

and the little bread, flour, and provisions that he eats, and, finally, the alcohol for which, like all the inhabitants of Oceanica, he has a pronounced passion.

The picture which I have just sketched is exempt from all exaggeration. I cannot enumerate the sufferings of these brave people who are so attached to us, nor the vexations that they have been subjected to on the part of trafficking strangers.

Twenty or thirty years ago the trade in mother-of-pearl in the Tuamotu Islands well paid those engaged in it. By means of a bit of valueless fabric, a few handfuls of flour, or a few pints of rum, there was obtained a ton of mother-of-pearl, worth two hundred or four hundred dollars, or many beautiful pearls whose value the natives ignored.

The archipelagoes were frequented by boats of various nationalities. Mother-of-pearl was abundant, and pearls were not so rare as at present. Since then the number of trading vessels has increased.

The aborigines, enticed by the advantages of a commerce that was becoming more and more fruitful in measure as competition extended, betook themselves to fishing with improvident ardor, and now they find that the lagoons are less productive, that they are becoming depopulated, and that some of the most fertile of them are giving signs of exhaustion.

The interesting situation of the population of the Tuamotus, the danger by which it was menaced of being deprived of all resources and of all work, and also the fear of soon seeing one of the most productive sources of revenue of the Tahitian colony exhausted, and the principal element of its commerce disappear, attracted the enlightened attention of the colonial administration. With an eagerness that the Colonial Council of Tahiti has had to thank him for, the Under Secretary of State had the goodness to select me to go on a mission to Oceanica. The programme of studies he gave me was as follows:

(1) What is the real state of the oyster producing lagoons? Are they beginning to give out? If so, what is the cause of it, and how can it be remedied? (2) Would it not be possible to create an industry for the culture of the pearl oyster at the Tuamotu, Gambier, Tahiti, and Moovea Islands analogous to that which exists in France for the culture of the edible oyster? Would it not be possible by this means to procure remunerative work for the indigenes of Tuamotu, and one that should be sedentary and continuous, and that would render them independent and free them from the cupidity of dishonest traders, whose dupes and victims they are? Would they not thus be preserved from the trouble and danger that result from the assidu-

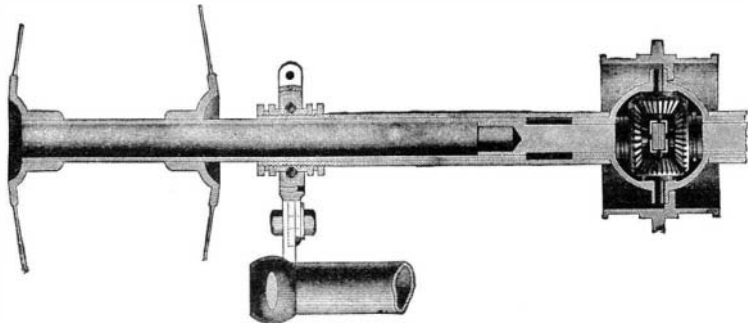


Fig. 2.—SECTION THROUGH AXLE.

practice of diving? Would it not be a means of attaching them to their home, their family and native island, prepare a more peaceful life for them, and gradually lift them toward the social level of the peoples of ancient civilization? (3) Is there any way of regulating the fishing for mother-of-pearl in the archipelago? If so, what should be the bases thereof?

Although statistics do not show a great diminution in the production of mother-of-pearl, it results from the minute investigation that I made upon the very spot that the lagoons are becoming poorer and poorer every day, and that in order to secure oysters of merchantable size the divers are obliged to visit great depths. I estimate that if we do not take prompt and vigorous measures, the lagoons of Tuamotu will run the risk of being very much impoverished, if not ruined, in a few years. The arrangements applied by the administrators who have succeeded one another at Tahiti were assuredly excellent, but they were insufficient to avert their ruin.

The forbidding to fish in a certain number of islands for a few years, so as to favor their regeneration, could not produce such a result, since, contrary to what has been thought, the pintadine is not unisexual, but hermaphrodite. The cause of the impoverishment of the lagoons is due to the abusive and improvident fishing that has been done in them.—G. B. Brandley, in *La Nature*.

THE *London Iron Trade Exchange*, on the tin plate trade, says: "Competition is as keen as a razor, and business is only made at the meanest profit."

Training Cavalry Horses.

Major W. K. Arnold, of the Sixth Cavalry, stationed at Fort Bayard, New Mexico, has undertaken the training of the horses used in his service, so that they will lie flat on the ground on command of the trooper.

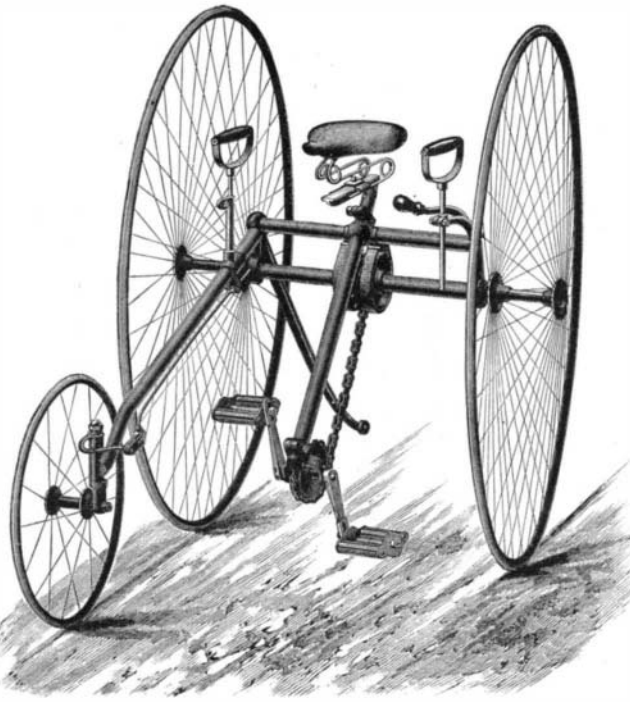


Fig. 1.—COLUMBIA TWO-TRACK TRICYCLE.

The result of his experiment has proved very encouraging thus far (about twenty-five horses have been thus trained), and nearly all of them lie down by merely taking hold of the left fore leg. The men can climb all over their bodies, and fire in various positions, without the horses stirring. Another desirable result of this training is that men who were formerly timid have become courageous and confident in the handling of their horses, and horses formerly dangerous are now thoroughly gentle. Army officers have become very much interested in the matter, and it is not improbable that more extensive experiments will be made in this direction. The value of a large body of men mounted on animals that will lie down at a touch and suffer guns to be fired over their bodies in action is apparent.

THE COLUMBIA TWO TRACK TRICYCLE.

The Columbia two track tricycle, of which we show a perspective view and also views of the more important characteristics, will present many points of interest to those who have studied and compared machines. It has been designed and made after careful study of every detail, and although many improvements have been adopted, it still contains all those details which extended use in the older machines has proved to be particularly applicable to the services required; thus the adjustable ball bearings and compensating swivels have their superior excellence too well established to be displaced. The middle driving or short crank shaft feature is a return to an old principle of tricycle construction which has at times been displaced for necessities of other parts or fashions in structure, but which, for steady effectiveness and lightness in this machine, is believed to be the best. The two track feature, though not broadly new, has been here embodied with improvements, so as to give equal steadiness of running and the stability of front steering, with the advantages of an open front for convenience, and but two lines of resistance to the wheels to watch and overcome.



Fig. 3.—SEAT.

Among the new features may be mentioned the Wallace dwarf steering head, which, besides its graceful and neat appearance and its lightness, conducts the strain more directly from the steering wheel to the driving gear, and insures steadiness of motion; the spiral rack and its connections, by which the steering apparatus is made most simple and effective, and is most out of the way and least subject to disarrangement; the three part frame, which affords just the parts needed, and no more; the double hand brake, which combines effectiveness with certainty and ease of action; the combination of brake drums, sprocket and balance gear together, and in the middle under the seat; the large, weldless, steel tubular axles in place of solid shafts, which are heavier and more likely to break.

The inclined seat rod operates to move the saddle backward also, when it is raised, so as to preserve the relative positions of seat and pedal, for the taller rider has a longer upper leg as well as lower leg; and by an ingenious attachment of the crank supporting tube, tangent to the horizontal one instead of flush with it, as usual, this seat rod is made to move in and out free of everything. Another and most valuable new departure is the building of the wheels directly upon the tubular half axles, thus obtaining a firm wheel, a safer axle, and dispensing with a large amount of misplaced material. These and other improvements have reduced the weight of a tricycle more than twenty pounds, while adding to its strength. The driving wheels are 48 in., and the steering wheel, tracking before the right hand driver, is 30 in.

The Columbia two track tricycle is made by the Pope Manufacturing Company, of 597 Washington Street, Boston, Mass.; it will be placed upon the market about the middle of April.

Skate Rollers.

"In less than one year the price of boxwood has trebled," said a hardwood dealer. "The roller skating mania has completely exhausted the market of a certain size of boxwood. Less than eighteen months ago I could sell a ton of three inch boxwood for \$38, and it would be first grade wood in every respect, and admirably suited for turning small work. The demand then was steady, and the principal consumers of the wood were rule makers, tool manufacturers, and turners, who supplied the market with boys' tops, pool pins, and toys of various kinds. The sudden and remarkable growth of the roller skating pastime has created a constantly increasing demand for a certain size of wood, and now it is impossible to purchase a ton of suitable wood for skate wheels for \$120. Rollers are made in several sizes, ranging from 1 1/2 to 2 1/2 inches in diameter, and only the natural growth of boxwood approximating these sizes is fit for use. Large wood is too costly, and is less firm in resisting the tremendous strain of a skater's weight upon an axle only 7-32 of an inch in diameter. The boxwood grows in Persia and Turkey, and heretofore the crop has always been handled in

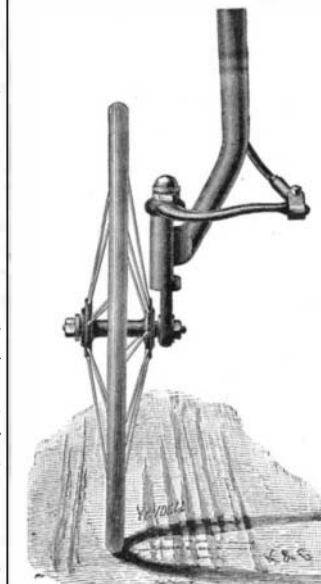


Fig. 4.—STEERING WHEEL.

England. It is a wood of very slow growth, and in its native country stringent timber laws restrict the depletion of the growing trees. At the present rate of consumption, the world will be practically exhausted of its boxwood in less than twelve months unless some equally cheap and durable substitute is found to take its place."

"Has nothing been tried which gives promise of superseding boxwood?" asked the reporter.

"Yes, rubber, celluloid, rawhide, vulcanized fibers, and compressed paper have been tried in making rollers, but

for one reason or another they have proved unsatisfactory. Some have proved too soft, while others, like the pure celluloid wheels, have been found too expensive for general sale, and the necessary metal bushings have proved objectionable, because the grit and dust from the floor and shoes of the skaters, wearing between two metal surfaces, has rapidly cut away the axles of the skates. Rollers with anti-friction bushings consisting of a number of small steel plugs freely revolving around the axles have been tried with some composition wheels with success, but they are necessarily very expensive, and on this account cannot come into general use."

"Will no other wood than boxwood answer?"

"Only for very cheap skates. Dogwood, apple, pepperidge, laurel, and lignum vitae have been tried by almost every roller maker; and all have been rejected. The lignum vitae alone is hard enough, but it will not stand the strain of the small axle. Metal wheels with a rubber surface are made, but nothing has yet been found which in all respects is as good for the purpose as boxwood."

PEOPLE who use warm water bottles and India rubber bags would find a bag of sand far more convenient. The sand should be fine, clean, and thoroughly dried, then put into a flannel bag, and the bag covered with linen or cotton cloth, to prevent the sand from sifting out. The bag may be quickly heated by placing it in an oven or on a stove. The sand holds the heat a long time, and imparts a more agreeable warmth to the feet or hands than a warm water bottle.