorado Springs,	May 10, 1895
100 " ...	4.40.09	...A. B. McDonell..	Buffalo, Oct. 28,	1895
200 " ...	12.20.00	...A. W. Evans....	New Brunswick, Aug.	19, 1895
500 " ...	56.05.00	...A. E Smith.....	Chicago, June 28-July	1, 1896
1,000 " ...	113.45.00	...J. F. Gunther...	Oct. 6-11,	1894.
21,053 miles, one year.....		A. A. Hansen...	Minneapolis,	1894
92 centuries, one year.....		W. A. Rubey.	Louisville,	1895

STATE RECORDS.

FIVE MILES.

California—11.11 2-5, Geo. Hamlin, San Francisco, Nov. 17, 1895.
Texas—11.18 1-5, W. A. Parker, Waco, Nov. 29, 1894.
Massachusetts—11.49, L. N. Walleston, Newburyport, Oct. 4, 1895.
Iowa—11.50, E. Kostomlatsky, Oskaloosa, Oct. 27, 1895.
Pennsylvania—12.15, W. A. Wenzel, Philadelphia, July 7, 1894.
New York—11.42, Linus Schillinger, Syracuse, Aug. 7, 1896.
New Jersey—12.55, Monte Scott, Plainfield, Oct. 12, 1894.
Utah—15.37, W. H. Ingham, Salt Lake City, Sept. 22, 1893.

TEN MILES.

Massachusetts—24.14, L. N. Walleston, Newburyport, Oct. 4, 1895.
Texas—24.16 1-5, W. A. Parker, Waco, Nov. 29, 1894.
California—24.27, F. M. Byrne, San Francisco, Oct. 19, 1895.
New York—24.47 4-5, Linus Schillinger, Syracuse, Aug. 10, 1896.
Iowa—25.25, E. Kostomlatsky, Oskaloosa, Oct. 27, 1895.
Colorado—26.04, Max M. Kreutz, Denver, Aug. 15, 1896.
New Jersey—26.07 2-5, Monte Scott, Plainfield, Oct. 12, 1894.
Missouri—26.34, H. C. Wood, Kansas City, Oct. 17, 1895.
Minnesota—27.32, A. C. Mertens, St. Paul, May 30, 1895.
Ohio—28.17 2-5, J. T. Graves, Cleveland, Oct. 19, 1894.
Maryland—28.50, L. C. Wahl, Washington, D. C., Oct. 15, 1893.
Tennessee—29.10, W. H. Whitehead, Memphis, Aug. 14, 1894.
Utah—29.26, T. S. Jensen, Salt Lake City, July 10, 1894.

FIFTEEN MILES.

Massachusetts—36.24, L. N. Walleston, Newburyport, Oct. 4, 1895.
New York—37.00, G. A. Phillips, State Line, Aug. 25, 1895.
New Jersey—39.30 2-5, Monte Scott, Plainfield, Oct. 12, 1894.
Iowa—40.00, W. A. Borton, Oskaloosa, Oct. 27, 1895.
Pennsylvania—42.29, A. Lejeal, Erie, Sept. 1, 1894.
Ohio—42.48, W. S. Furman, Cincinnati, July 4, 1894.
Missouri—44.38 1-5, A. L. Proulx, Kansas City, June 18, 1894.
Utah—49.40, T. D. Fenton, Salt Lake City, May 30, 1895.

TWENTY MILES.

Massachusetts—48 58, L. N. Walleston, Newburyport, Oct. 4, 1895.
Texas—50.08, W. A. Parker, Waco, Nov. 29, 1894.
New Jersey—52.51, Monte Scott, Plainfield, Oct. 12, 1894.
Iowa—53.30, W. A. Borton, Oskaloosa, Oct. 27, 1895.
New York—58.44 1-2, E. F. Leonert, Buffalo, June 23, 1894.
Ohio—58.56, W. S. Furman, Lima, May 30, 1894.
Maryland—59.36, C. E. Gause, Washington, D. C., Oct. 16, 1894.
Pennsylvania—1.05.55, A. Lejeal, Erie, Sept. 6, 1894.

TWENTY-FIVE MILES.

New York—51.55, A. B. McDonell, Buffalo, Oct. 19, 1895.
Massachusetts—1.00.59, L. N. Walleston, Newburyport, Oct. 4, 1895.
Colorado—1.02.38, E. Tyler Smith, Denver, Sept. 7, 1896.
New Jersey—1.05 21 4-5, Monte Scott, Plainfield, Oct. 12, 1894.
Ohio—1.09.42 2-5, W. S. Furman, Cleveland, May 30, 1895.
Missouri—1.10.00, R. E. Miller, St. Louis, July 14, 1895.
California—1.10.30 2-5, C. S. Wells, San Leandro, Feb. 22, 1896.
Rhode Island—1.10.45, L. A. Callahan, Providence, July 7, 1894.
Utah—1.26.00, S. T. Durant, Salt Lake City, Oct. 10, 1895.
Texas—1.28.00, M. W. McClure, Dallas, Sept. 28, 1895.

FIFTY MILES.

Colorado—2.15.00, L. C. Wahl, Colorado Springs, May 10, 1895.
New York—2.30.40, A. E. Weinig, Buffalo, Sept. 15, 1894.
Missouri—3.10.00, R. E. Miller, St. Louis, July 14, 1895.
Iowa—3.14.00, C. F Manahan, Ackley, Aug. 4, 1895.
Utah—3.15.00, N. W. Hewett, Salt Lake City, Oct. 6, 1895.
Nebraska—3.25.00, E. J. Whitson, Grand Island, Sept. 29, 1895.
Texas—3.48.00, F. Taylor, Dallas, March 23, 1895.

ONE HUNDRED MILES.

New York—4.40.09, A. B. McDonell, Buffalo, Oct. 28, 1895.
Colorado—5.22.30, P. Carlton Wright, Colorado Springs, Aug. 9, 1896
New Jersey—5.35.00, R. P. Searle, Elizabeth, Oct. 12, 1894.
Illinois—5.42.00, C. A. Wescott, Chicago, Oct. 20, 1895.
Maryland—6.23.00, J. R. Dunlop, Baltimore, Oct. 6, 1895.
Minnesota—6.25.00, A. A. Hansen, Minneapolis, April 16, 1895.
Pennsylvania—6.51.02, B. G. Goble, Pittsburg, Sept. 29, 1894.
Missouri—7.00.00, R. E. Miller, St. Louis, July 14, 1895.
Iowa—7.18.00, C. F. Manahan, Ackley, Aug. 4, 1895.
Ohio—7.20.00, C. G. Merrills, Cleveland, Oct. 8, 1893.
Nebraska—7.32.00, E. J. Whitson, Grand Island, Sept. 29, 1895.
Utah—7.32.00, S. T. Durant, Salt Lake City, Oct. 10, 1895.
Texas—8.21.00, F. Taylor, Dallas, March 23, 1895.

TWO HUNDRED MILES.

New Jersey—12.20.00, A. W. W. Evans, New Brunswick, Aug. 19, 1895.
New York—13.10.40, T. T. Mack, Buffalo, Oct. 19, 1894.
California—14.14.30, C. Sorenson, San Francisco, June 9 1895.
Ohio—15.57.00, C. G. Merrills, Cleveland, Oct. 8, 1893.
Illinois—16 39.00, R. P. Searle, Chicago, Aug. 5, 1894.
Massachusetts—17.28.30, F. C. Graves, Springfield, Oct. 31, 1893.
Minnesota—18.09.00, A. A. Hansen, Minneapolis, April 18, 1895.
Iowa—20.15.00, C. E. Jenkins, Omaha, Neb., Sept. 7-8, 1895.

TWENTY-FOUR HOURS.

New Jersey—277 miles, A. W. W. Evans, New Brunswick, Aug. 19-20, 1895
Ohio—246 miles. C. G. Merrills, Cleveland, Oct. 8-9, 1893

TANDEM RECORDS.

10 Miles—27.05 2-5, Winton-Baird, Cleveland, Oct. 19, 1894.
15 Miles—37.02, Knuth-Roth, State Line, N. Y., Aug. 25, 1895.
20 Miles—53.00, Kennedy-McGuire, Denver, Dec. 9, 1894.
25 Miles—1.10.00, Wills-Cochran, St. Louis, July 14, 1895.
50 Miles—3.10.00, Wills-Cochran, St. Louis, July 14, 1895.
100 Miles—7.00.00, Wills-Cochran, St. Louis, July 14, 1895.

BEST INDIVIDUAL MILEAGE FOR CALENDAR YEAR.

Minnesota—A. A. Hansen, Minneapolis, 21,053 miles.
Pennsylvania—M. Keim, Sr., Philadelphia, 18,538 miles.
New York—C. M. Shadbolt, Brooklyn, 15,164 miles.
Illinois—R. E. O'Connor, Chicago, 14,178 miles.
South Dakota—T. W. Rae, Madison, 12,436 miles.
Indiana—E. S. Shenkenberger, Oxford, 11,165 miles.
Kentucky—W. A. Rubey, Louisville, 10,211 miles.
Missouri—G. S. Easton, St. Louis, 9,769 miles.
Nebraska—L. T. Brodstone, Superior, 9,451 miles.
New Jersey—G. H. Garwood, Trenton, 9,369 miles.
Iowa—J. A. Pallister, Ottumwa, 9,300 miles.
Ohio—M. E. Gifford, Cleveland, 8,727 miles.
Maryland—S. M. Warns, Baltimore, 8,659 miles.
Colorado—L. C. Wahl, Colorado Springs, 5,399 miles.

BEST INDIVIDUAL CENTURY RECORDS FOR CALENDAR YEAR

Kentucky—W. A. Rubey, Louisville, 92 centuries.
Illinois—E. N. Roth, Chicago, 84 centuries.
Pennsylvania—M. N. Keim, Philadelphia, 78 centuries.
New York—J. C. Knowles, Brooklyn, 63 centuries.
Minnesota—A. A. Hansen, Minneapolis, 59 centuries.
Iowa—J. A. Pallister, Ottumwa, 53 centuries.
Nebraska—L. T. Brodstone, Superior, 44 centuries.
Indiana—E. Shenkenberger, Oxford, 36 centuries.
Maryland—J. R. Dunlop, Baltimore, 31 centuries.
Ohio—F. Boyle, Cleveland, 31 centuries.
New Jersey—G. H. Garwood, Trenton, 24 centuries.
Colorado—J. Atcheson, Jr., Denver, 20 centuries.
South Dakota—T. W. Rae, Madison, 18 centuries.
Missouri—H. L. Bowlds, St. Louis, 16 centuries.
Texas—C. F. Wilmans, Dallas, 15 centuries.
Massachusetts—F. G. Phelps, Boston, 15 centuries.
Michigan—G. Scharf, Ypsilanti, 10 centuries.
Oregon—F. B. Knapp, Eugene, 10 centuries.

CENTURY COURSE RECORDS.

Elgin-Aurora Century Course—5.57.30, H. Kohl, Sept. 27, 1895.
Chicago-Libertyville-Waukegan C. C.—5.42.00, C. A. Westcott, Oct. 20, 1895.
Buffalo-Le Roy Century Course—5.33.20, F. C. Fuhrman, Sept. 8, 1895.
Buffalo-Dunkirk Century Course—7.07.00, W. L. Steimal, June 26, 1894.
Denver-Evans Century Course—6.31.00, A. L. Hackenberger, Sept. 27, 1896.
Minneapolis-Northfield Century Course—7.03.00, A. A. Hansen, Oct. 15, 1894.
Colorado Springs-Pueblo Century Course—5.53.45, P. C. Wright, May 24, 1896.
Elgin-Aurora Century Course (tandem)—6.50.00, F. G. Clark and W. F. Zuse, Aug. 30, 1896.

CITY TO CITY RECORDS.

New York-San Francisco—902.15.00, Norman De Vaux, John La France, June 1-July 8, 1896.
Chicago-San Francisco—660.00.00, Norman De Vaux, John La France, June 11-July 8, 1896.
New York-Philadelphia—8.50.00, C. P. Staubach, Aug. 25, 1895.

New York-Philadelphia and return—19.56.00, C. P. Staubach, Aug. 25, 1895.
New York-Albany—21.54.00, R. P. Searle, Oct. 22-23, 1894.
Chicago-New York—137.21.00, A. E. Smith, June 28-July 4, 1896.
Chicago-Buffalo—59.34.00, A. E. Smith, June 28-July 1, 1896.
Chicago-Rochester—68.22.00, A. E. Smith, June 28-July 1, 1896.
Chicago-Cleveland—35.30.00, A. E. Smith, June 28-30, 1896.
Chicago-Milwaukee—5.56.03, E. Ulbricht, Nov. 7, 1893.
Cleveland-New York—75.51.00, A. E. Smith, June 30-July 4, 1896.
Cleveland-Rochester—30.52.00, A. E. Smith, June 30-July 1, 1896.
Cleveland-Buffalo—15.00.00, A. E. Smith, July 10, 1896.
Boston-Chicago—348.00.00, A. C. Smith, A. L. Bianchi, Sept. 9-24, 1894.
Boston-Detroit—275.30.00, F. E. Devlin, July 21-Aug. 1, 1894.
Buffalo-Erie—6.20.00, L. H. Bannister, Sept. 28, 1893.
Buffalo-Erie and return—13.10.40, T. T. Mack, Oct. 19, 1894.
Buffalo-Pittsburg—21.15.30, C. G. Wallin, Aug. 24, 1895.
Buffalo-Rochester—2.57.27, A. B. McDonell, Oct. 22, 1895.
Baltimore-Philadelphia—9.30.00, S. M. Warns, Dec. 1, 1895.
Baltimore-Washington—2.49.00, L. C. Wahl, Oct. 18, 1893.
Erie-Pittsburg—13.11.30, C. G. Wallin, Aug. 24-25, 1894.
Erie-Buffalo—4.40.09, A. B. McDonel., Oct. 28, 1895.
Frederick-Baltimore—3.23.00, S. M. Warns, June 21, 1896.
Rochester-New York—67.41.00, A. E. Smith, July 1-4, 1896.
St. Louis-De Soto—3.05.00, A. G. Harding, Nov. 16, 1894.
St. Louis-De Soto and return—7.47.00, H. Kohl, May 3, 1895.
Syracuse-Utica—2.59.00, A. J. Rosentreter, Aug. 9, 1895.
Syracuse-Utica and return—6.33.00, A. J. Rosentreter, Aug. 9, 1895.
Springfield-Boston and return—17.28.30, F. C. Graves, Oct. 31, 1893.
Colorado Springs-Denver—4.07.00, T. O. Vaux, May 8, 1895.
Colorado Springs-Denver and return—12.55.00, R. E. Osborne, June 28, 1896.
Hagerstown-Baltimore—5.41.30, F. H. Harvey, Oct. 15, 1893.
Louisville-Paris and return—18.32.00, N. G. Crawford, July 27, 1896.
Rockford-Chicago—6.50.00, R. P. Searle, July 19, 1894.
Rockford-Chicago and return—19.48.00, F. J. Ashton, July 31, 1893.
Lexington-Covington—6.50.10, C. E. Nadaud, May 5, 1894.
Colorado Springs-Pueblo—2.07.00, L. C. Wahl, May 10, 1895.

AMERICAN HOUR RECORDS.

Hrs.	Miles.	Yards.	Holder.	Place.	Date.
1....	27....	1690....	James Michael....	Manhattan Beach...	Sept. 18, 1896
2....	51....	1670....	C. W. Miller.....	Chicago, Ill.....	Sept. 24-25, 1896
3....	73....	1320....	F. Waller.....	"	"
4....	97....	495....	C. W. Miller.....	"	"
5....	117....	420....	F. Waller.....	"	"
6....	139....	25....	Louis Gimm.....	"	"
7....	159....	1214....	"	"	"
8....	181....	1320....	"	"	"
9....	203....	1506....	"	"	"
10....	224....	1606....	"	"	"
11....	243....	1586....	"	"	"
12....	265....	1735....	"	"	"
13....	278....	1745....	"	"	"
14....	309....	281....	"	"	"
15....	330....	540....	"	"	"
16....	344....	1361....	"	"	"
17....	366....	1651....	"	"	"
18....	385....	913....	"	"	"
19....	406....	647....	"	"	"
20....	423....	785 ...	"	"	"
21....	442....	32....	"	"	"
22....	460....	1350....	"	"	"
23....	477....	587....	"	"	"
24....	486....	1151....	"	"	"

RECORD BREAKING IN 1896.

Distance.	Time.	Holders.	Track and Date.
¼ miles....	.20 2-5....	John S. Johnson..	Nashville, Tenn., Oct. 28, 1896
⅓ "	.27 4-5....	" ..	" Oct. 29, 1896
½ "	.44 1-5....	" ..	" "
⅔ "	.58 3-5....	W. W. Hamilton..	Coronado, Cal., March 2, 1896
¾ "	1.10	John S. Johnson..	New Orleans, La., Nov. 12, 1896
1 "	1.39 1-5....	W. W. Hamilton..	Coronado, Cal., March 2, 1896
2 "	3.33 3-5....	James Michael....	New Orleans, La., Nov. 12, 1896
3 "	5.22	"	" "
4 "	7.15	"	" "
5 "	9.07	"	" "
6 "	11.00 1-5....	"	" "
7 "	12.53 3-5....	"	" "
8 "	14.46 3-5....	"	" "
9 "	16.40 2-5....	"	" "
10 "	18.33 1-5....	"	" "
11 "	20.33 1-5....	Thomas Linton...	Catford, London, July 7, 1896
12 "	22.35 2-5....	" ...	" "
13 "	24.23 3-5....	" ...	" "
14 "	26.21 1-5....	" ...	" "
15 "	28.13 2-5....	" ...	" "
16 "	30.09 4-5....	" ...	" "
17 "	32.03 3-5...	" ...	" "
18 "	33.57 4-5....	" ...	" "
19 "	35.54 2-5....	" ...	" "
20 "	37.53 4-5....	" ...	" "
21 "	39.53 2-5....	" ...	" "
22 "	41.50 2-5....	" ...	" "
23 "	43.45 4-5....	" ...	" "
24 "	45.45	" ...	" "
25 "	47.41	" ...	" "
26 "	49.40	" ...Crystal Palace, Lond., Oct. 21, '96	
27 "	51.38 1-5....	" ...	" "
28 "	53.37 2-5....	" ...	" "
29 "	55.34 4-5....	" ...	" "
30 "	57.32 4-5....	" ...	" "
31 "	59.22 4-5....	" ...	" "

SIX DAYS' PROFESSIONAL RACE.

Safety Bicycles—Hour Records.

MADISON SQUARE GARDEN, NEW YORK, DEC. 6-12, 1896.

The record by hours in the race which Schock won in 1893 and Hale's performance in 1896 are as follows:

Hr.	Name.	Mls.	Name.	Mls.	Hr.	Name.	Mls.	Name.	Mls.
1	Berlo	21	Linton	23	49	Schock	745	Hale	772
2	Waller	40	Lumsden	44	50	Schock	756	Hale	789
3	Fornuldt	57	Lumsden	64	51	Schock	767	Hale	807
4	V Emburg	75	Lumsden	83	52	Schock	770	Hale	823
5	V Emberg	91	Hale	99	53	Schock	776	Hale	839
6	V Emberg	108	Hale	118	54	Schock	783	Hale	852
7	V Emberg	125	Hale	137	55	Schock	796	Hale	858
8	Hosmer	141	Pierce	156	56	Schock	807	Hale	875
9	Waller	156	Hale	176	57	Schock	808	Hale	892
10	Hosmer	173	Foster	192	58	Martin	820	Hale	905
11	Hosmer	190	Hale	213	59	Martin	835	Hale	907
12	Hosmer	206	Hale	230	60	Martin	850	Hale	907
13	Hosmer	223	Reading	244	61	Martin	864	Hale	918
14	Hosmer	240	Reading	261	62	Martin	878	Hale	933
15	Hosmer	256	Reading	277	63	Martin	891	Hale	951
16	Hosmer	273	Reading	294	64	Martin	907	Hale	968
17	Hosmer	289	Reading	309	65	Martin	918	Hale	981
18	Hosmer	305	Reading	325	66	Martin	931	Hale	997
19	Waller	321	Reading	341	67	Martin	946	Hale	1009
20	Waller	337	Hale	359	68	Martin	961	Hale	1022
21	Waller	353	Hale	376	69	Martin	967	Hale	1036
22	Waller	367	Hale	393	70	Martin	977	Hale	1046
23	Waller	385	Hale	409	71	Martin	983	Hale	1059
24	Waller	402	Hale	426	72	Martin	983	Hale	1071
25	Schock	410	Hale	433	73	Martin	983	Hale	1071
26	Schock	418	Hale	449	74	Martin	992	Hale	1075
27	Martin	432	Hale	466	75	Martin	1004	Hale	1091
28	Martin	447	Hale	481	76	Martin	1012	Hale	1107
29	Schock	463	Hale	497	77	Martin	1012	Hale	1119
30	Schock	477	Hale	509	78	Waller	1015	Hale	1136
31	Schock	490	Hale	525	79	Waller	1025	Hale	1144
32	Schock	505	Hale	541	80	Waller	1025	Hale	1161
33	Schock	521	Hale	542	81	Waller	1036	Hale	1172
34	Schock	535	Hale	546	82	Waller	1051	Hale	1188
35	Schock	550	Hale	563	83	Waller	1067	Hale	1201
36	Schock	565	Hale	580	84	Waller	1081	Hale	1210
37	Schock	578	Hale	596	85	Waller	1095	Hale	1224
38	Schock	592	Hale	612	86	Waller	1108	Hale	1224
39	Schock	607	Hale	629	87	Waller	1123	Hale	1238
40	Schock	621	Hale	639	88	Waller	1137	Hale	1254
41	Waller	636	Hale	656	89	Schock	1149	Hale	1263
42	Waller	651	Hale	671	90	Schock	1160	Hale	1280
43	Waller	665	Hale	687	91	Schock	1170	Hale	1294
44	Schock	678	Hale	703	92	Schock	1183	Hale	1306
45	Schock	692	Hale	720	93	Schock	1197	Hale	1322
46	Schock	705	Hale	734	94	Schock	1205	Hale	1335
47	Schock	719	Hale	751	95	Schock	1218	Hale	1344
48	Schock	733	Hale	770	96	Schock	1232	Hale	1361

Hr.	Name.	Mls.	Name.	Mls.	Hr.	Name.	Mls.	Name.	Mls.
97	Schock...	1239	Hale.....	1361	120	Schock...	1474	Hale.	1646
98	Schock...	1252	Hale.....	1372	121	Schock...	1480	Hale.....	1657
99	Schock...	1264	Hale.....	1388	122	Schock...	1481	Hale.....	1660
100	Schock...	1277	Hale.....	1401	123	Schock...	1486	Hale.....	1670
101	Schock...	1287	Hale.....	1413	124	Schock...	1489	Hale.....	1684
102	Schock...	1287	Hale.....	1426	125	Schock...	1504	Hale.....	1700
103	Schock...	1288	Hale.....	1439	126	Schock...	1508	Hale.....	1713
104	Schock..	1302	Hale.....	1451	127	Schock...	1508	Hale.....	1727
105	Schock...	1316	Hale.....	1456	128	Schock...	1508	Hale.....	1738
106	Schock...	1327	Hale.....	1456	129	Schock...	1508	Hale.....	1748
107	Schock...	1341	Hale.....	1471	130	Schock...	1508	Hale.....	1761
108	Schock...	1355	Hale.....	1488	131	Schock...	1508	Hale.....	1779
109	Schock...	1368	Hale.....	1504	132	Schock ..	1508	Hale.....	1793
110	Schock...	1381	Hale.....	1515	133	Schock...	1513	Hale.....	1805
111	Schock...	1395	Hale.....	1530	134	Schock...	1525	Hale.....	1819
112	Schock...	1409	Hale.....	1543	135	Schock...	1530	Hale.....	1834
113	Schock ..	1423	Hale.....	1553	136	Schock...	1540	Hale.....	1849
114	Schock...	1436	Hale.....	1569	137	Schock...	1547	Hale.....	1850
115	Schock...	1448	Hale.....	1585	138	Schock...	1558	Hale.....	1867
116	Schock...	1457	Hale.....	1600	139	Schock...	1567	Hale.....	1879
117	Schock...	1468	Hale.....	1615	140	Schock...	1577	Hale.....	1891
118	Schock...	1469	Hale.....	1624	141	Schock...	1588	Hale.....	1903
119	Schock...	1473	Hale.....	1631	142	Schock...	1600	Hale.....	1910

The final score and prizes won in the six days' race, held in Madison Square Garden, New York City, the week ending December 12, 1896, are as follows:

		Miles.	Laps.	Prize.			Miles.	Laps.	Prize.
1	Hale.....	1910	8	$1,300	9	Ashinger.....	1673	3	100
2	Rice.....	1882	6	800	10	Moore.....	1661	7	100
3	Reading.....	1855	3	500	11	Maddox.....	1644	3	75
4	Forster.....	1829	4	350	12	Cassidy.....	1605	0	...
5	Schock.....	1766	2	300	13	Gannon.....	1366	8	...
6	Pierce.....	1758	1	200	14	McLeod.....	1350	2	...
7	Smith.....	1754	7	150	15	Glick.....	1096	3	...
8	Taylor.....	1732	2	125					

Hale's exact distance for 142 hours was 1,910 4-5 miles.

The Spalding Bicycle

Model No. 524. **For 1897**

Price, $100

SPECIFICATIONS

FRAME—Diamond, standard height 24 inches, front tubes 1⅛ inch, rear tubes ¾ inch, swaged and tapered at all connections, excepting at crank hanger. All connections, except one, steel thimbles. Tubular construction throughout.

FRONT FORK—Double plate crown. Side forks of large section, reinforced and gracefully tapered. No forgings.

BEARINGS—Tool steel cut from bar, tempered, ground and polished.

TIRES—28 inches by 1¾ inches. (See Options.)

SPOKES—Straight, tangent, swaged and nickeled.

CRANKS—6¾ inches. Round, spring steel, detachable.

PEDALS—Spalding combination, rubber and rat-trap. Dust proof.

HANDLE BARS—Steel tubing of large section. Cork grips.

BRAKE—Direct plunger with rubber friction blocks. Detachable.

SADDLE—Christy, with "T" post.

GEAR—70 inches—20 teeth by 8 teeth.

FITTINGS—Tool Bag, with tools and repair kit.

WEIGHT—Without brake, 23 pounds.

TREAD—" inches.

FINISH—Black enamel, nickeled trimmings.

OPTIONS—20-inch frame, Model No. 520; 22-inch frame, Model No. 522; 26-inch frame, Model No. 526; 28-inch frame, Model No. 528; Handle Bars, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (see page 81); Sprockets, front, 17, 18, 19, 20, 21, 22, 23, 24, 25; Sprockets, rear, 8, 9, 10 (for table of gears see page 63); Cranks, 6½, 7, 7½ or 8 inches; Spalding Adjustable Gooseneck Post; Tires, Spaulding & Pepper, Hartford, Palmer, Goodrich Single Tube or Dunlop Detachable; Pedals, extra wide; Saddle, Sager; Finish, dark blue or carmine enamel, gold striped, cherry finished rims.

NOTE—Brake cannot be fitted to handle bars Nos. 3, 4 or 5.

A. G. SPALDING & BROS.

New York Chicago Philadelphia

Factory, Chicopee Falls, Mass.

The Spalding Bicycle

Model No. 522. For 1897

THE LADY SPALDING

Price, $100

SPECIFICATIONS

FRAME—Curved double tube, standard height 22 inches, front tubes 1⅛ inch lower, 1 inch upper, rear tubes ¾ inch. Tubular construction throughout.

FRONT FORK—Double plate crown. Side forks of large section, reinforced and gracefully tapered. No forgings.

BEARINGS—Tool steel cut from bar, tempered, ground and polished.

TIRES—28 inches by 1⅝ inches. (See Options.)

SPOKES—Straight, tangent swaged and nickeled.

CRANKS—6½ inches. Round, spring steel, detachable.

PEDALS—Spalding rubber. Dust proof.

HANDLE BARS—Steel tubing of large section. Cork grips.

BRAKE—Direct plunger with rubber friction blocks. Detachable.

SADDLE—Christy, with "T" post.

GEAR—66½ inches—19 teeth by 8 teeth.

FITTINGS—Tool Bag, with tools and repair kit.

GUARDS—Wood, natural color, coach finished, laced.

WEIGHT—Complete, 28½ pounds.

TREAD—5½ inches.

FINISH—Black enamel, nickeled trimmings.

OPTIONS—20-inch frame, Model No. 620; 24-inch frame, Model No. 624; Handle Bars, Nos. 1, 2, 4, 6, 7, 8, 10 (see page 81); Sprockets, front, 17, 18, 19, 20; Sprockets, rear, 7, 8 (for table of gears see page 63); Cranks, 6, 6¾ or 7 inches; Spalding Adjustable Gooseneck Post; Tires, Spaulding & Pepper, Hartford, Palmer, Goodrich Single Tube or Dunlop Detachable; Saddle, Sager; Finish, dark blue or carmine enamel, gold striped, cherry finished rims.

A. G. SPALDING & BROS.

New York Chicago Philadelphia

Factory, Chicopee Falls, Mass.

The Spalding Bicycle

Model No. 123. **For 1897**

THE SPALDING SPECIAL

Price, $75

SPECIFICATIONS

FRAME—Diamond, standard height 23 inches, front tubes 1⅛ inch, rear tubes ¾ inch, swaged and tapered at connections. All connections, except one, steel thimbles. Tubular construction throughout.

FRONT FORK—Tubular throughout. Side forks of large section, reinforced both ends. No forgings.

BEARINGS—Tool steel cut from bar, tempered, ground and polished. Removable ball races throughout.

TIRES—28 inches by 1⅝ inches. (See Options.)

SPOKES—Straight, tangent, swaged and nickeled.

CRANKS—6¾ inches. Round, spring steel, detachable.

PEDALS—Spalding rat-trap. Dust proof.

HANDLE BARS—Steel tubing of large section. Cork grips.

SADDLE—Sager, with "T" post.

GEAR—68 inches—17 teeth by 7 teeth.

FITTINGS—Tool Bag, with tools and repair kit.

WEIGHT—With wood rims and rat-trap pedals, without brake, 23 pounds.

TREAD—5¼ inches.

FINISH—Black enamel, nickeled trimmings.

OPTIONS—20-inch frame, Model No. 120; 26-inch frame, Model No. 126; Handle Bars, Nos. 1, 2, 3, 8 or 9 (see page 81); Sprockets, front, 17, 18, 19, 20; Sprockets, rear, 7, 8 (for table of gears see page 63); Cranks, 6 or 7½ inches; Spalding Adjustable Gooseneck Post; Tires, Spalding & Pepper, Hartford or Goodrich Single Tube; Pedals, rubber; Saddle, Christy.

NOTE—Brake cannot be fitted to handle bars Nos. 3 or 9.

A. G. SPALDING & BROS.

New York Chicago Philadelphia

Factory, Chicopee Falls, Mass.

The Spalding Bicycle

Model No. 220. **For 1897**

THE LADY SPALDING SPECIAL

Price, $75

SPECIFICATIONS

FRAME—Curved double tube, standard height 20 inches, front tubes 1⅛ inch lower, ⅞ inch upper, rear tube ¾ inch, swaged and tapered at connections. Tubular construction throughout.

FRONT FORK—Tubular throughout. Side forks of large section, reinforced both ends. . No forgings.

BEARINGS—Tool steel cut from bar, tempered, ground and polished.

TIRES—28 inches by 1⅝ inches. (See Options.)

SPOKES—Straight, tangent, swaged and nickeled.

CRANKS—6 inches. Round, spring steel, detachable.

PEDALS—Spalding rubber. Dust proof.

HANDLE BARS—Steel tubing of large section. Cork grips.

BRAKE—Direct plunger with rubber friction blocks. Detachable.

SADDLE—Sager, with "T" post.

GEAR—68 inches—17 teeth by 7 teeth.

FITTINGS—Tool Bag, with tools and repair kit.

GUARDS—Wood, natural color, coach finished, laced.

WEIGHT—With wood rims, rubber pedals, chain guard, dress guard and brake all on, 26 pounds.

TREAD—5¾ inches.

OPTIONS—23-inch frame, Model No. 223; Handle Bars, Nos. 1, 2, 3, 8 or 9 (see page 81); Sprockets, front, 17, 18, 19, 20; Sprockets, rear, 7, 8 (for table of gears see page 63); Cranks, 6¾ inches; Spalding Adjustable Gooseneck Post; Tires, Spaulding & Pepper, Hartford or Goodrich Single Tube; Pedals, rat-trap; Saddle, Christy.

NOTE—Brake cannot be fitted to handle bar No. 9.

A. G. SPALDING & BROS.

New York Chicago Philadelphia

Factory, Chicopee Falls, Mass.

Spalding Hygienic or Cushion Frame

During the past season we have made a careful study of the requirements of riders in general and particularly of that class who ride solely for pleasure and consider comfort as the most essential feature of the bicycle, and as a result we are prepared to meet the demands of this class of the trade with the Spalding Hygienic Frame, made by us under patents of the Hygienic Wheel Company, of Philadelphia.

The frame which we offer contains many features which are original with us and which are not to be found in the machines of other makers operating under the same patents. We have simplified and improved the construction wherever possible, particularly in the rocker joint at the crank hanger, which will commend itself at first sight. It is unusually strong and is also adjustable for wear, and there is a lack of the usual complication to be found in most frames of this description.

This frame appeals strongly to conservative riders of heavy weight or those who experience any unpleasantness from continual riding over cobblestones or rough roads.

In ordering this machine the weight of the rider should be specified, that the proper weight of spring and air pressure may be used in the cushion.

The Spalding Hygienic Frame can be furnished in Series Nos. 5 and 6, at an additional cost of $10 per machine.

The construction of this frame will not permit the use of tires larger than 1¾ inches in diameter, and experience has shown that larger sized tires, even with heavy-weight riders, are unnecessary, as the elasticity of the frame more than compensates for any decrease in the size of the tire.

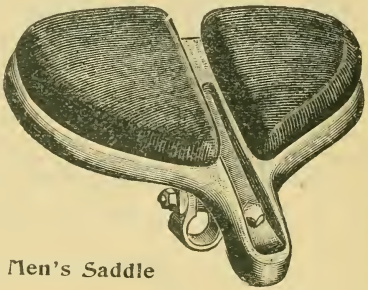
A. G. SPALDING & BROS.

Handle Bars for 1897 Spalding Bicycles.

No. 1. Medium raised, straight front, 17 inches.
No. 2. Medium drop, straight front, 17 inches.
No. 3. Ram's horn, 16 inches.
No. 4. Medium drop, extreme forward curve, 16 inches.
No. 5. Racing bar, forward curve, 14 inches.
No. 6. Medium raised, slight forward curve, 16 inches.
No. 7. Medium drop, slight forward curve, 16 inches.
No. 8. Extreme upturned, 18 inches.
No. 9. Adjustable, steel, 18 inches (No. 1 shape).
No. 10. Adjustable, wood, 18 inches.
Nos. 1, 2, 3, 8 and 9 *only* furnished on "Spalding Special."

The Christy
Anatomical Saddle

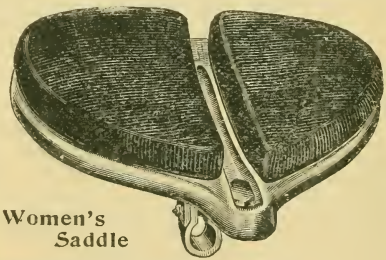
THE phenomenal success of the Christy Saddle during 1896 should be its greatest endorsement. It has fully met the universal demand for a hygienic saddle built on true anatomical principles. Our experience during the year has suggested many little improvements which, while not materially changing the general construction of the saddle, will greatly add to the rider's comfort.



Men's Saddle

For those desiring a spring saddle, we have devised the Spiral Spring models as shown on opposite page.

For women riders we especially recommend the spring saddle and shall always supply it unless otherwise ordered.



Women's Saddle

For those who desire a more rigid seat we have continued the Flat Spring model, used last season, and which gave the best of satisfaction to the majority of riders.

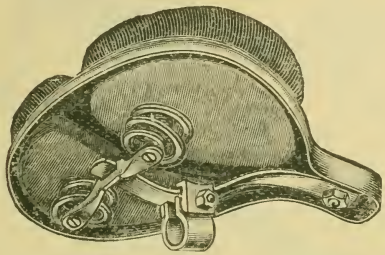
Handsome booklet, "Bicycle Saddles, from a Physician's Standpoint," mailed free.

A. G. SPALDING & BROS.

New York **Chicago** **Philadelphia**

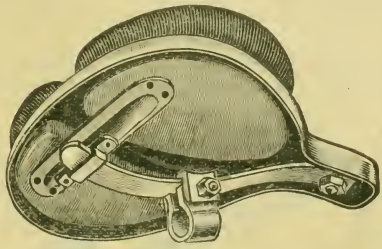
PRICE LIST

The Christy Anatomical Saddle



WITH SPIRAL SPRINGS.

No. 1. Men's model, width of seat 8 in., $5.00
No. 3. Men's model, width of seat 8¾ in., 5.00



WITH FLAT SPRINGS.

No. 5. Men's model, width of seat 8 in., $5 00
No. 7. Men's model, width of seat 8¾ in., 5.00

WOMEN'S MODELS.

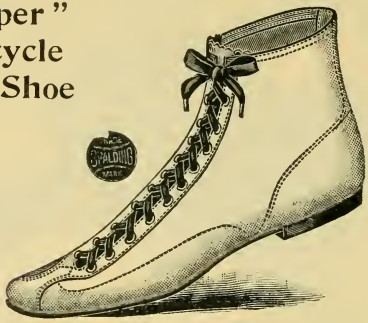
No. 9. Women's Special Saddle, Spiral Springs. $5.00
No. 11. Women's Special Saddle, Flat Springs. 5.00

Insist on the Christy Saddle being fitted to your bicycle.
No dealer will lose a sale on account of your preference.

A. G. SPALDING & BROS. New York Chicago Philadelphia

Spalding's Bicycle Shoes

"Clipper" Bicycle Shoe



High Cut.

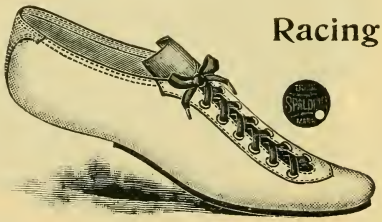
No. **4B.** Spalding's "Clipper" Bicycle Shoe, *High Cut*, selected calf, black, substantially made, and a very serviceable shoe, ... **$3.00**

No. **4T.** Same as our 4B, Russet, . . . **3.00**

No. **3B.** Spalding's "Clipper" Bicycle Shoe, *Low Cut*, selected calf, black, substantially made, and a most excellent shoe for general wear, . . . **$2 75**

No. **3T.** Same as our 3B, Russet, . . . **2.75**

Racing Shoe



No. **2B.** Spalding's "Racing" Shoe, extremely light and glove-fitting; each pair furnished with cleats, which can be readily attached after the position of the tread has been determined. Worn almost exclusively by all professionals. **$3.50**

Catalogue of Bicycle Sundries free to any address.

A. G. SPALDING & BROS. New York Chicago Philadelphia

The Spalding
HIGHEST QUALITY

Athletic Sweaters

...Our "Highest Quality" Sweaters are of the very finest Australian lambs' wool and are exceedingly soft and pleasant to wear. They are full fashioned to body and arms and without seams of any kind. We call special attention to the "Intercollegiate" grade, which were originally made by special order for the Yale foot ball eleven and are now exclusively used by all Intercollegiate players. They are considerably heavier than the heaviest sweater ever knitted and cannot be furnished by any other maker, as we have exclusive control of this special weight. The various grades in our "Highest Quality" Sweaters are identical in quality and finish, the difference in price being due entirely to variations in weight Colors: White, Navy Blue, Black and Maroon.

No. **A.**	"Intercollegiate," special weight,	**$7.00**
No. **B.**	Heavy weight, .	**5.00**
No. **C.**	Standard weight, .	**4.50**
No. **D.**	Medium weight, .	**3.50**

Our complete Catalogue of Athletic Uniforms and all other requisites for Indoor and Outdoor Sports mailed free to any address.

A. G. Spalding & Bros.

New York Chicago Philadelphia

Bicycling and Outing Sweaters

Shaker Sweaters

Our Shaker Sweaters are made of selected American wool and are of superior quality in fit and finish. We guarantee them to be absolutely all wool and full shaped to body and arms. Colors: White, Black, Navy Blue and Tan.

No. **3.** Standard weight, **$3.50**

Shaker Turtle Neck

Made in same style as our regular Turtle Neck, except that the inner or part to which collar is attached does not extend below shoulders. Double woven in front for protection to chest. Made same colors as above.

No. **33.** Standard weight, **$4.50**

Ribbed Sweaters

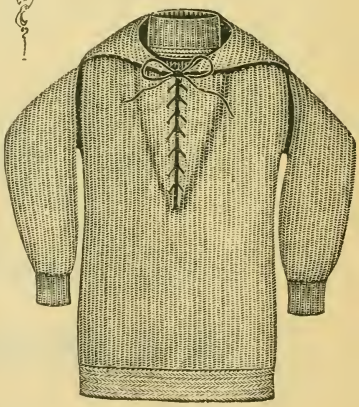
Made of fine Australian wool, is heavy ribbed and full shaped to body and arms, and guaranteed the finest and best line of Ribbed Sweaters ever offered at the price. Colors: White, Navy Blue, Black and Maroon.

No. **PX.** Special weight, **$3.00**
No. **9.** Medium weight, **1.50**

Ribbed Turtle Neck

Made in same style as our regular Turtle Neck, except that the inner or part to which collar is attached does not extend below shoulders. Double woven in front for protection to chest. Made same colors as above.

No. **99.** Medium weight, **$2.50**



Catalogue on Application. **A. G. Spalding & Bros.** New York Chicago Philadelphia

Spalding's Sweaters

Lace Front Sweater

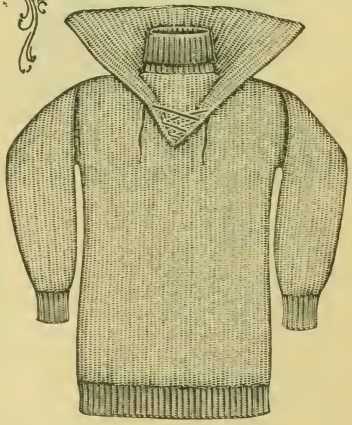
Our Lace Front Sweaters are made with large sailor collar, which can be turned up if desired, affording additional protection to back of neck and head. We can furnish them from stock in White, Navy, Black and Maroon. This style sweater made up in A or B quality, at 50 cents extra per garment, to order only.

No. **LC.** Standard weight, **$5.00**

Turtle Neck Sweater

The "Turtle Neck" Sweater is made of the finest Australian wool, with lace front and deep sailor collar, which can be turned up, giving additional protection to back of neck and head. The inner part to which collar is attached is woven to sweater and extends half way down front and rear. It thus forms a double thickness over chest and back. This style sweater made up in No. A or B quality, at $2.00 extra per garment, to order only. Colors: White, Navy, Black, Maroon.

No. **KC.** Standard weight, **$6.00**

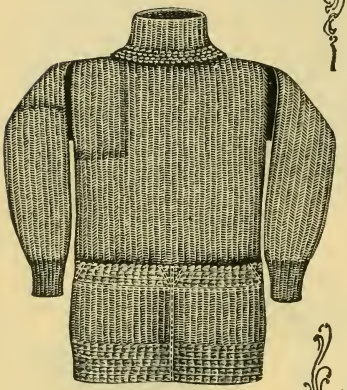


Our Complete Illustrated Catalogue Mailed Free to any Address.

A. G. SPALDING & BROS.

New York Chicago Philadelphia

Spalding's Trap and Field Sweaters.



Shooting Sweater.

Regulation Style

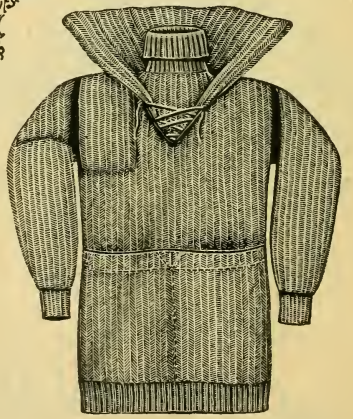
Made of finest Australian lamb's wool, fashioned to fit the form snugly and of sufficient weight to give all the protection required without making them uncomfortably bulky. They are knit in dead grass color, and the shoulder and upper arm heavily padded with several thicknesses of weaving for protection against recoil of gun. Two large pockets in front afford ample space for shells, etc.

No. 19.
Shooting Sweater, $4.00

"Turtle Neck" Shooting Sweater.

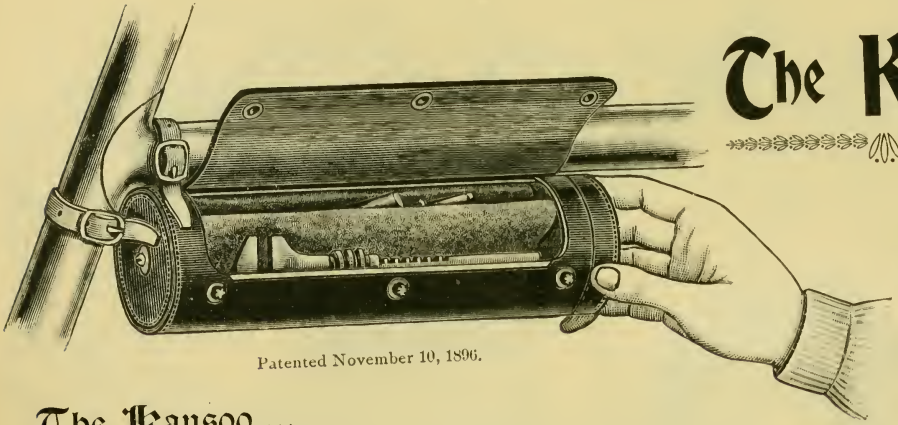
This style of Shooting Sweater is made with the "turtle neck" as described above. They are knit of the finest Australian wool, in dead grass color, and full fashioned to body and arms. The extra heavy thickness at shoulder and upper arm acts as a recoil pad, and the two large pockets in front afford ample room for shells and other articles. This style is made in extra heavy weight, and affords protection against the severest weather.

No. 17.
"Turtle Neck," $8.00



Catalogue on Application.

A. G. Spalding & Bros. NEW YORK CHICAGO, PHILA.



Patented November 10, 1896.

The Kansoo

Ask your dealer for this bag. If he cannot furnish you, send $1.25 in currency or postal order and we will send you one by mail

The Kansoo....

Revolving Tool Bag is made of selected leather, cylinder shaped, and occupies no more space than the ordinary tool bag. The compartments adapt themselves to the size and shape of the tools, which fit snugly, and does away with all rattling. One revolution of the cylinder exposes the entire contents. The compartment from which tool has been taken remains exposed until tool is ready to be replaced. The bag has but few parts, cylinder revolves freely and cannot get out of order. Made in russet or black and of best workmanship.

MANUFACTURED BY

Geo. Barnard & Co.

Sixth Ave. and Pacific St.

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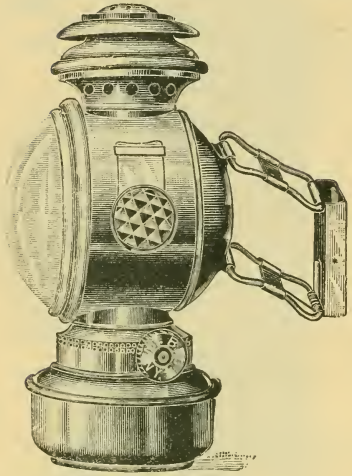
A. G. SPALDING & BROS.

Selling Agents

New York Chicago Philadelphia

SPALDING'S
BICYCLE SUNDRIES.

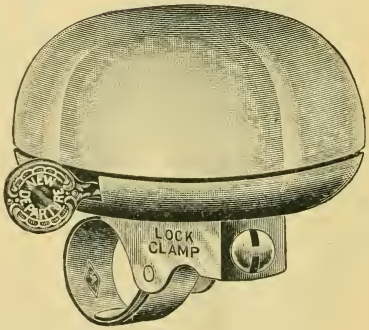


We carry a complete line of Bicycle Sundries and shall be pleased to send Catalogue on application.

Lamps
Bells
Enamel
Tire Cement
Rubber Cement
3 in 1 Compound
"RR" Compound
Illuminating Oil
Lubricating Oil
Repair Kits
Cyclometers
Bicycle Watches
Cork Grips
Oil Cans

Trouser Guards
Wrenches
Chains
Bundle Carriers
Pumps
Saddles
Bicycle Stands
Toe Clips
Tool Bags
Foot Brakes
Whistles
Screwdrivers

In fact, everything which is of use to bicyclists.



A. G. SPALDING & BROS. New York Chicago Philadelphia

WRIGHT & DITSON

MANUFACTURERS OF

Fine Lawn Tennis

ROSE COTTAGE, KILLARNEY,
IRELAND, 11-9-'95.

DEAR MR. WRIGHT:

You have my permission, with pleasure, to use my name on your racquets in Canada and the United States. Faithfully yours,

JOS. PIM.

Our New Racket for

... 1896 ...

"THE PIM."

STYLE B—Strung with very thin gut, and in every detail the same as racket used by Dr. Joshua Pim, the acknowledged champion of the world, in his matches played in this country last summer.

STYLE A—Same as above, only strung with gut the size ordinarily used.

Wright & Ditson's Championship Ball.

Adopted for 1896 by the United States National, Intercollegiate, Southern, Pacific States, and Canadian Lawn Tennis Associations.

WRIGHT & DITSON'S LAWN TENNIS GUIDE.

More complete than ever. By mail, 15 cents.

OUR GOODS ARE FOR SALE BY ALL FIRST-CLASS DEALERS.

WRIGHT & DITSON,

344 Washington Street, - BOSTON, MASS.

Catalogue, containing latest official rules, free.

Bicycle Suits

RECOGNIZING the general desire for appropriate dress for outing purposes, we have given special attention to this department, and were never in a better position to supply the constantly increasing demand for High Grade Bicycle Clothing at a moderate price, and equal in fit and finish to the best custom work.

We carry in stock an endless variety in select and exclusive designs, in all sizes and for all shapes.

We shall be pleased to furnish samples and solicit correspondence relative to club outfits.

Full line of Caps, Belts, Stockings; in fact, everything for bicycling comfort, and at all prices.

CATALOGUE ON APPLICATION.

A. G. SPALDING & BROS., ...

NEW YORK.

CHICAGO.

PHILADELPHIA

SPALDING'S

Official Basket Ball Goods.

FREDERIC B. PRATT, *Chairman.* CHARLES E. PATTERSON, *Treasurer.* LUTHER GULICK, M.D., *Secretary.*

The Athletic League of Young Men's Christian Associations of North America.

40 East Twenty-third Street,
New York City.

SPRINGFIELD, Mass., Sept. 9, 1896

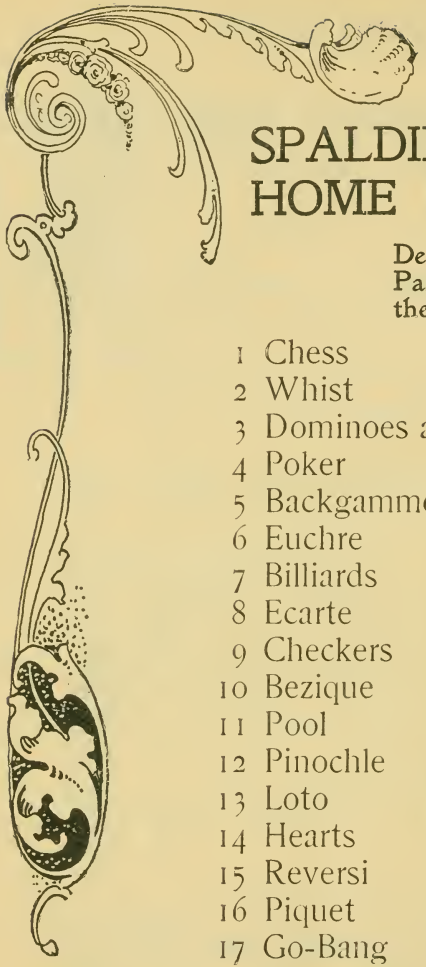
MESSRS. A. G. SPALDING & BROS.,

Dear Sirs: I am authorized to inform you that the Governing Committee of the Athletic League has decided to adopt your Basket Ball and Goal as the *Official Basket Ball and Goal* for the coming year; and also to request you to publish the official basket ball rules.

I am, sincerly yours,
LUTHER GULICK,
Secretary.

A. G. SPALDING & BROS.

New York. **Chicago.** **Philadelphia.**



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2 Whist
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