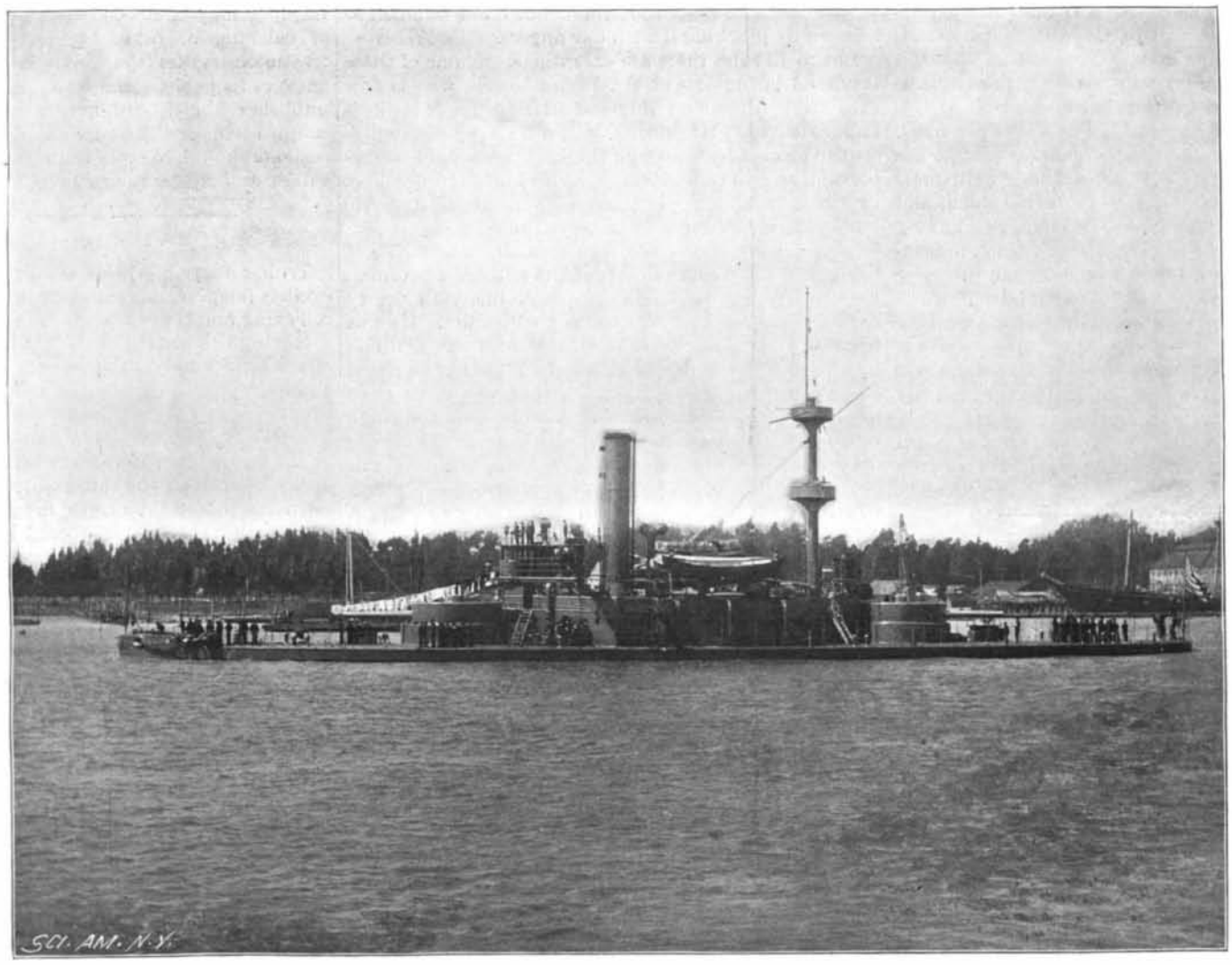
REINFORCEMENT OF THE DEWEY SQUADRON.

After the brilliant naval action of Manila Bay on May 1, it was decided to reinforce Dewey's squadron, so that the substantial fruits of his victory would be assured to him and all danger of his being assailed by a superior force would be eliminated. It was also considered desirable to send an army of occupation which should take formal possession of Manila as the key to the Philippine Islands, for Dewey's squadron only had a sufficient complement of men to properly man his vessels, and any landing of the marines would have been attended with danger, as they would have been immensely outnumbered by the Spanish troops. Notwithstanding the fact that every effort was made to rush forward preparations for the embarkation of troops, it was not until May 22 that the cruiser "Charleston" started westward with a full supply of ammunition and provisions for the squadron. The "Bennington," which was at Honolulu, was ordered to Manila, and the "Mohican" left San Francisco June 5 to relieve the "Bennington." Three large transports left San Francisco on May 25 with 2,600 troops and supplies of food and ammunition. Major-General Wesley Merritt was made military commander of the Philippine Islands under the title of Governor-General, and has had 21,000 troops assigned for service in the Archipelago, and General Merritt himself sailed on June 30 with the Astor Battery and other troops.

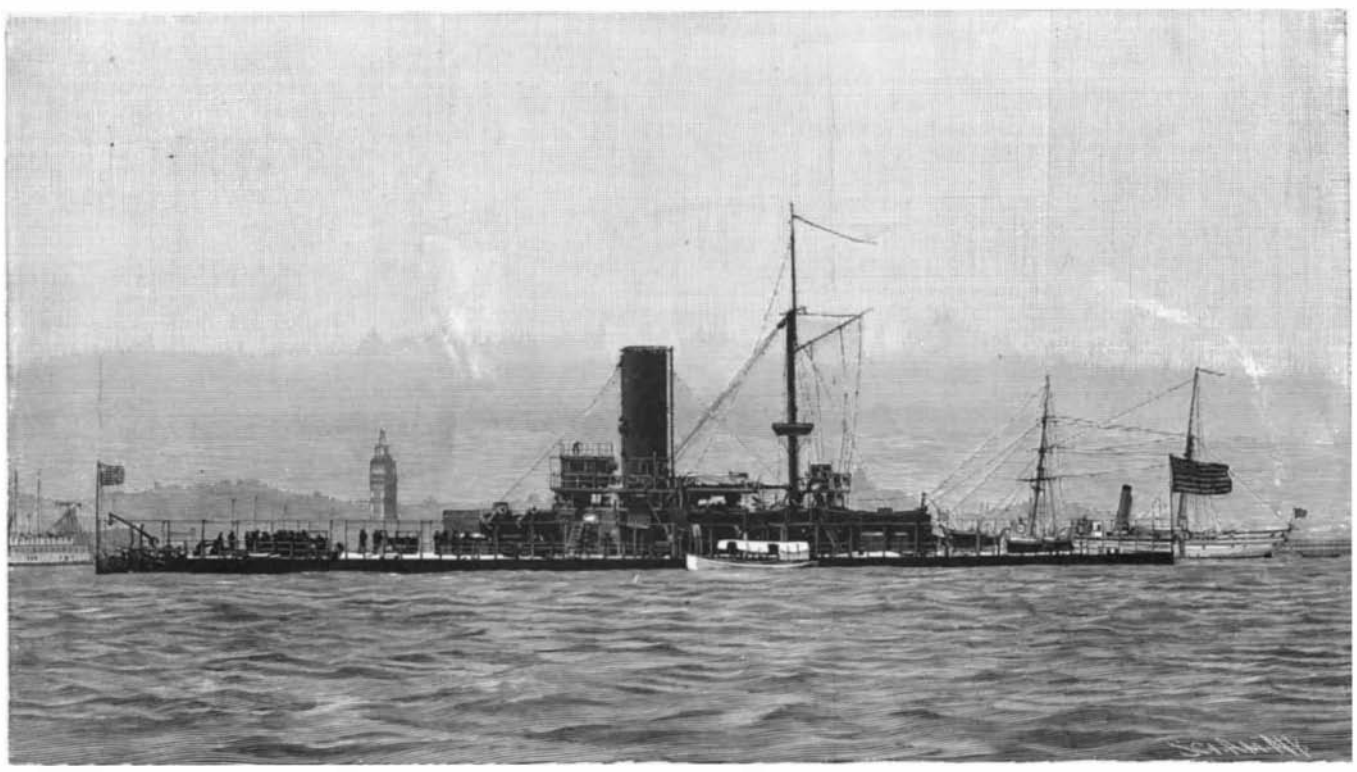
The question of strengthening the Dewey squadron was an interesting and important one. There was not a great choice in the matter, as the "Oregon" had been sent to join the fleet in the Atlantic. The protected cruiser "Charleston" is a fine boat of 3,730 tons displacement and capable of making 18½ knots per hour. She has a 2 to 3-inch protective deck, and the main armament consists of two 8-inch and six 6-inch breech-loading rifles. It was decided that it would be desirable to provide vessels better protected and more heavily armed, so the monitor "Monterey" and the coast defense monitor "Monadnock" were selected for the service.

The distance from San Francisco to Manila by way of Honolulu is 7,000 miles; and as the "Monterey" has a normal coal capacity of only 200 tons, the "Monadnock" only 250 tons, it was a bold venture to send away these monitors, which were built for coast defense. No monitor had ever taken such a voyage, and naturally the greatest interest is felt in naval circles over their trip, the question of coal making it of great importance. A few years ago the "Monterey" made a run down the Pacific coast from San Francisco to Callao, Peru, stopping frequently on the way to coal. The "Monterey," in her trip to Callao, traveled more than 1,800 knots without stopping to coal. The best speed of the "Monterey" is 13·6 knots per hour, but as she will have to economize in coal on this voyage, she will not make more than 8 knots. Coaling at sea is a dangerous and tedious performance, and much time will be lost in conveying the fuel from the collier to the bunkers and deck of the "Monterey." It is estimated that in the run from Honolulu to Hong Kong, 4,961 miles, she will have to coal four times at sea, and on her trip from San Francisco to Honolulu the "Monterey" will be towed by an ocean-going tug after the coal gives out, to avoid the necessity of taking on coal at sea. At Honolulu the consorts as well as the monitor will fill their bunkers, and this will be repeated at Hong Kong. The "Monterey" and the collier "Brutus" sailed at noon on June 6 from San Francisco and put in at San Diego on June 10. The "Monterey" had 200 tons of coal on her deck. When one day out from San Francisco, 80 tons of it were washed away. She was so heavily loaded that she lay very low in the water, and the sea sweeps over her even when she is under way and in smooth water. She took on additional coal and proceeded with her voyage. The "Monadnock" sailed on June 23 from San Francisco for Manila. She has sufficient coal to carry her to Honolulu, and she will make that port under her own steam. She has aboard 360 tons besides more than 100 tons on her deck. From Honolulu the "Nero" will tow her to Manila, the best appliances for that purpose having been put on both vessels. The collier has at least 5,000 tons of coal.



THE COAST DEFENSE MONITOR "MONADNOCK" STARTING FOR MANILA.

When the two monitors and the "Charleston" have reached their destination, Acting Rear-Admiral Dewey will have a formidable addition to his squadron, for the cruisers and the gunboats which participated in the notable battle of Manila Bay are only protected, and the "Olympia" alone has a turrret. With the "Monterey," "Monadnock" and the "Charleston" Admiral Dewey will have nine fighting ships under his command, not including the revenue cutter "McCulloch," which is being used as a dispatch boat, so that even if Spain should send her Cadiz fleet, which has now reached the Suez Canal, to Manila, Admiral Dewey will have a formidable squadron with which to meet the enemy. Having now given an outline of the proposed measures to reinforce Acting Rear-Admiral Dewey, we will briefly note a few particulars regarding the monitors which are sent to reinforce him. At the time when it was finally decided to complete the four old monitors whose keels were laid in 1874, the construction of a new monitor, the "Monterey," was authorized. The contract was secured by the Union Iron Works, of San Francisco, who are also the builders of the battleship "Oregon." The keel was laid in 1889, and the vessel went into commission February 13, 1893. This vessel is a good example of a monitor pure and simple, and is one of the most powerful coast defense vessels of the new navy. Her length is 256 feet; beam, 59 feet; draught, 14 feet 10 inches; her displacement is 4,138 tons. She is constructed entirely of steel, the belt being 13 inches thick amidships, tapering to 8 inches at the bow and 6 inches at the stern. A continuous deck of 3 inches of steel extends from stem to stern. Further protection is provided by a double bottom and water-tight bulkheads. The hull contains 110 watertight compartments. The heavy guns are carried in turrets and the turning gear, etc., is protected by barbettes. The forward turret is 8 inches thick and the barbette 13 inches thick, and within the turret are two 12-inch guns. The after turret is 7½ inches thick and the barbette 11½ inches, and the heavy guns are 10-inch breech-loading rifles. The ship carries a single military



THE MONITOR "MONTEREY" EN ROUTE FOR MANILA.

mast in the fighting top, in which is placed a part of the rapid-fire batteries, which consist of six 6-pounders, four 1-pounders and two machine guns. Her engines, which are illustrated on page 31 of our NAVY SUPPLEMENT, are of 5,244 horse power.

The "Monadnock" is the sister ship to the "Miantonomoh," "Amphitrite" and "Terror," although these vessels differ somewhat as regards their engines, speed and armor. The "Monadnock" was built at the Continental Iron Works, of Vallejo, California. She is 259 feet 6 inches long; her extreme breadth is 55 feet 6 inches; her mean draught is 14 feet 6 inches; displacement is 3,990 tons; she has twin horizontal triple expansion engines, which drive her at 12 knots per hour. Her maximum indicated horse power is 3,000. She has two steel barbette turrets. The steel armor belt varies from 5 to 9 inches. Her turret is 7½ inches thick, and her barbettes have 11½ inches of armor. She has 1¾ inch protective deck. She carries four 10-inch breech-loading rifles and two 4-inch rapid-fire guns. Her secondary battery consists of two 6-pounders, two 3-pounders and four smaller guns. She has one military mast. Her complement consists of 26 officers and 157 men. The "Terror," "Amphitrite," and "Miantonomoh," which all resemble the "Monadnock," are fully illustrated in our NAVY SUPPLEMENT.

Our engravings were made from photographs taken at San Francisco just before the departure of the monitors.

Krypton.

On June 6, 1898, the discovery of yet another element was announced, in a communication made by Prof. Ramsay, of London, to the Academy of Sciences, of Paris. The communication was read to the Academy by M. Berthelot. This new element is a gas, and makes a fifth constituent of the atmosphere; it is, however, present in very minute quantities, viz., one part in ten thousand of its volume. Krypton belongs not to the argon, but the helium group; its density is greater than that of nitrogen, being, according to the corrected measurement, 22·47.

The discovery of this new gas is in a way due to the kindness of Dr. Hampson, who supplied Prof. Ramsay with about 750 cubic centimeters of liquid air; this was allowed to evaporate away slowly, until not more than 10 cubic centimeters were left. This gaseous residue was freed from oxygen and nitrogen, and then sparked in the presence of oxygen and caustic soda, when a spectrum was obtained showing the argon lines feebly, but in addition to this a new spectrum was observed.

This spectrum is not yet entirely disentangled from the spectrum of argon: it is, however, characterized by two very brilliant lines, one almost identical with D_3, and another one very strong in the green.

Measurements made with a grating of 14,438 lines to the inch give:

$$D_1 = 5895{\cdot}0$$
$$D_2 = 5889{\cdot}0$$
$$D_3 = 5875{\cdot}9$$
$$D_4 = 5867{\cdot}7$$

The green line, which is comparable with the helium line in intensity, has the wave length 5568·8, and the somewhat weaker line which accompanies it has the wave length 5560·6.

The wave length of sound was determined in the gas by the method described in the "Argon" paper. The data are:

	I.	II.	III.
Wavelength in air	34·17	34·30	34·57
" " in gas	29·87	30·13	..

Calculating by the formula:

$$\lambda_2 \text{ air} \times \text{density air} : \lambda_2 \text{ gas} \times \text{density gas} :: \gamma \text{ air} : \gamma \text{ gas}$$
$$(34{\cdot}33)^2 \times 14{\cdot}479 : (30)^2 \times 22{\cdot}47 :: 1{\cdot}408 : 1{\cdot}666$$

it is seen that, like argon and helium, the new gas is monatomic, and, therefore, an element.

The atomic weight of krypton will probably be found to be 80.—Chemical News.

Kussu Honey.

The Pharmaceutische Post is responsible for the statement that King Menelik, of Abyssinia, made an experiment to determine whether honey made from kussu flowers (Brayera anthelmintica) could be used as a tænicide. He planted numerous Brayera trees in his garden, and at the flowering season placed several hives of bees close by. After the honey had been stored a test was made. It was proved that a tablespoonful of honey dissolved in water speedily caused the expulsion of tapeworm.

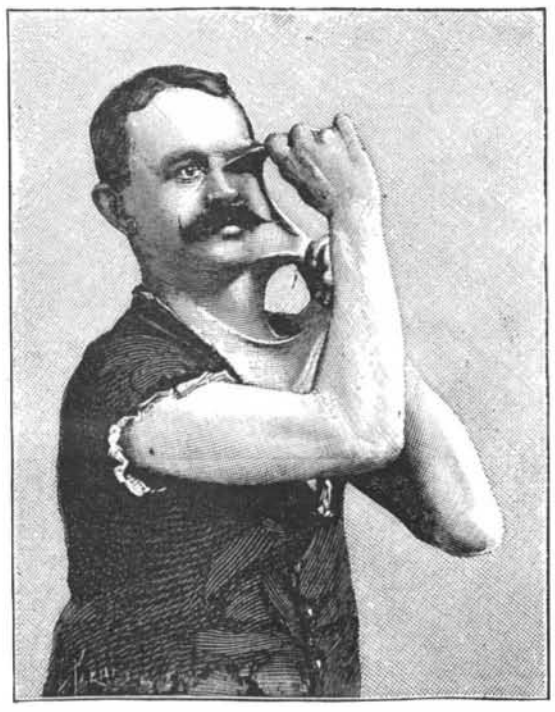
The Quinine Industry in Germany.

During the ten years 1887–1896 Germany imported cinchona bark to the value of 35,500,000 marks, while her exports thereof were only 2,000,000 marks. Her exports, however, in quinine and quinine salts reached the enormous total of 58,000,000 marks, of which the greater part was to the United States. Russia, Italy and Holland absorb large quantities also. The imported quinine totalled, during the decade in question, 2,100,000 marks.—Süddeutsche Apotheker Zeitung.

MORRIS, THE "INDIA RUBBER MAN."

Oxen, horses, cats, dogs and many other animals have the peculiarity (fortunate from certain points of view) of possessing an extremely elastic skin, which almost floats, so to speak, around the tissues that it envelops, and which may be easily stretched without the animal experiencing any painful sensation. This is a faculty that does not belong to us poor human beings, who are scarcely able to raise the skin of our hand as much as an inch by pinching it with our fingers.

But to all rules there are exceptions, and one of these is offered in the case of Mr. James Morris, who is now exhibiting himself in England in Barnum & Bailey's famous circus. Mr. Morris, whom we are able to present to our readers through the intermedium of a photograph sent to us by Mr. Bailey, is known indifferently by the names of the "India Rubber Man" and the "Elastic Skin Wonder." Observed outside of his performance (and as may be seen from the right side of his face in the picture), he presents nothing abnormal. He is a strong man, in the prime of life, with pretty regular features and an excellent education. He was born at Copenhagen, N. Y., in 1859, and was first employed in a cotton mill. It was in 1873 that he ascertained that he possessed a skin that was more than usually elastic. He was at that time accustomed to stretch it for the amusement of his companions (the other lads employed in the same mill), but it did not occur to him to profit by his phenomenal faculty, and when he left the cotton mill it was only to enter a rope-walk in the State of Rhode Island, which he finally forsook for military service. Here he gave representations to his regimental comrades. The officers soon got wind of the thing, and wishing to witness



JAMES MORRIS, THE "INDIA RUBBER MAN."

the phenomenon, got up an exhibition to which they invited some friends and journalists.

The manager of the Westminster Museum learned of the existence of the man with the elastic skin, and succeeded in engaging him for a year. Since then, having found his vocation, Morris has traveled around the country drawing profit from his "elastic skin," as the posters call it. For the last fourteen years he has exhibited himself almost everywhere in the United States and Canada, and has now come to visit the old world, or at least to show himself thereto.

The spectacle that he gives cannot be truly considered as pleasing; and from this point of view the reproduction of the photograph that we present herewith will prove more eloquent than anything that we might say. He stretches the skin of his forehead, cheeks and breast in a truly fantastic manner; and does the same with the skin of his nose, which, according to the picturesque language of a spectator, then takes on the aspect of an elephant's trunk.

Apropos of this singular plasticity with which Morris' face is endowed, we may recall the very singular example mentioned by M. Albert Tissandier in the account of one of his interesting voyages around the world. It was a question of the Japanese grimacer Morimoto, who succeeded in raising his lower lips and chin so as to cause the end of his nose to disappear, and who concealed his mouth in the folds of his cheeks. —La Nature.

THE fine red color of certain rubber goods often turns into a nondescript white much to the disappointment of the shopkeeper, who is anxious to show goods of perfect finish. A writer in the Gummi Zeitung offers a few useful hints on the manner in which the red color may be maintained. The white is due, in the first instance, to French chalk, which does not show much as long as the goods are not perfectly dry, and which may easily be removed by wiping with naphtha. The other cause of trouble is the sulphur, which slowly makes its appearance on the surface after weeks. The sulphur can be got rid of by boiling the article in five per cent caustic soda; many articles will not stand such treatment, however. Rubbing with cotton waste soaked in naphtha is again said to be useful. Goods which have to be exposed in shop windows may be rubbed with glycerine, soap, chloride of calcium, or other hygroscopic substances. The treatment makes the goods rather slippery, but it answers its purpose. In the same issue Dr. Treumann publishes analyses of five rubber cements, all with English names. The analyses do not show why those cements should do more than clog the pneumatics and valves and render the real repair difficult.

Truing Bicycle Wheels.

Truing bicycle wheels is not so difficult as many cyclists imagine, and can be easily accomplished if the following points are observed:

Having the wheel sideways toward you, holding one of the top spokes on the side of wheel next to you with a pair of pliers to prevent it twisting, and turning the nipple so that its side next you moves from right to left, will tighten the spoke and draw rim over toward you. Turning the nipple the reverse way will have an opposite effect on the rim, and loosen the spoke.

Having placed the bicycle in such a position that the wheels will turn freely, proceed as follows: Take hold of the front forks, or rear stays, as the case may be, with the fingers, close to the rim of wheel you wish to true up, and hold the thumb (or a piece of chalk) stationary, in such a position that the edge of rim will touch it in places when the wheel is revolved. Revolve the wheel slowly and notice where the rim touches the chalk; then tighten spokes on the opposite side at that place, if spokes are slack; should they be tight (which is rarely the case), loosen those on the side where the chalk mark is. A quarter to half a turn of the nipples is generally sufficient. Now, revolve wheel slowly and repeat the above operation at every "high" place in rim, i. e., every place that touches the chalk.

Of course, should the rim touch all the way round except in one place, you will tighten the spokes on the side next you at the place where it does not touch.

In tightening or loosening spokes, hold them with a pair of pliers close up to the nipple and turn nipple with a nipple wrench placed firmly upon it. The most convenient nipple wrenches the writer has seen are concave disks with milled edges, having a slightly V shaped slot running from the edge to a little past the center.

Having trued the rim so far, i. e., made it so that the edge keeps in contact with the chalk when the wheel is revolved a full revolution, the next operation is to get the rim concentric. To do this, see that the frame is firm and steady, sight some object on the opposite side of the rim a little distance away from it and in a line with the inside of rim and your eye and revolve the wheel slowly; at the places where the rim looks to be nearest the hub, loosen the spokes on both sides equally, and where the rim is farthest away from the hub, tighten the spokes on both sides equally. Repeat the operation until the rim is a circle with the hub in the center.

The rim is now true, but it is most important that it should be central with the hub sideways. If it is not, the bicycle will not steer properly. To find out if the rim is central, thread a piece of strong cotton thread over the tire, between the spokes and as close to the barrel of hub as possible without touching either spokes or hub (when thread is tight) to a point on rim nearly diametrically opposite the place from whence you started; take cotton over the tire and thread between spokes on opposite side back to the starting point, then tie the two ends of thread together over the tire; place a pair of trouser guards, or pieces of metal bent to a similar shape, over the tires so that the ends of them press the cotton close to edge of rim at the sides.

See that the thread touches neither the hub nor any of the spokes, and with a pair of dividers measure the distance from the cotton to the outside flange of hub on one side; with the dividers set to this distance, measure the opposite side; if both measurements are the same, then the wheel is true. If one side measures less than the other, loosen all the spokes equally on the side that measures less, and then tighten all the spokes equally on the side that measures more. An eighth or quarter of a turn is usually sufficient, unless the rim is very badly out. A very slight adjustment of the nipples makes a surprising difference to the rim in this last operation; in turning the nipples be careful to do so equally, i. e., if you loosen the first one one-eighth of a turn, loosen all the others on that side one-eighth of a turn and then tighten all those on the opposite side the same amount. It is best to start at the valve, and you then know where to stop.

If the wheel is true at first and the spokes simply want tightening, all you have to do is to tighten all the spokes equally.—L. A. W. Bulletin.