

THE BICYCLE FOR WOMEN.¹

BY

JAMES F. PRENDERGAST, M.D.,
Philadelphia, Pa.

Two years ago, in an article on Physical Culture, I stated that I could see no valid reasons why women should not indulge in bicycle-riding as an exercise. Since that time I have given the subject careful consideration from every point of view—the hygienic, physical, and, I might say also, the moral—and my conclusion is that, for physical exercise for both men and women, the bicycle is one of the greatest inventions of the nineteenth century. It is a fad at the present time that has grown to enormous proportions, and will be productive of great value to the present generation, while in the next its benefits will be seen in the form of better health, finer physical development, and more stable nervous systems. The reasons for the widespread adoption of the bicycle are numerous. The cheapness of the pastime, its general adaptability to both sexes and to all ages, the beneficial effects of riding in the open air, the ease and exhilaration of rapid movement, the swift change of scenery, and the companionship of others interested in the same pursuit, all tend to make it a very enjoyable form of both physical and mental exercise.

Exercise is a necessity for continued good health and mental vigor. It is almost universally conceded that any form of exercise that will bring women and girls into the open air must be of great value. They have been so tied down and hampered by social duties and conventionalities, and have been dressing for generations so unhygienically, regardless of health or comfort, that many of them have become mere bundles of nerve fibres, ready to explode on the slightest provocation. To these the bicycle will prove a blessing.

Those who do not ride or who have not given the matter thought imagine that bicycling exercises the leg muscles only. In this they are greatly mistaken. All the muscles of the lower extremity (those of the pelvic floor, the back, and the abdo-

¹Read before the Section on Gynecology, College of Physicians of Philadelphia, May 21st, 1896.

men) are brought into play: the muscles of the back in maintaining an erect posture and in balancing the wheel—to sit erect for two hours without aid being no slight amount of work for the back muscles; the abdominal muscles in hill-climbing and hard pushing, unless interfered with by tight corsets; the muscles of the arms in guiding the wheel and in helping carry the weight of the body in crossing rough spots on the road, car tracks, etc.

The heart and lungs are benefited by the increase of the force of the circulation and by the deep inspirations. We have thus an increase in the supply of oxygen and in the elimination of carbonic acid and other toxins—poisons that accumulate in the system from lack of exercise.

It has been demonstrated by experiment that a person walking at the rate of four miles per hour takes in five times as much air as when at perfect rest or recumbent. In other words, under ordinary conditions we take in four hundred and eighty cubic inches of air per minute, whereas during a walk of four miles an hour we take in twenty four hundred cubic inches. Applying this to bicycling, we can appreciate the value of exercise in the open air. The action of the heart is increased in force and frequency, and the flow of blood through all parts of the body, including the heart itself, is augmented. These two factors, the increase in the action of the respiration and circulation, explain the improvement in a local or functional trouble by such exercise as bicycling. The increased circulation is not to be passed over lightly when dealing with nervous women, as it means better nutrition to starved nerves. The muscles grow larger, firmer, and respond more readily to volition. The term exercise as commonly used expresses only the action of the voluntary muscles. Dubois-Raymond, in "The Physiology of Exercise," says: "It is easy to show the error of this view and to demonstrate that exercises demanding composite movements are much more exercises of the central nervous system, of the brain and spinal marrow." Every action of the body as a motive apparatus depends, not less, but more upon the proper co-operation of the muscles than upon the force of their contraction. In bicycle-riding the muscles must begin to work in the proper order, and the energy of each must increase, halt, and diminish according to a certain law, so that the result shall be the proper position on the wheel in order to maintain one's balance and to exert the force in the proper direction. Thus, bicycling is not mere muscle gymnastics, but

also, to a high degree, nerve gymnastics, if for brevity we may apply the term nerves to the whole nervous system.

Bicycling as a form of exercise is more beneficial than horse-back-riding, for several reasons:

1. *Accessibility*—Hundreds can ride a wheel where one can ride a horse.

2. *Utility*.—It is a better form of exercise. The side saddle, as generally used, has a tendency to increase lateral curvature of the spine and exercises one side of the body more than the other; the shock of a trotting gait excludes many from that form of exercise who can ride a wheel with perfect comfort.

3. The *clothing*, as fashion dictates it for the saddle, is entirely too tight to allow the benefit which might be obtained from the exercise. The only hygienic position on horseback is astride, and until fashion or common sense sanctions this women had better ride the bicycle. For bicycling the clothing should not in any way interfere with free play of the muscles, nor constrict the chest, thus preventing full expansion of the lungs. Corsets should be short and loose, or they greatly interfere with the circulation and prevent hill climbing. Wool should be worn next the skin, to absorb perspiration and prevent chilling when the rider is resting. In a word, the clothing should be perfectly comfortable.

Some have compared bicycling to running a sewing machine. This is an absurd charge. The treadle of a sewing machine is run by the muscles from the knee down, and is a short up-and-down stroke of both feet at the same time, and is very tiresome. The pedalling of the bicycle brings into play all the muscles of the legs, and is a much wider sweep in slower time, while the muscles are practically at rest during a portion of the stroke. Bicycling is a pleasant recreation and mental stimulus enjoyed in the open air. The sewing machine is used in a room with a bad atmosphere while wearing unhygienic clothing; the eyes are following a seam only twelve inches distant, producing eye strain and other nervous symptoms, simply from the extreme monotony and drudgery of the work. The sewing machine causes stasis of blood in the lower limbs and pelvic organs because of the bent posture. Bicycling demands deep inspiration; operating the sewing machine does not.

As to the machine itself. For women it should run very easily and not be geared too high, as heightened gear requires increased power for propulsion, and this applies especially to hill-climbing. The gear equals the diameter of a circle whose

circumference represents the distance advanced during one revolution of the pedals. Thus, a bicycle geared to sixty-three inches will cover the same space of ground with one turn of the pedals as one revolution of a wheel sixty-three inches in diameter. I am satisfied that dealers are offering wheels geared entirely too high for beginners. A wheel geared to fifty-three to fifty-six inches is high enough to use the first season, unless the rider is accustomed to considerable exercise. A higher gear means very hard pushing on up-grades or hill-climbing, which may lead to strains and exhaustion; it is also very discouraging to beginners on account of the hard work. It must be understood that the wheel should fit the rider as to height of frame, length of stroke, adjustment of handle bars and saddle, not only for the comfort of the rider, but in order to obtain the best results from a hygienic point of view. In other words, the rider should have an intelligent knowledge of the machine and a realization of the fact that rider and wheel should work as a unit.

The Opinions of Others.—Fearing that my enthusiasm for the bicycle and love of out-of-door exercises and sports might have biassed my judgment, and that I had also exaggerated the dangers of the saddle, I sent out letters to twenty-five physicians,¹ ten of whom were women and the majority gynecologists. I received twenty replies. I asked for a brief reply to the following questions :

1. Have you seen any bad effects from bicycle-riding ?
2. Do you consider it a good exercise for women and girls ?
3. Have you seen any troubles arising from saddle pressure ?

To the first question all but one stated that they had never seen any bad effects from the exercise, except from its gross abuse, carelessness, too long rides, and lack of care when overheated. One reports two cases of aggravated leucorrhœa and one case of aggravated functional heart disturbance. Another reports a case of acute ovaritis, probably caused by two long rides on successive days ; the rider, however, rested by sitting upon the ground near a stream. Another states that he had seen bad effects in women with weak hearts or pelvic disease.

To the second question—Do you consider it a good exercise

¹ Drs. S. Weir Mitchell, Charles B. Penrose, J. M. Baldy, C. Goodell, William Pepper, J. W. White, H. C. Wood, H. A. Hare, W. W. Keen, Edward Martin, I. P. Strittmatter, Barton Cooke Hirst, J. M. Taylor, Elizabeth L. Peck, Emily G. Hunt, Anna P. Sharpless, Lucy N. Tappan, Clara Marshall, Elizabeth W. Griscom.

for women and girls?—every reply was favorable. Some placed limitations on it, such as the existence of inflammation of pelvic organs. One says: "I have recommended it to some of my patients, even those who were suffering from disease of the ovaries and displacements of the uterus." Another says: "Every neurasthenic woman should own and ride a wheel, under proper restrictions as to distance and speed, and the length of time in the saddle. I believe it to be the greatest therapeutic agent introduced for years, especially for this class of patients." Another states "that it is really too soon to judge of its benefits. The next generation will be in a better position to answer." Another woman-physician says: "Yes, for healthy persons and in moderation. The fact that it takes some women from a sedentary life into the open air seems to me its special claim to usefulness."

To the question, Have you seen any troubles arising from saddle pressure? seven answer no. Others report serious ulceration of the vulva and perineum in a syphilitic subject, tumefaction of the vulva, vulvar bruising, frequency and urgency of micturition and ardor urinæ, soreness and bruising of the perineum. Another replies that the saddle pressing on the perineum of either male or female is bad. The Christy and similar saddles do away with this fault. One physician stated to me personally that he had a case which required stitching, the rider having been thrown violently forward against the peak of the saddle. One reply stated that no saddle is fit for use if it fails to support the body on the ischial tuberosities. Chadwick reports a case of irritation of the vulva caused by pressure of the point of the saddle in front. and a case with leucorrhœa whose general health had been so greatly benefited that he did not forbid bicycling. His conclusion is that bicycling is a most desirable form of exercise and recreation for women.

The Saddle.—As it is almost universally accepted by physicians that bicycling is an excellent form of physical exercise for women and girls, under proper conditions of dress, posture, and care that it is not overdone, the question arises, Are there any real dangers aside from over-exertion and the accidents incident to the pastime? The real danger lies in using badly constructed and ill-fitting saddles. This especially applies to women. The trouble is, and has been, that the manufacturers of saddles have, up to the present year, been catering to the racing man and neglecting that largely increasing and impor-

tant class who ride for pleasure, and have been offering the same style of saddle to women as to men—that is, the old-fashioned suspension saddle, over which the rider is hung astride on the same principle as riding a rail. The ordinary suspension saddle is wholly unsuited for women ; it is too narrow to carry the rider's weight properly, and instead of the rider resting on the tuberosities of the ischia the weight is carried on the perineum ; the pommel or peak in front is too high and the rider is in danger of bruising the vulva in crossing car tracks and in going over rough spots on the road. Furthermore, the ordinary saddle becomes narrower with use, sags in the centre, thereby exaggerating the already too high peak in front, and, being too narrow behind, throws the rider's weight forward, not only bringing pressure on the perineum, but also giving rise at times to friction and heating of the parts where it is very undesirable and may lead to dangerous practices. That there is such a danger in riding a badly constructed saddle the writer has been able to verify in two or three cases, but that it exists to the extent thought by the laity is absolutely untrue. These bad effects are positively precluded by the use of such a saddle as the Christy.

The ideal saddle has not as yet been produced. Dealers and riding teachers in general are very ignorant of the wants of women riders, and have no definite ideas as to their requirements or as to what a saddle should be like, and will recommend the most abominable of saddles as ideals of comfort, simply to make a sale. The ideal saddle should be broad enough to sit upon with the weight carried on the tuberosities of the ischia ; it must not produce pressure on the perineum or have a high peak to injure the vulva ; it should not chafe and produce saddle soreness ; it should be cool, and springy enough to take up shock and vibration not so disposed of by the pneumatic tire. Owing to the objections to the ordinary saddle that have been raised by physicians and riders, a number of new styles are being offered as being everything that is desirable in this line, but the majority are faulty in some vital point. The Christy saddle is at present about the best for women riders. It is broad enough to carry the weight on the tuberosities of the ischia ; the rider sits on two thick pads which prevent pressure on the perineum or more delicate parts ; and the saddle has no high peak in front. When properly adjusted on the saddle post, it is almost impossible for an injury to result from its use, as I have personally tested it over some of the worst pavements in this city,

and had one trying experience coasting, but have never suffered in the least from saddle soreness.

Townsend¹ states "that he received eighteen replies from female physicians, and all but one stated decidedly that they considered bicycling of value to women. None had seen any harm except from excessive use or bad saddles." The question, Would you advise it in any form of uterine disease? was answered in the negative by two only. The remainder had recommended it, or would do so in suitable cases. The majority limited the exercise to chronic cases, especially where the circulation was sluggish and the muscular system relaxed. A number of cases were reported as benefited by bicycle exercise. In one case of dysmenorrhea requiring rest in bed, systematic use of the wheel caused great improvement in general health with fairly comfortable menstruation. Several retroversions, one with enlarged and prolapsed uterus, were greatly benefited by wheeling. One young married woman, who had retroflexion of the uterus and prolapsed ovary with adhesions, rode all summer and was cured. Several speak of the beneficial effects of the bicycle where walking was difficult or impossible. These favorable criticisms were not obtained from enthusiasts, as only one had used a wheel herself. Townsend himself says "that as a general exercise bicycling is not harmful to the pelvic organs, even when these are affected, unless the disease is so acute that any exercise as great as this is contraindicated."

Dickinson, in this JOURNAL for January, 1895, says: "Under proper conditions of costume and posture, with care that the exercise be gradually increased and properly graded for the individual case, and where there is no acute inflammatory condition to contraindicate it, bicycling will probably show itself capable of large results as an agent in curing pelvic disorders, since it is one of the few exercises which attract women."

Garches-Sarrante read a paper on "The Bicycle" before the Society of Medicine, Paris, and stated that she had been riding for three years with great benefit to her health; she recommends moderate riding in chronic troubles. In any case it is less fatiguing than standing or walking. It can replace with advantage the Swedish method of massage. She also draws a vivid picture of the moral rôle of the bicycle, the only physical exercise that husband and wife can enjoy together.

Galbraith, in her work on "Physical Culture for Women,"

¹ Boston Medical and Surgical Journal, June 13th, 1895.

says : "In the light of experience it is believed that for healthy individuals bicycling is one of the most excellent forms of exercise for maintaining health, retarding disease, and strengthening the constitution, and in many forms of disease, when used cautiously and under medical supervision, it will often be found of an inestimable advantage."

A certain nervous condition, said to result from excessive use of the bicycle, has been termed the "vibratory habit." Benjamin Ward Richardson has presented the subject before the Medical Society of London and evidently considers it a disease. I have been unable to get the full text of his paper. This "vibratory habit" can be almost eliminated if riders will sit on their saddles, and not on their wrists and arms by doubling up over the handle bars. Another fault which causes vibration and shock is blowing up the tires too hard. Pneumatic tires were intended to do away with just this condition, and should not be blown up so hard that they are not springy.

Frederick Treves, an authority on physical culture, strongly objects to bicycling for women and girls, on account of pressure and friction upon the pudendal region; but with improved saddles that objection does not hold good. He says that the exercise appears to have a very beneficial effect in relieving chronic constipation and is advantageous to dyspeptics and in functional diseases of the liver.

Summary.—We have in the bicycle an agent which will accomplish an enormous amount of good for women. It is notorious that women after a certain age will not take sufficient exercise in the open air, and to order them to do so for the mere sake of exercise is a waste of time, as not one in a hundred has the courage to keep it up. What women who are tied down by household cares, social duties, and occupied in sedentary pursuits need is exercise with some mental stimulus or recreation. The bicycle answers perfectly this condition, and peevish, overwrought, nervous women will find that exercise on the wheel in the sunlight and fresh air will invigorate their bodies, restore the appetite, bring ease, contentment, and elasticity to the mind, and enable them to better understand the wear and tear of mind and body to which our high-pressure methods of living subject them. As a therapeutic agent the bicycle has a very large range of usefulness. If used with discretion and ordinary common sense it will prove of value in a number of chronic conditions—namely, all chronic pelvic troubles, chronic heart disease (as bicycling closely resembles

mountain-climbing), dyspepsias, functional conditions of the liver, chronic constipation, and all functional troubles. This is brought about, not from any special effect of the exercise on certain organs, but because it is a pleasant, healthful form of exercise in the open air, and by exercising all the muscles and increasing the force of the circulation benefits special conditions. Personally I should consider it safe to allow the use of the wheel in any condition that permits of walking, providing hill-climbing is not attempted. Through the general use of the wheel by women we look for a reform in dress, more exercise in the open air, better muscular development, more stable nerves, easier labors, and healthier children.

8888 SPRING GARDEN STREET.