SADDLES AND POSTURES FOR WOMEN ON THE WHEEL.*

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One has but to glance at ten riders of the hampered sex to see nine bicyclists ignorant of some of the rules of good riding, who misapply force, waste effort, and run a certain risk of harm. The trouble is chiefly due to lack of training, since the pupil is turned adrift on the road as soon as she can balance a wheel and can mount and dismount, and further instruction may only be called out after bad habits of riding become fixed. Unmerited disrepute is thus thrown on the most alluring and practicable, as well as the most generally beneficial, of the outdoor exercises for women.

I started to describe some of these strained attitudes, and to photograph dressed riders. It was evident at once that my points could not be made with any clearness without obtaining anatomical data that the clothes concealed. This may be an excuse for making

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my statements in more pictures than paragraphs.* Such graphic arguments serve to answer some of the questions put to physicians concerning right ways of using the wheel, and may define its relation to the sewing machine and horseback riding.

It is superfluous before this audience to do more than name the ordinary precautions necessary for the women who take up wheeling. We all agree, and insist on our patients' recollecting, that tension and excess may do much harm. We lay stress on careful increase of length and difficulty of ride; on heeding the warning given by palpitation and labored breathing—signs of strain of the right heart, which is only robust in laborers and athletes; on frequent rests; on care about chilling and over-fatigue; on light food during exercise; on rest after riding. We state that muscular aching after the first few rides is expected, but exhaustion and after-pallor call for medical advice, and we say that tension is as hurtful as excess. Keenly alive to all possibilities and impossibilities of accident, woman suffers more nerve strain than man, and narrow side paths or crowded roads are not for her until she is confident, at ease, and quick in automatic action.

Saddles.—The troublesome question concerning wheeling does not lie among these simpler matters, which every rider with a modicum of common sense appreciates. It concerns the anatomical problems presented by the saddle. A good saddle, as I have already had occasion to say in the *Outlook*, embodies anatomical modeling; selection to fit the individual form; stanch construction, that it may not alter in shape with use; and adaptability, that it may be set at any angle, moved forward and backward, and made more or less tense. It must fit the individual, we say; but, notwithstanding the fact that the modeling in no two persons is alike—differing as much as the shape of individual faces or hands—many still hold to the absurd belief that a single perfect saddle can be constructed to suit all needs. Manifestly each woman should seek out what is adapted to herself, and, in starting with a few general principles, must work out her own problem. It is safe to say that the number of women who can not be suited after a little patient trial must be very small.

Saddles must differ as pelvic floors, as buttock contours, and as thigh modelings differ. Take three models at random and compare the point of the lowest sweep of the floor line from coccyx to symphysis—usually in front of the anus—with the elevation of the gluteal

* The courtesy of Mr. W. S. Perry, Art Director at Pratt Institute, enabled the author to take pictures in the life studios from professional models.

FIG. 1.—Correct posture. With the foot at the lowest point, the knee is slightly bent, as shown by the bones of the joint, while the ankle is somewhat straightened, the elbow is a little flexed, and the wrist extended. The thigh bone of the farther leg is at a strong slant, whereas in Fig. 2 the raised thigh is nearly level.

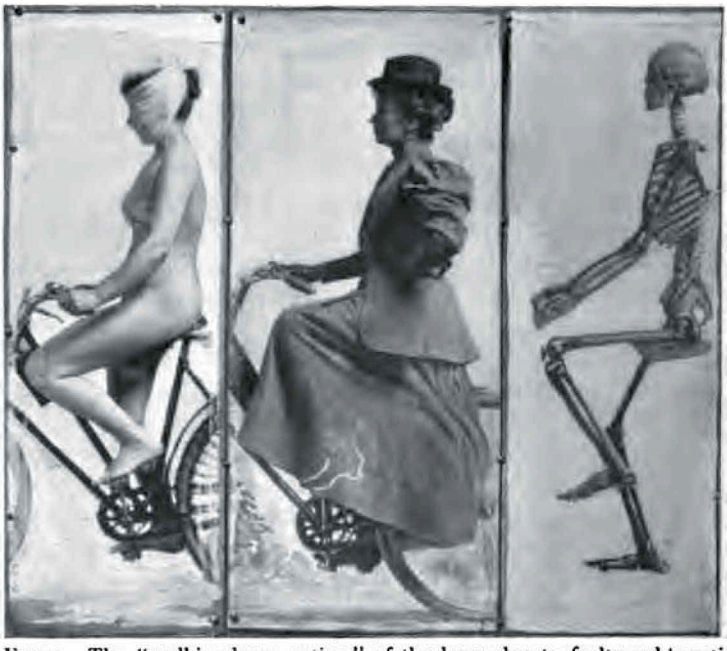


FIG. 2.—The "walking-beam action" of the knee, due to faulty ankle action, or to a saddle too low. The near heel is not held down as it should be, and the far heel is not high enough. The drag on the skirt is also demonstrated. The model is on a saddle well forward, so that her knee is not very high. The skeleton's femur is nearly level.

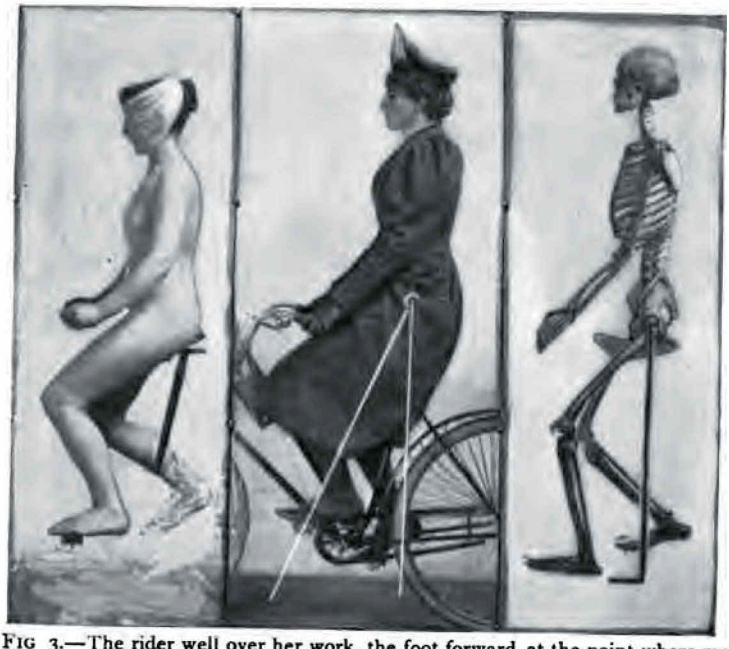


FIG 3.—The rider well over her work, the foot forward at the point where most of the power is applied, showing how short a distance from the perpendicular the pedal sweeps forward. Illustrating a low position of the handle bars, with an arm that is too straight.

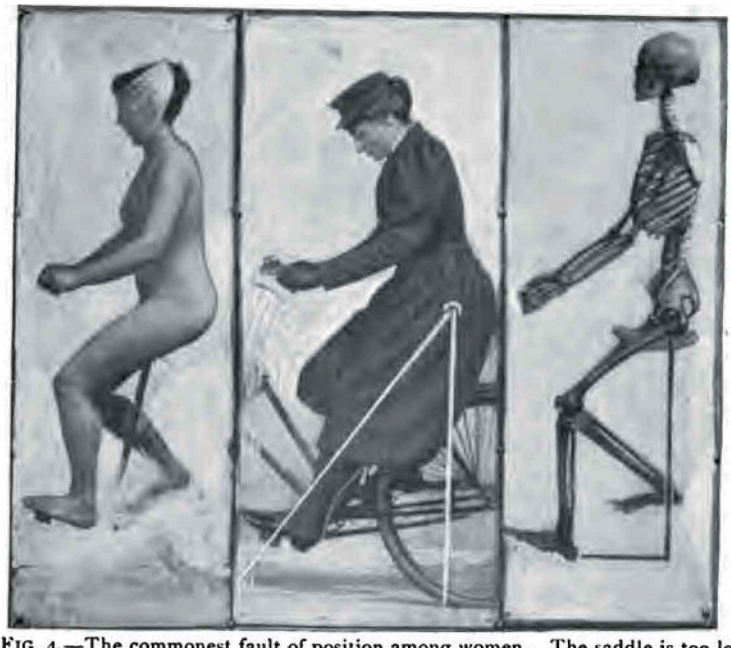


FIG. 4.—The commonest fault of position among women. The saddle is too low and too far back. Compare the distance between the pedal and the perpendicular in this and Fig. 3. Advisable for beginners, to give them ease in mounting, and the sense that the ground is within easy reach.

FIG. 5.—Overstretched leg, both at the knee and ankle, with the saddle too high. The action of the knee may be compared with that in Fig. 1. Tiresome, with strain on posterior ligaments and all leg muscles.

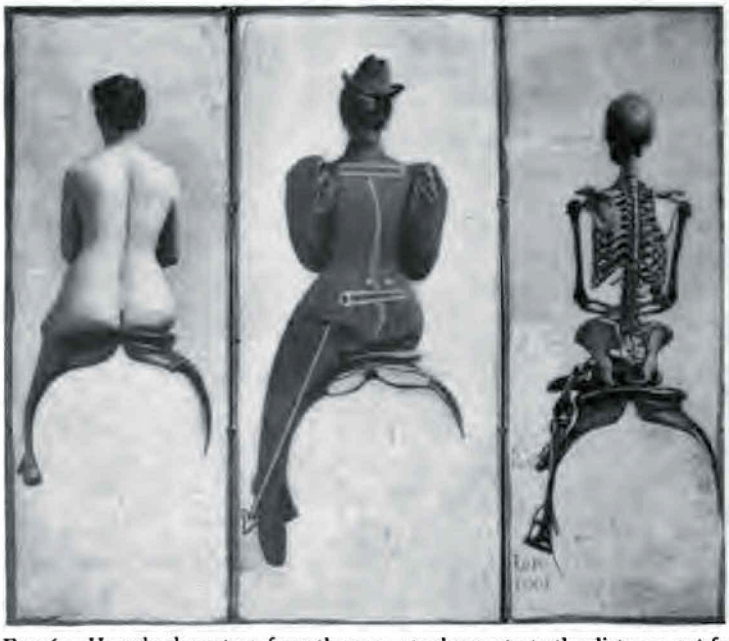


FIG. 6.—Horseback posture from the rear; to demonstrate the distance out from beneath the body the foot support is placed as compared with the bicyclist's position in Fig. 7. The outline of the spine, and bars at the level of the shoulders and the hips, give an idea of the twisted vertebral column.

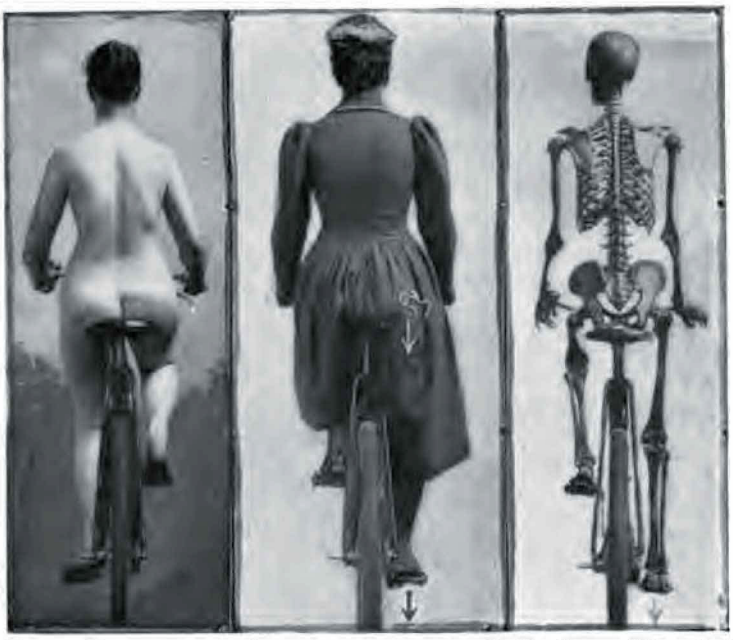


FIG. 7.—Correct posture, from the rear; a perpendicular dropped from the hip socket passes through the center of the pedal. An even and easy action and balance to the outer and inner leg muscles is maintained as compared with the posture of Fig. 6. Handles of the nude figure are too far apart for her width of shoulder.

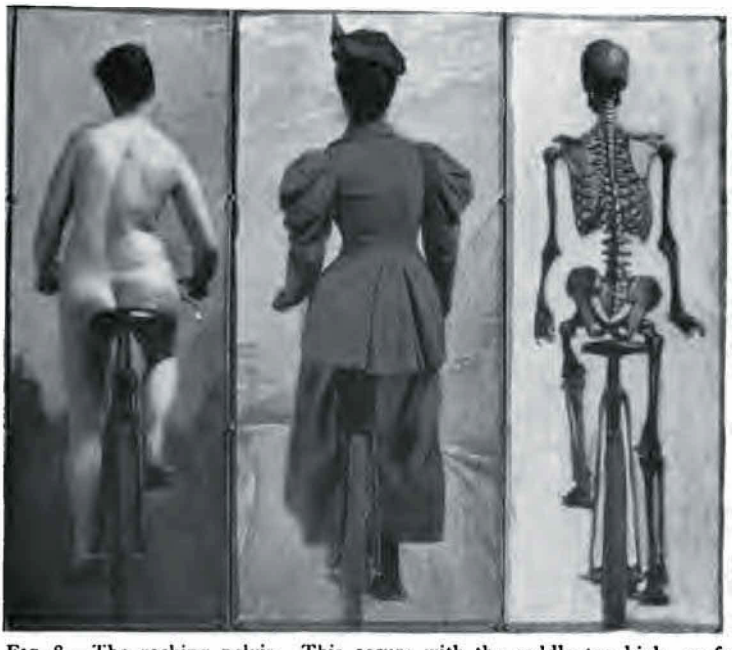


FIG. 8.—The rocking pelvis. This occurs with the saddle too high, or from faulty action, especially in hill climbing. Compare with Fig. 7.

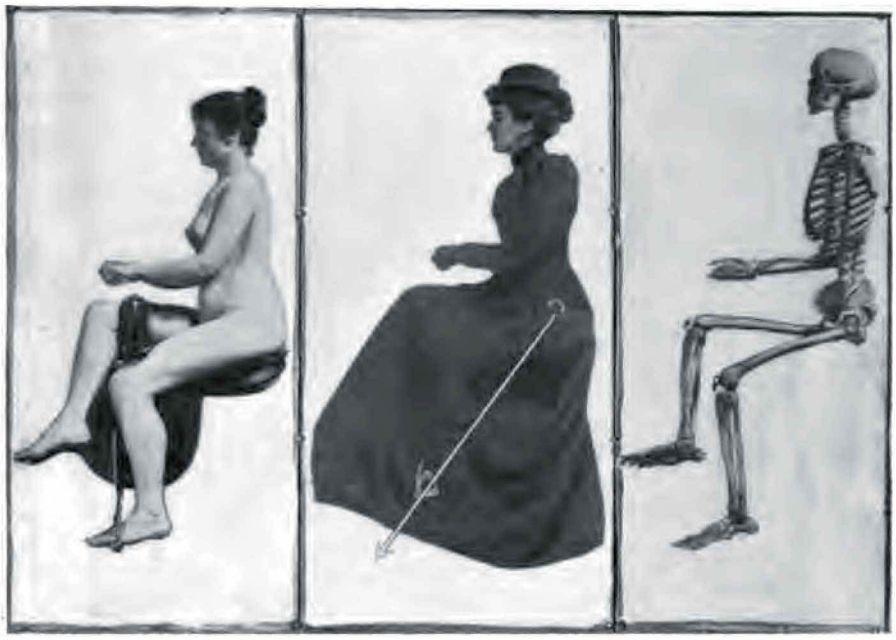


FIG. 9.—Horseback posture, from the side. The skirt masks the striking contortion of the figure; the foot is far away from beneath the trunk; the lower leg is like that in Fig. 4. Compare nude model and skeleton here with those of Fig. 1.

FIG. 10.—The scorcher. An attitude only allowable in breasting a short hill or a gust of wind, or for a rest.

FIG. 11.—The sewing-machine attitude. Cramped compared with Fig. 1 or any other except the scorcher's position.

fold and the gluteal fat-pads. Notice how greatly the thickness of the labia majora varies, bringing the vulva against an ordinary saddle in one case and clear above it in another. The nymphæ, the real seat of sensation in women, can not receive friction except when hypertrophied and low hanging, or in certain conformations. The clitoris—wrongly supposed to be the most sensitive point—is protected. Its usual seat is above the pubic arch against the front of the symphysis, and a sagging, weak-springed or stretched-leather saddle is the only one that could make contact here, except in the scorching posture (Fig. 10). A narrow saddle, permitting the wide pubic angle to straddle it, will bring weight on the vulva, and a saddle tilted downward in front will slide the trunk forward on to the narrower portion of the saddle. But these conditions are too infrequent to be a source of danger, and too uncomfortable to be tolerated long. I have only to re-enforce the statement made in detail in my former paper (*American Journal of Obstetrics*, January, 1895, on Bicycling for Women), that investigation proves sexual feeling not to be aroused or self-abuse fostered by wheeling. The scorching position is the only attitude in which the pubic arch is likely to span the front pommel or the vulva, or come in full contact with the saddle. Although the location of the vulva varies much in different women, it is to be noted that in the right posture (Fig. 7) the symphysis is at some distance above the saddle, and that the vulva for half its length is high, covering the front of the symphysis, instead of being, as the student commonly imagines, beneath the pubic arch—dorsad to it, as Dr. Wilder would say.

Moreover, whether the vulva will come in contact, more or less, with the saddle is somewhat dependent on the inclination of the pelvis. With an excessive pelvic inclination the pubic arch is applied almost level to a level saddle, and in such case a saddle with a median groove is desirable. Among women whose ideas of sitting upright include the ungainly and extreme incurving of the lower back (the lumbar curve), the symphysis will again come in contact with the front pommel. I have had to draw attention to this more than once, and, indeed, in the illustration showing the correct posture in an excellent article in one of our most prominent monthly magazines, this is shown as the correct attitude.

One can not do away with the anterior projection of the saddle entirely, for the reason given by Dr. Chadwick: "The trouble is that when the leg is straightened and the treadle at the lowest point of its circuit, the thickness of the thigh tends, by pressing against the an-

terior margin, if an oval saddle, either to lift the tuberosities of the ischia from the saddle or to drag them forward, so that after a jounce they will not descend upon their proper place and a secure seat will be thereby lost, or the skin be chafed at the junction of the thigh and the ischiatic region."

Another noteworthy anatomical condition militates against the probability of the construction of the perfect seat, that never can chafe: In the ordinary seated posture on a chair the right-angled flexion of the thigh on the trunk axis draws the gluteal pad or buttock directly forward under the tuberosity to act as a cushion. But when the thigh is extended, or nearly so, the cushion is pushed backward, and the tuberosity falls nearly opposite and above the outer end of the gluteal fold, with scant covering or shield. This accounts for the fact that some women derive more comfort from a man's saddle than from the broader form of the same make, which causes discomfort along the ischial ramus and tuberosity. This is the place where an English pigskin often chafes a man on horseback.

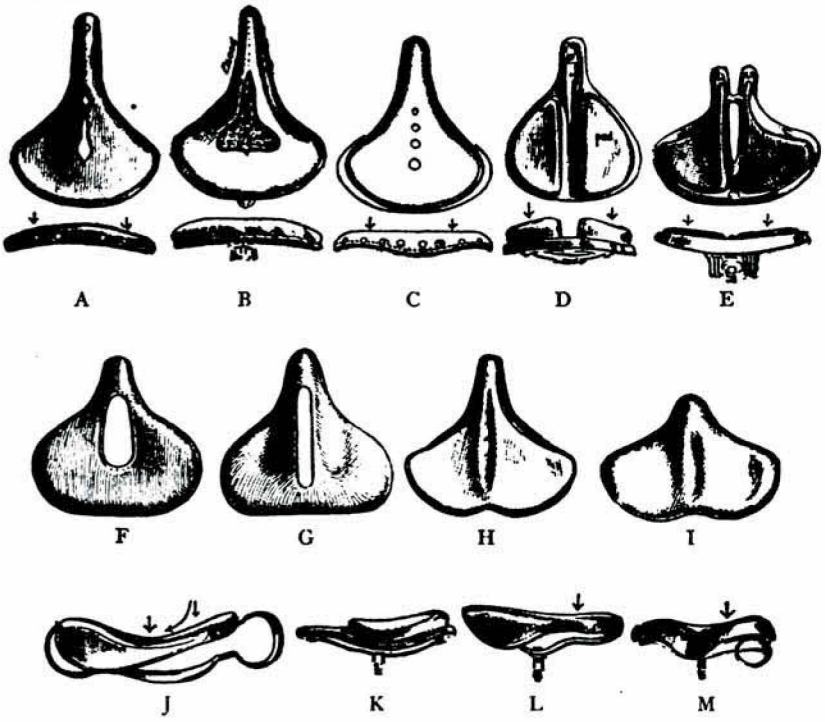
Defects in Construction.—Some of the injurious and not uncommon defects are: A center ridge; sagging, or the hammock shape; narrowness; and a vicious tilt.

Some seats are built on the ridge-pole plan, notably on one of the best of the popular wheels. There is in this case contact over such an area of the nates and pelvic floor that at first it seems most comfortable, and only after a long ride is the harm of it divined. The same shape may develop from stretching of the leather. It may also come from bending downward of the outer ends of the cantle or transverse rear bar of the saddle. Fig. A shows a saddle made in this shape.

The downward sweep of the center of the saddle is also occasionally due to faulty construction. More often weakness of the spring causes the imperfection, and the tendency to it is one of the reasons why the old model of spring, as is shown in Fig. J, is little used now. A flat stiff spring is the usual form, and for those who feel the jar a good deal there are, besides the pneumatic saddles, those with a better kind of spring, such as the Hunt Lady's, the Duplex, and the Utility. Saddles that are originally of good model may sag from stretching. This is usually remediable by setting the nut underneath, a thing that may call for the repairer's vise.

The narrow shape is unsuited to some women, because the wider pubic arch allows the pelvis to straddle the ridge pole with more ease and more harm than is the case with men.

A wrong tilt or angle, unduly raising or lowering the front peak, calls for mention only because the average woman is not aware how slight an alteration in angle will make a large difference in comfort and safety.



The available types of saddle we may roughly classify as follows: First, the narrow man's saddle suitable to a few women. Second, the most commonly used and most useful of all, the modified male type of the shorter, broader, flatter form, supplied with most wheels on request. It should not be less than eight inches wide. As examples are the Mesinger (Fig. B), Garford (Fig. C), Hunt (Fig. C), and Reform Wheeler. There is the saddle with the pad on each side to carry the weight, with a deep groove in the center and without front pommel. Of these the best is the Christy (Fig. D). Many people find comfort and relief to perineal pressure in this seat. It is less secure than the usual form, and chafes some riders.

The Automatic belongs in this class, though it embodies another principle—to wit, the independent tilting of the sides with the motion

of the legs. One objection to these saddles is that greater care is necessary in mounting on account of their rather sharp beaks.

Theoretically, the broad seat with a very short and blunt pommel in front would seem the ideal one for women. Various forms devised on this principle are coming into use. Their only fault is that in certain people, as already explained, there is a tendency to chafe along the inner side of the tuberosity. Therefore they should, as a rule, be placed farther back and lower than the ordinary saddle. . The Empress, the Duplex, and the Common Sense may be mentioned as well adapted to some individuals.

Theoretically, too, the pneumatic saddle would claim approval, but it is not much used apparently. The Cutting saves some of the jar, and has a short anterior projection which does not rise when pressure is made on the confined air farther back. The Sager has a separate cushion on each side, and thereby prevents the billowy feeling some air-cushion saddles give, while the lacing allows of certain changes in conformation.

Individual saddles, shaped to suit the rider, is what we have been looking for, and Mr. Ray, of the Rambler agency in New York, is meeting this demand. The customer sits in a tray of modeling clay which is fastened to the bicycle like a seat in such fashion that the wheelman propels the wheel while the impression is being taken. Over the plaster cast of this mold an aluminum plate is made, and the metal is covered with felt and leather. A marked variation in individuals is observed (Figs. F and G).

Postures, Correct and Incorrect.—Concerning these I shall let the pictures speak for themselves, as the text below them tells what there is to say. I draw attention to the model photographed in the sewing-machine position, to controvert the queer objection that still manages to draw breath and which holds that the actions on the two machines resemble each other. And to give clearer ideas of that contortion that is masked by a riding skirt, the front and rear views of the ladies on horseback are respectfully submitted. One has but to imagine the man's position in these cuts to see that some of the same statements concerning misapplied force and lack of balance between the work demanded of internal and external thigh and leg muscles applies also to his attitude astride a horse.

In the matter of faulty postures we have but to say that seven tenths of the ungainliness or lumbering action of women awheel is the result of such attitudes. The rest is due to dress unsuited to the exercise or to the rider. American women rarely study themselves as

the French women do, and until color and form are adapted by each to her individual beauties and shortcomings, we can not hope for any better decorative effects on the wheel than on the sidewalk.

The practical outcome of this paper is that we physicians ought to have personal knowledge of this means of exercise, and that it is our duty to instruct prospective wheelwomen, in order that each rider be carefully trained by competent instructors as to the right posture, right methods of pedaling, correct height of saddle, correct position of saddle, and, finally, should be told that she must insist—in learning or in buying a wheel—on such trial as will enable her to judge what saddle suits her. By testing the machines of one's friends, not for a half hour, but for a considerable ride, and by experimenting with saddles at different heights, positions, angles, and tension, one can arrive at a comfortable conclusion.