

Correspondence.

The Bicycle Frame Again.

To the Editor of the SCIENTIFIC AMERICAN:

I have been reading, with much interest, your recent articles on lighter weight bicycles, and particularly your suggestions as to the use of a third transverse tube from seat cluster to the bottom angle of the head.

I can say, to start with, that the idea is not a new one, nor is it, as some of your correspondents claim, a "wild-eyed" one.

In 1893 the writer conceived this idea, studied over it a while, and then made a machine on that line in 1894. Previous to that time a certain well known machine was made and marketed in large numbers, with a tube running from the top of the head to the crank hanger bracket. It occurred to me that the strain of successive shocks transmitted through front forks was not provided for in any way whatever, under that form of construction; that, in fact, the extra tube was entirely superfluous.

On the other hand, I had observed in every case of a head-on collision, of undue shock from running against an obstacle or in a deep depression in the road, that the lower main tube of the front diamond was invariably buckled and bent upward. I thought a tube placed exactly opposite from the one in the machine referred to would obviate this and provide against shocks of the character mentioned, distribute them through the length of the auxiliary tube by vibration, and, meeting with a solid point of resistance at the seat cluster, become absorbed and their destructive qualities eliminated.

So in the machine I made I used 26 gage seamless tube throughout, except on the chain side of the rear frame, where I used 18 gage to provide against chain pull.

I mentioned my idea to a number of bicycle workmen, who all admitted the tube would perform what I aimed at, but that it would be impractical mechanically, some under one claim and some under another.

But being confident the idea was practical and mechanical, I built my machine. The result surprised even myself. I found I had a thoroughly practical road wheel, at a weight, with road tires, of about 23 pounds. The rigidity and freedom from shocks in riding over rough roads was very apparent and much commented upon by all who tried it.

I rode this machine all of one season, for something like 700 miles. Gave it particularly hard usage, met with more than the ordinary number of accidents, on one occasion taking a "header" into a blind ditch, with which an ordinary built machine would, I am confident, have been a complete wreck. In short, the idea proved practical from every point of view except one—that of marketing same. Many people in the trade, whose opinion was valuable, claimed it would not prove a "seller," and my experience in one of our leading cities obliged me to adopt the same view. For instance, I have had the irrepressible street gamin yell after me, "See the guy with his freak wheel," etc.; many times in terms less complimentary than those. Personally, after becoming used to the outlines and appearance of the machine, I rather liked it, but perhaps I was prejudiced, it being my own child, you know. Finally, I laid it by as a thing ahead of its time. It is still stored in a certain place, awaiting the time when it may seem proper to attempt its introduction as a thing to make and to sell with success. I will only say in conclusion that all your claims as to the feasibility of the idea were fully proved in my experience.

W. C. JOHNSON.

Springfield, O., November 12, 1898.

Death in the Milk Jug.

The omnipotent bacillus is everywhere. At the Sanitary Congress, says Humanitarian, some very unpleasant revelations were made concerning the milk supply of our large cities. Dr. Scurfield testified that not only was the milk poor in quality as regards the proportion of fat and non-fatty solids in it, but it was often contaminated by dirt or disease germs on its way to the consumer. Mr. Niven, the Medical Officer of Health for Manchester, also gave some unsavory facts about that city. Out of ninety-three samples of milk taken at random, 18 per cent were found to contain tubercular infective matter. Medical authorities declare that one of the most fruitful causes of diarrhea is the boracic acid used to adulterate the milk; and that the existing Adulteration Acts are inadequate and not strictly enforced. These are not small things, for milk is one of the necessities of life. They constitute a great scandal and a grave danger, which should be dealt with firmly and promptly.

A Medal for the "Phantoscope."

The Elliott Cresson medal has been awarded to C. Francis Jenkins, for the invention of the phantoscope, on the recommendation of the Franklin Institute, after a searching examination of this instrument. We have already fully illustrated the Jenkins apparatus.

Miscellaneous Notes and Receipts.

Picric acid excited popular interest for some time when this substance was employed in France for the production of the melinite bombs. Now the acid formerly used for an explosive assumes the rôle of a peaceful remedy against the so-called eczema, a cutaneous eruption which is sometimes quite malicious. According to the Paris Bulletin Médicale, a solution of 1 part picric acid in 86 parts pure water, applied with a brush on the diseased portions of the skin, is said to allay the painful itching at once. It forms a sort of protective covering over the sore spot, under which the healing and cicatrization progress quickly.

A New Whooping Cough Bacillus.—An Italian investigator, Prof. Livio Vincenzi, at Sassari, claims to have discovered the above. He found it, as stated in the Deutsche Medizinische Wochenschrift, in the expectorations of children suffering with whooping cough, in some cases it being present in a very large quantity, while it was absent in other processes of sickness. Prof. Vincenzi ascertained by a series of researches the peculiar qualities of the little organism, but he did not succeed in causing by inoculation on animals the same disease as in human beings. It is, however, a well-known fact that whooping cough never occurs in animals.

Preserved Lemon Juice.—The expressed juice is poured through a cloth and then mixed with about one-fourth of its volume of powdered talc, whereupon it is shaken about one-quarter hour; next, it is placed aside for one-half hour, shaken again, allowed to stand, and filtered. Filter through paper, add to the filtrate 10 per cent of sugar and bring to a boil. During this time place the bottles to receive the juice in a kettle of water, fill them with water and boil them in the kettle. Empty the bottles, pour in the boiling lemon juice as quickly as possible and close up at once with a good cork previously dipped into paraffine. Juice prepared and bottled in this manner is said to possess unlimited keeping qualities.—Neueste Erfindungen und Erfahrungen.

Soluble Mercury.—According to Lottermann colloidal quicksilver can be produced by using stannous nitrate as a reducing agent and proceeding as follows: The strongly diluted mercurous nitrate solution is, with stirring, poured into the likewise diluted solution of the stannous nitrate, both solutions containing only so much free acid as is necessary for preventing the separation of basic salts. A deep brown liquid is formed. The liquid is then mixed with a concentrated solution of ammonium nitrate, whereby the colloidal mercury is eliminated. The brown color of the liquid passes into black, and a very fine black precipitate is distinguished. Then neutralize with ammonia, stirring the while and avoiding strong heating. After the precipitate has settled the supernatant solution is taken off with a siphon, further liquid being sucked up by means of a porous clay filter, and the paste, still rather thinly liquid, is dried in the vacuum exsiccator over sulphuric acid. Thus silvery pieces are obtained which dissolve in water, with a deep brown color.—Journal für praktische Chemie.

Preparation of Gold Water (Dantzig Brandy).—Some of the most reliable and tried recipes for the preparation of Dantzig brandy are the following:

I.

Rose leaves.....	125	grammes.
Cinnamon bark.....	15	"
Cloves.....	7½	"
Caraway.....	2½	"
Nutmeg.....	5	"
Lavender blossoms.....	7½	"

Pour 1½ liters of spirit of wine and 1 liter of water over the comminuted spices, and subject to distillation. After 1½ liters have been distilled, add 750 grammes of sugar and water, so as to obtain 3 liters. Mix with gold leaf reduced to small pieces.

II.

Rose leaves.....	15	grammes.
Lavender blossoms.....	15	"
Balm.....	15	"
Marjoram.....	7½	"
Caraway.....	7½	"
Camomile (Roman).....	7½	"
Sassafras wood.....	4	"
Cloves.....	4	"
Nutmeg.....	4	"
Lemon peel.....	6	"
Orris root.....	6	"
Guinea grains.....	6	"
Bay berries.....	4	"
Juniper berries.....	4	"

Directions same as in first recipe.

III.

French recipe:		
Rose leaves.....	250	grammes.
Orange flowers.....	250	"
Cinnamon bark.....	30	"
Cloves.....	7½	"
Lavender flowers.....	15	"
Spirit.....	3	liters.
Water.....	2	"

Distill 4 liters of this and add ½ liter of rose water and ¼ liter of orange flower water, as well as 1 kilo gramme of sugar, and mix with gold leaf.—Apotheker Zeitung.

Science Notes.

A writer in a recent number of *Medicin Moderne*, after expressing his sympathy with the pharmacists whose difficult task it is to decipher illegible prescriptions, adds that the matter has attracted the attention of the Dean of the Medical Faculty of Paris. The execrable handwriting of many French physicians is thought to be a menace to the public, and the Dean is reported to have said that he would take the earliest opportunity of bringing the matter to the notice of the faculty. The pharmacists of America will doubtless sympathize with this movement.

Capt. Spelterini a few weeks ago ascended in the balloon Vega, but was foiled in his attempt to cross the Alps by the wind, which drove the balloon to the northwest of the Diablerets instead of northward. The balloon descended safely at Dijon in France, having reached an altitude of 20,670 feet. Prof. Heim, Dr. Mauer, and Dr. Biederman accompanied Capt. Spelterini. The balloon was specially constructed for this ascent. It contained 3,268 cubic meters of gas, was nearly 200 feet in height, and was capable of carrying a weight of 110,000 kilos, or about 100 tons. The weight of the car was one ton, and two tons of ballast were carried. A "trial," or unoccupied, balloon was also sent up by the International Aerostatic Society. It was fitted with recording instruments. Quite a gale was blowing at the time, and the balloon was driven at high speed in a northeasterly direction, finally disappearing amid the clouds at a height of 4,500 meters (14,764 feet). The automatic ballast was lost at the start when the balloon was crossing the promenade.

On the suggestion of C. Witter, of the Hamburg metallurgical laboratory, R. Hase, of Hanover, has constructed a new type of chemical balance, which at once marks the approximate weight of the substance. This is done by an additional pointer, which occupies an inclined position and plays over a special graduated arc. This pointer and the additional device are put in gear by means of a button on the top of the glass case of the balance. The substance is put in one pan, a number of weights in the other; the pointer then marks how many grammes are still wanting, to within a few centigrammes. The rest of the weighing can easily be performed with the help of the rider only in the usual fashion. The method is particularly convenient for weighing predetermined quantities. The platinum dish can, for instance, be filled while standing on the pan without arresting the balance, until the additional pointer indicates that the weight is almost correct. The addition is said not to complicate the construction much, and to make little difference in the price. If that be so, the novelty will be welcome.

Prof. Zickler, of Brünn, has conducted an elaborate series of experiments, which show that a telegraphic instrument can be actuated at considerable distances by a beam of ultra-violet light. He employs a powerful arc lamp as his transmitter, using a screen of glass to produce intermittent flashes of the ultra-violet beam, which embody themselves as dot and dash signals on his receiver. The receiver is an air gap in a circuit containing an induction coil regulated to an electromotive force just below the sparking point at the air gap. As Hertz long ago has shown, a beam of ultra-violet light falling on the cathode of a strained air gap, near its breaking-down point, will immediately provoke a discharge. Zickler started by producing this effect over a distance of 2 meters. Then, by improving the shape and material of his electrodes and inclosing them in a chamber of compressed air, he was able to increase this distance to 200 meters, says *The Electrical Review*. This is a remarkable result, and it is extremely interesting to physicists to learn that the short and easily absorbed ultra-violet light can influence a spark discharge at so great a distance.

F. C. Harrison, of Guelph, Ontario, has examined hailstones bacteriologically on two separate occasions. The stones were washed in mercuric chloride solution (1 in 500), rinsed several times in sterilized cold water, and each stone thus treated was dropped into a tube of melted nutrient gelatin, the mixture thoroughly shaken, and plates were made in the usual way. Four days after the plates were counted, all the bacteria and a number of moulds were isolated, and their cultural characteristics determined. Among those present were *Penicillium glaucum*, *Mucor* sp., *Aspergillus* sp., *B. fluorescens liquefaciens*, *B. fluorescens non-liquefaciens*, a protean form of *Proteus vulgaris*, and two micro-organisms, a bacillus and a coccus, which do not agree with any published descriptions, and for which the author suggests the names *B. flavus grandinis* and *M. melleus grandinis*. Detailed descriptions of the two latter are given in the monograph. The repeated presence of the fluorescing germs lends support to Bujwid's surmise that surface water is carried up by storms and frozen, producing hailstones. Bujwid, who probably was the first bacteriologist to investigate hailstones, arrived at this conclusion in the first place from consideration of the large number of germs found in the hail.—*Botanical Gazette*.