

THE WHEEL.

A Journal of Bicycling.

Vol. II. No. 10.]

FEBRUARY 1, 1882.

[Whole No. 36.]

SCHUYLER & DUANE,
Importers and Dealers in Bicycles,
189 BROADWAY, NEW YORK.

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Sole New York Agents for "THE HARVARD" "THE YALE," "SPECIAL TIMBERLAKE" and others.

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FOR NEW ELEGANT ILLUSTRATED THIRTY-SIX PAGE CATALOGUE.

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PICKINGS AND STEALINGS

The wheel interest in New York is now decidedly "forward."

The possible opening of the Park, the actual opening of a riding school, and the undoubted success of the ball which will take place February 20th, shows a decided awakening among the New York bicyclists.

The latter event has occasioned considerable interest among wheelmen and tickets are being taken up very rapidly. As all wheelmen are expected to appear in uniform, the occasion will possess additional charms from its novelty.

We have received the Catalogue of Charles R. Percival the advent of which we announced in our last. It is large, (24 pages) well printed and profusely illustrated, containing descriptions and price-lists of the best bicycles and tricycles in the market. The price-list of Bicycle accessories, parts, stampings &c., is very complete and should be in the hands of all wheelmen.

A few of our readers are waking up to the fact that we desire information in regard to the condition of roads throughout the country. Capt. Fowler sends us a description of some Kentucky roads and Mr. Campbell also wheels into line with a rather terse account of the roads in his vicinity. The latter gentleman is the person who wheeled from Lima, Ohio, to Boston, and wrote the description of his trip recently published in THE WHEEL.

Invitations were sent to over three hundred wheelmen for the opening of the Columbia Riding School to-morrow night. As there are boxes in the gallery holding six, we expect to see a sprinkling of the fair sex.

Three or four men have been expelled from the Manhattan Club for non-payment of dues, and although according to the new Constitution their names are to be published, they are, owing to some objections, at present withheld until the next meeting, when the question will be finally settled. We recently expressed our views on the subject and deem it unnecessary to repeat them here. We urge the members of the Manhattan Club to stand by their Constitution as nothing acts so much as a check on "dues-jumpers" as the publication of the nature of the offense in a case of expulsion.

We understand that some of these men intend to bring an action against the club for libel, which is of course absurd. The same course is taken in military circles as a glance at the Sunday edition of the *New York Times* reveals, and the plan has also met with approval and been practised in some of our large Eastern Clubs. Should the majority of the Manhattan Club withdraw from the very sensible stand they have taken, we will have to credit them with less firmness than we had been accustomed to think they possessed.

The Pope Manufacturing Company have also issued a new Catalogue, the main feature of interest is a description of the new "Expert Columbia," extracts from which are given in this number. As space does not permit of a very extended description we advise those whose curiosity has been aroused to send a stamp to the Boston office for further information.

A BOLD CHALLENGE.

NEW YORK, Jan. 20, 1882.

Editor of THE WHEEL: As there seems to be some doubt as to my ability to beat John S. Prince, I will, upon my return to this country next summer, race Prince ten miles on the Polo Grounds, New York, for \$1000 dollars a side, and will concede him a start of one minute.—Respectfully yours, JOHN KEEN.

CORRESPONDENCE

Editor of THE WHEEL: Your correspondent, "Capt. C. W. F." suggests that a hollow inch tire might be used on the bicycle to advantage, either with or without a spiral spring inside.

I think the spring would be apt to cut the rubber, but whether this be true or not the better way is, in my opinion, to discard the inch tire entirely, for the following reasons:

1. It is heavier than a 7-8 inch tire, and requires a heavier rim.
2. It makes a wheel look heavy and ungraceful, especially if under 52 inches in diameter.
3. It costs more to manufacture.
4. It is harder to propel, the adhesion to the road surface being greater.
5. It is a slower tire for racing for the above reason. (The two objections 4 and 5 are so marked that any average rider can easily perceive the differences named).
6. It is much more unsafe to ride in wet or muddy roads, as the inch slips more frequently and dangerously than one of 7-8 inch diameter.
7. The only advantage which can be claimed for an inch tire is its superior elasticity, and this, I believe, is mostly imaginary. I ride daily, dividing my time pretty evenly between a machine with an inch tire and one with a seven-eighths tire, and I cannot perceive any material difference arising from the difference in tires, except that I feel certain the smaller is less given to slipping, and is easier to propel up hill, or through mud, or on the level.

J. P.

OSHKOSH, WIS., Jan. 25, 1882.

Editor of THE WHEEL.—On the evening of the 23d inst. a bicycle exhibition was given in Fraker Hall (now used as a roller-skating rink), that eclipsed anything seen in this city for a long time, in connection with the carnival held that evening, in which some sixty costumed roller-skaters took part. It was managed by the Hooper Brothers, both of whom are largely interested in wheel matters. The riders were Ben. Hooper and John Nevitt, on bicycles, while Sam Larsen manipulated a large boneshaker, to show the contrast. The fancy riding by the two former was simply perfect, as was shown by the applause of the large and appreciative audience, to say nothing of the opinion of bicycle riders present. Messrs. Larsen, Nevitt and Hooper also took part in the races held here at the Northwestern Fair, in which the former won the mile race in 3.49, while in the three-mile race Hooper won in 10.52, and that with a wind to contend against. There are a dozen wheels here, and two have been ridden day after day up to date, the thermometer sometimes showing 5° below zero. This may be a rather cool assertion, but the Northwestern boys know of what they speak. The roads are good in this part of the State, and some are excellent. Several riders came down from Fond du Lac, and one from Milwaukee, some time ago. Some of our members would like to hear from the Rochester, N. Y., club, in which they are interested, having learned of their newly-fitted winter quarters. Our genial "curled darlings" of that Eastern club will please take notice.

ZOLL.

NEWTON, IOWA, Jan'y. 10 1882.

On the first day of 1881, this county and place numbered not a single wheel. I came here from Ohio bringing the first bicycle. By May 1st of 1881 we had five Columbias in Newton which form the present club. About five months out of the year the roads here are fine riding,—smooth and just undulating enough. Rain, however, (as they are mud roads), makes them impassible. In the summer and fall, and even in the winter when sleighing is fine, a trip can be made anywhere through

the State of Iowa, with profit and pleasure. Ohio and Kentucky however, have the roads for bicycles. Although I know considerable about these roads I leave them for Ohio wheelmen.

CHAS. E. CAMPBELL.

FROM THE CLUBS.

[Secretaries of clubs are invited to contribute to this column any items of general information and interest, and to send in their reports as early as possible, to insure proper classification.]

KENTUCKY.—The Kentucky Bicycle Club was organized last Wednesday night, and the following officers elected: Aaron Cornwall, President; Arthur Pope, Secretary and Treasurer; Henry C. Schimpeler, Captain; Charlie Jenkins, First Lieutenant; and Clarence Jenkins, Second Lieutenant. The club is formed of the old Louisville Club and about half of the members of the Falls City. The remaining members of the Falls City Club, who refused to part with their name even for the advantages to be derived from union, are more closely banded together by this step, and intend to add new laurels to that enterprise which has been characteristic of their club.

BOSTON RACES.

The second bicycle race meeting was held Saturday evening at the Manufacturers' Institute building, and proved an entertaining exhibition of speed and skill, though a rather small number of spectators were present, doubtless owing to the inclemency of the weather. According to the printed programmes put into the hands of the spectators, the first race was an amateur handicap, five miles, for a prize trophy; the starters were Messrs. Frye, Bent, Underwood and Garwood, the former winning in 16m. 58s., Underwood a good second in 16m. 58½s.

Next followed an "amateur two-mile straightaway," in which N. Ethier, C. D. Corey and H. M. Pope competed. During the running of the first mile, Ethier and Pope struggled for the lead, each having it alternately, the former winning the first mile, but in the second mile Corey put himself to his speed, and, with little effort, won the race in 6m. 50s. Pope second in 6m. 51 3-8s.

The most important feature of the evening's sports was the "professional handicap" five-mile contest for a purse of money in which the starters were John S. Prince, the winner of 136 fast races, who started from the scratch; G. Harrison, with a start of 150 yards; T. Harrison, 150 yards, Joseph Murray and James Harvey, each with 300 yards lead. The first mile was made by T. Harrison in 3m. 10s.; the second by G. Harrison in 6m. 56 1-8s.; the third by G. Harrison, time 10m. 38 3-8s.; the fourth by same, time 14m. 21 7-8s.; and the fifth was captured by Mr. Prince, who had evidently been fooling, with his competitors; at any rate, he put on a burst of speed in the last two laps, which evoked much enthusiasm in the audience, and was a winner by several yards, his time for the five miles being 17m. 54s.; the Harrisons, struggling for second place, came in with hardly a yard between them, the referee decided in favor of T. Harrison, whose time was 17m. 57 7-8s.

The closing event of the tournament was a "one-mile straightaway," in which seven riders started, and was won by H. D. Corey in 3m. 19s.; second man, H. M. Pope in 3m. 21s.

The officers of the "meet" were W. E. Gilman and George Pope judges; A. Bassett, scorer; Percy A. Legge, referee; F. W. Weston, starter; and C. A. Walker, time keeper.

SOME BOSTON BEANS.

The races that did *not* come off on the 19th have caused comment rather adverse to our English visitors. I suppose there is always two sides to every question, but the management feel chagrined, to say the least of it, at the cavalierly way in which Messrs. Vesey and Keen treated them. The good feeling of our men, which did exist toward these gentlemen, has certainly received a very disagreeable shock.

A. G. Rowler need not fear that the Hub hankers after any more L. A. W. meets, because it don't. We are perfectly willing to allow New York, Philadelphia or Washington to lay themselves out May next, and we will go and *enjoy* it this time.

But I would like to ask Rowler if New York had been chosen last year, what sort of a success the meet would have been? Even if you get a favorable decision in the Park case, I doubt if New York is the place, so far as the *convenience* of wheelmen is concerned, it is a hard city for a man with a machine to get about, to and from the depots, to head-quarters, &c. On this score, as compared with Philadelphia or Washington, there is a marked difference in favor of these cities. But if you are successful in this suit, then the *moral* influence of a large meet in New York becomes an important factor in the case, and should be by no means lost sight of when canvassing the question. Personally, I am for Philadelphia, excepting the doubt arises in my mind, do the Philadelphians want it? In order to make the thing a success, we here *know* that there must be an immense amount of work done, and to do it the wheelmen of the city selected must be unanimous and *want* the meet. Admitting that the streets of Washington are superb for the parade, the question arises, *can* we have it there, and do the Washingtonians *want* it? The League membership is very light in the capitol, and I doubt if there are enough to arrange the necessary details for the reception of a crowd.

If, however, the directors propose to go still further west, and in so doing conclude it best for the interest of the League to hold the meet in Chicago, I shall still say, amen, though in so choosing the attendance will, of necessity, be very meagre.

While taking in the pros. and cons. of this question, the thought comes up in my mind, why this country is not big enough for two, or even three, separate organizations? Does not the present league cover too much territory? is it not too big and unwieldy, and would not the efficiency of such organization be greatly enhanced if the country were subdivided into New England, Middle and Western States Leagues? I am aware that a certain sentimental feeling exists among some of our wheelmen opposed to such a division, but I am convinced that cool, practical argument will far outweigh any mere impalpable sentiment. Practically, the L. A. W. to-day is the League of New England, New York, Pennsylvania and New Jersey.

The above sentence suggested to my mind to *count* and see how it came out. I find that New England and Prov. of Quebec can show 796 members; New York, New Jersey, Pennsylvania and Prov. of Ontario, 442 members; all the balance of states, 338. I will simply leave comment for some one else.

The *World* has done a good thing for itself in securing Mr. J. S. Dean as contributing editor, and the readers of that paper will now look with interest for the weekly articles from the pen of that gentleman.

Even Brother Dalton has had to abandon the wheel for the time being, and when such an enthused wheelman as he gives up, it is about time for "*we uns*" to put away our little bi's. Our "veteran" complains of one thing. He says the boys are developing a too decided taste for "Rabelais" and conch-shell music(?) for, as he puts it, "if some one is not reading the former out loud for the delectation of some one else, some one is tooting on those infernal shells," and, as he adds, "it is really *too too*."

The bicycle races under the auspices of the U. A. C., which were to have taken place last evening, were postponed until Saturday next, at the "Institute" building. The 14-lap track in the "Mechanics" was not safe, excepting a man rode about a 5-minute gait, and even at that pace I saw a man get a nasty cropper while testing the track. On helping this individual up on his pins, I anxiously asked him his unbiased opinion of the track—certainly a very natural and harmless question; but the answer came back with the quickness and vicious "ping" of a bullet: "D—d hard, sir; d—d hard." Perhaps my manner was cold and unsympathetic, or may be I did not put sufficient pathos and solicitude into my tone. HANDY ANDY.

COMING EVENTS.

FEBRUARY 16.—Entries close for mile handicap at winter games of Manhattan Athletic Club, at Madison Square Garden, February 23d. Fee, fifty cents, to F. J. Graham, secretary, Eighth Avenue and 56th Street.

THE WHEEL.

A Journal of Cycling.

Published on alternate Wednesday mornings by FRED. JENKINS,
187 Broadway, Room 12. London agency, *Bicycling Times* office,
East Temple Chambers, Whitefriars street, Fleet street.

SUBSCRIPTION - - - - - ONE DOLLAR A YEAR.
EUROPEAN SUBSCRIPTION - - - - - SIX SHILLINGS.

FRED JENKINS - - - - - *Editor and Publisher*
JULIUS WILCOX *Associate Editor.*

187 Broadway, Room 12, New York.

ENTERED AT THE POST OFFICE AT SECOND CLASS RATES.

NEW YORK, February 1, 1882.

THE PARK QUESTION.

We have received from the Pope Manufacturing Co., an interesting volume of the testimony taken in the Park case. Over three hundred pages are filled, and a variety of ideas advanced. The case which has cost upwards of \$5000 will probably come up for trial shortly, and we hope that it will be speedily settled.

It will be remembered that last June a petition was sent to the Park Commissioners from the clubs and referred to Mr. S. H. Wales who rendered the following report which we believe has never been published.

NEW YORK, JUNE 1 1881.

Report of the Special Committee appointed to consider the expediency of allowing the use of bicycles in Central Park.

Your Committee, after an examination of the petition of the bicycle clubs, and the papers submitted therewith, and after hearing the parties interested, present the following report; It is the opinion of your Committee that bicycles should be allowed passage through Central Park under the following restrictions and conditions:

1. That all bicycles and tricycles shall be excluded from every portion of Central Park between the hours of 10 a. m. and 5 p. m.
2. That before 10 a. m. and after 5 p. m. bicycles and tricycles shall be permitted to enter Central Park at Eighth avenue and Fifty-ninth street or at Seventh avenue and One hundred and Tenth street, and pass through the Park only on the west side or drive thereof; that they shall confine themselves to a space on the carriage or drive-way within ten feet of the curb or gutter, keeping always to right side of the drive going and returning, and that they shall be permitted to go outside of the limit of ten feet from the curb or gutter only when necessary in order to pass a slow moving vehicle.
3. That bicycles or tricycles shall be permitted to pass over Fifty-ninth street, along the north side thereof, between the hours of 5 p. m. and 10 a. m., but that no bicycle shall at any time be permitted to ride his vehicle across the entrance to the Central Park at the corner of Fifty-ninth street and Fifth avenue.
4. That this permission shall be granted only to bicycles and tricycles and that each vehicle shall always be provided with a brake, a gong, or bell, and a lamp, which shall always be lighted at night.
5. That only two bicycles or tricycles shall be allowed to ride abreast through the Park; that no racing or trial of speed shall be allowed; and that the rate of speed shall not be greater than is now allowed to carriages.
6. That every person using a bicycle in Central Park, shall be required to previously obtain a badge as an evidence of proficiency in the management of his vehicle, which badge shall be ob-

tained from a committee of experienced bicyclers, who shall be selected for that purpose by the captains of bicycle clubs in the City of New York. Such badges shall be numbered and shall be worn in a conspicuous place on the person of the rider, and every applicant shall have a right to such a badge, provided he can satisfy the committee of examiners of his ability to manage his vehicle. Under such regulations and restrictions, your Committee are of the opinion that permission should be granted to bicycle riders to pass through Central Park, and during the pleasure of this Board.

All of which is respectfully submitted.

(Signed)

S. H. WALES.

At the risk of being accused of anticipating too much, let us presume that the park has been opened to the free passage of bicycles and tricycles, and see if there is anything in the report worthy of adoption for the protection of the wheelmen themselves. There seems to be a feeling among wheelmen in general, and clubmen in particular, that some action should be taken to exclude the incompetent rider and reckless boy from the use of the drives. Legally, we have no right to place restrictions upon any rider, but moral influence should make itself strongly felt. The Park will be opened for the benefit of wheelmen at large, and not for a few favored members of clubs. However, we wish to present the subject for discussion, and wish a general expression of opinion on the merits of the case. But to return to the report.

Section First, we pass by without comment, as we admit of no restriction in regard to time.

Section Second, contains a few points in the latter half that are worthy of adoption but is really nothing more than an enforcement of strict road riding rules, which should receive more attention from wheelmen.

Section Third refers to time restrictions, which we do not care to acknowledge, and also provides that bicycles and tricycles should be allowed on the north walk. Although a passage over that portion of the street would be sometimes useful, yet it is better to discard the idea of riding on sidewalks, which not being in accordance with our claim to rights as riders of vehicles, should not be permitted.

Section Fourth, contains a suggestion that should be adopted without discussion. In section five there is considerable food for reflection. We should also recommend a clause prohibiting coasting.

Section Sixth, is the one that should receive the greatest attention. It provides that any average rider can obtain a badge if he passes an examination before a committee. This plan is open to a number of objections, the chief difficulties being the obtaining of a committee who would perform this arduous task of examining the riders individually; of drawing the line between the good and bad; of enforcing the rule in the case of strangers and visiting wheelmen; and of the necessity of always being obliged to have the badge on hand, amounting almost to a nuisance, and many other annoyances. We firmly believe in the necessity of excluding a certain obnoxious element, and for our own part would be willing to conform to the rule as it stands. How it effects the majority of wheelmen, we have yet to discover. From personal observation we have found wheelmen anxious to place some restriction upon Park riding; but what form it will assume, whether in the partial adoption of the report of Commissioner Wales, or in a set of rules to be drafted at a future general meeting of New York bicyclers, is a thing that rests with the wheelmen themselves.

F. J.

THE NEW BICYCLE.

We are enabled to give a description of the new Expert Columbia Bicycle, which has excited much interest among riders, and which will bear close examination. The matter is condensed from advanced sheets of the Pope Manufacturing Company's catalogue, and should the reader desire additional information, we refer him to their pamphlet, which will shortly be issued.

"EXPERT COLUMBIA."

"This elegant bicycle, to the production of which we have brought the best experience of our mechanics, the most deliberate judgment of skilled riders, and the introduction of much new machinery, is designed as a medium-weight roadster for expert riders. We challenge comparison of its merits, by any accredited tests, with those of any high-class bicycle of any make. In describing it we call attention to some of its points, in passing; but are confident that, on examination and use, it will recommend itself better than anything we may print.

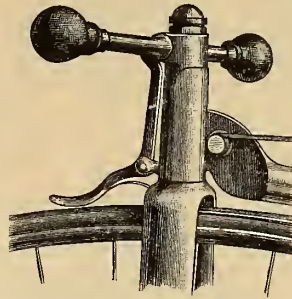
"Description of 50-inch.—1 inch and 3-4 inch moulded red rubber tires; deep U rims; 56 direct spokes; No. 11 steel wire, with both ends enlarged; 18-inch back wheel; 5-inch recessed steel hubs, with 5 3-4 inch spread of spokes; detachable cranks, 4 1-2 to 5 1-2 inch throw, notched on back for adjustment of pedal; small parallel rubber pedals; front and rear ball-bearings; cylindrical weldless steel hollow perch; 5-inch cylindrical head, with dust shield; 4-inch ball centres; Elliptical hollow forks; bolted sliding spring, with steel roller clip; suspension saddle; 23-inch handle-bars, screwed in lugs; large vulcanite handles; oblong open serrated step; grip-lever spoon brake; steel trouser guard; steel monkey-wrench; screw-driver, oil-can, handy tool-bag. Weight, all ready to ride, 45 lbs. Half nicked (on copper coat) and painted with gold stripe, or all nicked.

"The Expert is a medium-weight bicycle, in which strength has not been sacrificed for lightness, nor durability for cheapness. It will stand as much hard usage as any bicycle made. Amongst the other steel parts, the following are solid steel drop forgings, viz.: steering head, neck-and-spindle, rear fork, front and rear fork ends, head dust-shield, spring, handle-bars, brake-handle, lever, hub flanges, cranks, crank keys, pedal shaft, rear wheel hub, rear wheel cones, front bearing cases, front bearing cones, etc. Not only these and other forgings, but all parts are shaped in dies, a method of construction which secures not only even and elegant finish and form, but homogeneity of metal and greater strength and reliability. To many steel is steel; but when we say that the Expert is made of steel throughout, we have not said half. The quality or degree of hardness of steel for different parts has been carefully studied and calculated for the strains to be resisted; not only for lateral and torsional strains, and for wear, but for resistance to bending as well as to breaking. The crank and the axle, the bearing box and the ball, the handle bar and the hub—for neither of these pairs is the same quality or hardness of steel equally appropriate in each. In fact, scarcely any two parts of the Expert are of the same degree of hardness, and all the steel is especially prepared at the best mills for our use.

"The cylindrical centre-steering head is still preferred by most for its appearance, and in retaining it in the Expert, we have taken care to make it equal in strength to the open one, which has generally led in the latter quality, as well as in the length of spindle or distance between centres available. This last quality we have also preserved in the Expert, making the spindle 4 inches in length. We have also

added a new dust-shield over the rear part of the head, which also adds to the beauty as well as the efficiency of the head.

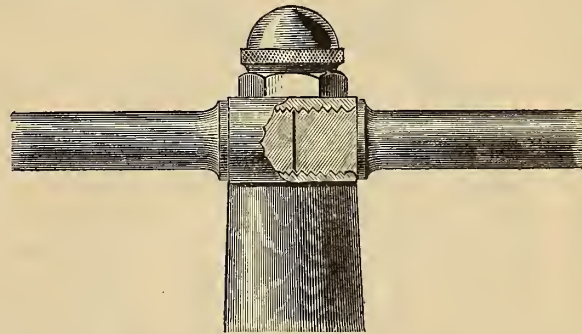
"Length of the head and height of handle-bars have also received attention. The very short heads have, as we expected,



met with a reversion of favor, and 5 inches has become the best accepted standard abroad and at home. This we have adopted. It leaves good length for the spindle within, and brings the handle-bar lugs where they should be for freedom of leg-movement without hitting the thighs. An improvement, especially invented for this machine, is the hemispherical or ball-steering centre. A cubical hardened steel step below, and a

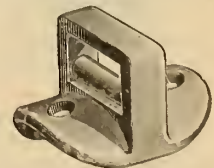
hardened steel adjusting bolt above, afford concave hemispherical bearings for the convex hemispherical end spindle (also case hardened for bearings); and this arrangement is superior to the ordinary conical centres in several respects—more perfect adjustment, more even bearing, greater durability, etc. The handle-bar is made in two parts, each of which is firmly screwed and fastened into the lug in the head, with a double shoulder, in a new and approved manner. The handle bars are from 22 to 25 inches in length over all, which appear to be the best lengths for general use. Extreme length for handle-bars (sometimes 28 or even 30 inches) is a mistake. These bars are gracefully tapered.

"After much experimenting and balancing of advantages and disadvantages, we have adopted a vulcanite handle for the Expert of large diameter, hard finish, and great elasticity, and which has no nut at the end.



"We have retained the general form of grip-lever spoon brake for the tire of the front wheel, as the most convenient and effective and safe yet devised. The best steel forging for the lever, with long handle, and compound leverage, makes this the best yet produced.

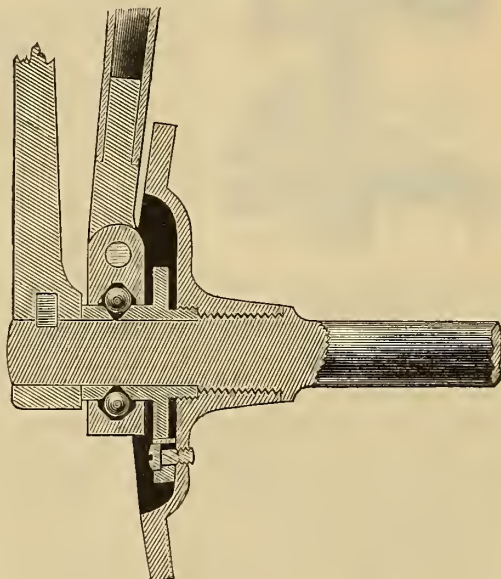
"The neck-and-spindle is of solid steel drop forging; and the form of the neck is such as to combine great strength with good appearance and a close build. To it the perch is brazed with a specially strong joint. The perch (or backbone) is of the best weldless steel tube, 1 3-8 inches in diameter, tapered both ways, and of such shape and thickness of shell as to be thoroughly rigid and strong. It is of circular section; and we adhere to this form for three reasons: it is scientifically more correct for the strains it has to bear; it takes less space for the same length between the saddle and the wheel, so enabling closer build, and it gives a more graceful appearance to the machine. The spring is a rolled steel plate, formed by patented process, with a new and improved curvature. It is bolted to the neck at the fore end, and slides in an improved clip at the rear end, on a hardened steel roll, so that it cannot wear or rattle. We think this form of spring, with a suspension saddle, offers the most advantages.



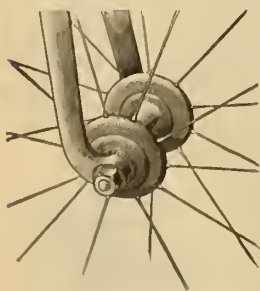
"The tires are moulded of the best 'fine' Para rubber, and spliced before vulcanizing in such manner that they are the same in strength and effect as if made in an endless mould.

The Expert wheels show a number of our best improvements, and will, we believe, meet the approval of the most critical. The spokes are of the best drawn steel, No. 11 wire, with the hub ends three sizes larger, or No. 8; and they are "direct." They are also enlarged at the felloe-end. We exceed the conservative rule of spokes for inches, and put in an extra number

of six to fourteen more, according to size. They are headed and nicely fitted in the rim, which is of U form, of wide section, and rolled (deeper than heretofore) and welded by our patented machinery. We have constructed this with special reference to resisting lateral strain, or "buckling," and not vertical strain, which, in a well-built sus-



sension wheel is taken by the spokes. The hubs or flanges of the forward wheel are of steel drop forgings, and are threaded and pinned to the axle. These are lighter and stronger than gun-metal or bell-metal, and hold the spokes better. They are five inches in diameter, recessed sufficiently to take all the bearing mechanism except the thickness of the fork-lug, and formed so as to receive and draw on the spoke in the direction of its length. They are placed at a distance apart, such as to give from 5 1-2 to 6 1-2 inches breadth between centres of spokes. This breadth of hub, together with its great diameter, the number and size of the spokes, and the construction of the rim, make the Expert wheel the most rigid, we believe, yet offered in the market. Not even for a narrower tread would we sacrifice the breadth of the wheel between spokes. The axles are of a high grade of steel, and are very short (notwithstanding the breadth of wheel retained), being from 8 1-2 to 9 1-2 inches, according to size; and proportioned in diameter according to requirement, so as to resist bending, as well as breakage. To these the detachable cranks are closely fitted and keyed. These are thinner than has been usual, but of a width and peculiar shape for strength and rigidity. They allow from 4 1-2 to 5 1-2 inches throw, being slotted for the pedal pin, and are grooved on the back side for correspondingly ribbed washers on the pedal nuts. This allows accurate adjustment of pedals for length of throw, and prevents their slipping on the crank, while the face of the crank is not disfigured.

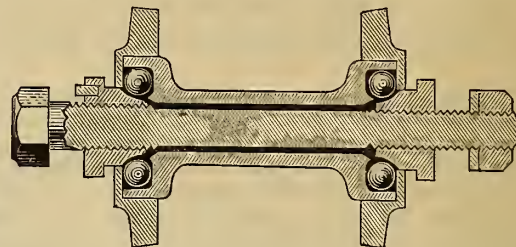


We have made a new plain pedal for the Expert, with parallel bearings, in case-hardened bushings. This pedal is light, narrow, finely finished, and neatly protected from access of dust. It is attached to the attachment and grooved crank in a very neat, non-slipping manner, and with the flange one quarter inch from the face of the crank. (We shall furnish Bown's "Æolus" ball-pedal if desired, at the difference in price, and commend this as the neatest and most accurate made ball-pedal that

has come to our knowledge.)

More has been said and written by wheelmen, during the past year, about "narrow tread" than probably ever will be again. It is not natural, in standing, sitting, or walking, to

bring the feet very near together. Experiment on a large number shows that the natural 'tread' (or distance between the balls of the feet where they rest on the pedals) of men, measured from the edges of the soles (inside the flanges, say), averages about 10 1-2 inches at rest, and, owing to the swaying of the body, a trifle less in action. In other words, measuring from middle to middle of soles, it varies from thirteen to fifteen inches. A good width of tread is not only natural and easy, and also neces-



sary in a suspension wheel with cranks, etc., but it is also of advantage in the matter of leverage, for preserving equilibrium by the feet, and, especially, in rough road riding. 'Narrow tread' may be carried to an extreme of disadvantage in either of these three aspects; but whatever of advantage there is in narrowness of 'tread' between different bicycles can be justly claimed for the Expert; in which (by the recessing of the hub and knuckling inward the fork end; by thinness of crank and short axle; by closeness of pedal, and other slight but well-considered modifications of structure), we offer a 'tread' of from 9 to 10 inches from flange to flange of pedals, or 12 to 13 1-2 inches from centre to centre of pedals, according to size; and we do this *without* weakening the wheel, by reducing the spread of the spokes below the correct distance.

"The rake in the Expert—that is, the inclination of the centre of the forks backward from a perpendicular through the axle of the fore wheel, measuring at the bottom of the head—is 2 inches for a 54-inch wheel, and the same angle on other sizes. This insures strength of the machine, ease in riding or trundling, and a proper degree of safety in passing over obstacles. We call especial attention to this point of strength and ease in a machine, because it has of late been overlooked.

"We invite examination of the front forks of the Expert, and of the fact that they are not merely 'hollow.' A hollow fork is not necessarily any more rigid or satisfactory than a solid one, as can be well seen by testing most of the hollow forks in the market. In fact, our solid fork, as made for the Standard Columbia during the past year, resists the several strains to which it is subjected in use or in experiment better than, (we will not say *any*, but) most of the hollow forks in existence. Those of the Expert are of the best weldless steel tube, of thick shell, of elliptical cross-section, 1 5-8 inches in one diameter, and 3-4 inch in the other; and the form of the fork throughout its length is made with a regard to scientific principles of mechanics. Forks were first made hollow for lightness. The era of long handle-bars has discredited them, as well as solid ones. Now we have made hollow forks for strength, to resist lateral and torsional strains, for rigidity. These forks are formed to true and even shape and finish in large dies. The fork ends are steel forgings, and are knuckled inwards to secure closeness and to give a steadier bearing for box and balls on the axle.

"Every bearing part is accurately formed and fitted by machinery, hardened with particular care, and polished, so that a new machine may run as freely as if it had been used a week.



Even plain and cone bearings, made with such carefulness and accuracy, are easier running than so-called 'anti-friction' ones without them. The front wheel bearings of the Expert are of our patented, and now well-known and proved Columbia ball pattern, consisting of a one part box, a two part sleeve and a circular row of balls between, by which both 'journal' and 'pivot' friction are most effectively reduced to a minimum. Other advantages are referred to on

page 14. But we have made a modification for the Expert, which consists in threading the recess in the hub (instead of in the crank), and putting the adjusting part of the sleeve on the inner side. On this is formed a large serrated annulus, easily

reached and turned by the thumb and finger, and held in position by a neat block or dog screwed to the hub. By a neat arrangement of the slot and screw for this dog, the necessity for removing it, when adjusting, is obviated. The whole is made more compact, elegant and secure.

"The back wheel is provided with our Columbia ball-bearings, specially adapted. The hubs are of steel, drop-forged, and the single row of balls, on each side, is in a hardened box, and the whole is so constructed that the adjustment is effected by turning one cone with its annulus, that it cannot bind or loosen in use, that the balls do not rattle, and that the balls cannot leave their places in the box when the wheel is taken off for cleaning, etc. In our ball-bearings the greatest accuracy in size and sphericity of the balls is attained by means of improved machinery, and they are carefully tempered, tested and polished. The rear wheel rims are rolled deeper than heretofore, to guard more securely against starting of the tire; and our improved method of cementing tires has proved most effectual.

"We have made a new step for the Expert, of oblong shape, open, and serrated; and we have paid particular regard to the height of the step from the ground. This latter has been determined for the different sizes by many experiments.

"Other improvements in details of construction will be apparent on inspection and use, and some of those which have given us most thought will elude the eye, but will, we are confident, be appreciated in the long run by the durability, staunchness, and reliability of this latest and best of bicycles."

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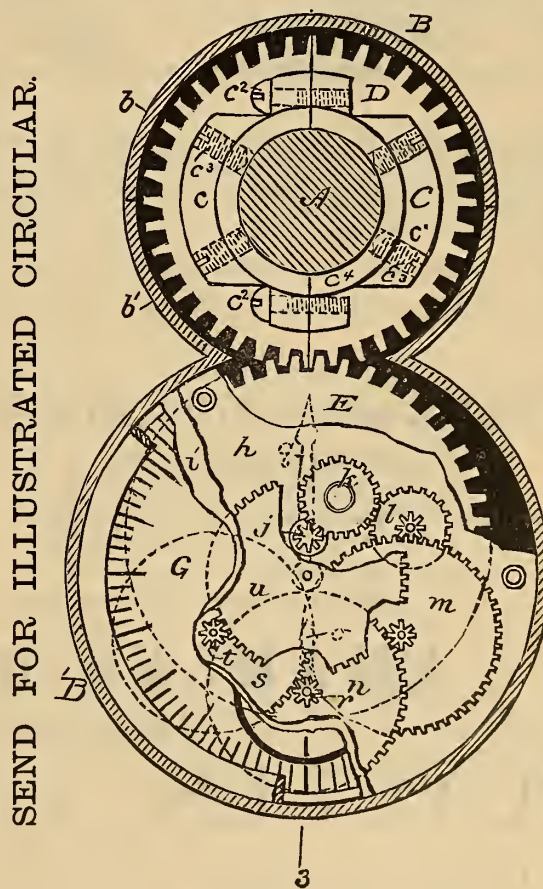
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