

**India Rubber Law Case in England.**

Messrs. Editors.—Your article on the subject of the india rubber patent case, tried June last, in England, is—manifestly—one sided, and though very American in feeling, is not entirely just to truth. And here permit me to say, I do not attribute any intention on your part to do injustice to anybody, for I have so often had occasion to notice the independence and honesty which stamps the "Scientific American," that I cannot suppose in this case the least intention of being one-sided—but you are misinformed. In the first place the simple vulcanization of india rubber mixed with sulphur never was known in this country by Charles Goodyear as a possibility till after 1845, and in the next place the result is different and requires entirely different treatment from that described in Goodyear's patent of June 1844, and re-issued 1849.

The great fact that rubber and sulphur could be vulcanized for any practicable or useful purpose, was not known to Charles Goodyear till after 1845. Nor was the fact known or believed in this country till the English discovery. The process of Hancock is different, and the result different from that claimed by Charles Goodyear.

The large experience which I have had enables me to know the simple vulcanization of rubber was first imported here from England in the published patent of Hancock. The process which Charles Goodyear used in making what he termed "metallic rubber," (taking the term metallic from the large quantity of lead used) was 25 pounds rubber, 7 pounds lead, and 5 pounds of sulphur, submitted to a heated atmosphere in an oven. Simple rubber and sulphur cannot be vulcanized to be useful for any known practicable purpose in a heated atmosphere to-day, though it can be in steam—which is substantially and chemically different from heated air, and was the discovery of Hancock.

That yourself and readers may have a true knowledge of the English trial, I inclose you an extract from a letter of a distinguished English barrister, addressed to me; he says:—

The case "ended in the jury being discharged by consent, as they could not agree, one holding out for the defendant against all the others on the question whether the samples sent by Goodyear or Moulton, which arrived in England about October or November, 1843, had arrived and were published prior to the date of Hancock's patent, Nov. 21 1843. The jury might have found for the defendant, Ross, on that issue without prejudicing Hancock's patent. The Judge told them that Hancock's patent, for the simple compound of sulphur and rubber acted on by heat, was perfectly valid, notwithstanding Goodyear's patent or invention for sulphur lead rubber. Then so far as the opinion of the judges goes, it confirms entirely the view as to the invalidity of Goodyear's re-issued patent, which you have always entertained and contended for. The trial also went to impeach Goodyear's patent here altogether, because, according to our law, no man who has had the profitable working of an invention, can after that, make it the subject of a patent, so that any idea of piracy upon Goodyear's patent in this country is at an end. Mr. Goodyear was called as a witness, but nothing very material was elicited from him except that his first goods were not merchantable or marketable. The cause will be tried again in December, when I have no doubt of Mr. Hancock succeeding to the fullest extent, as both Judge and jury were breast-high with him, as the inventor of the simple sulphur and rubber compound; that is, the pure and simple vulcanization as contended for. This result must be a terrible blow to any interest in Goodyear's patent, either here or in America, because their invalidity is clear, and nothing remains but Hancock's, which appears to me to override all of them. The practical result of this litigation, then, has been to impeach the Goodyear and to set up the Hancock patent. Nothing whatever occurred to affect the validity of the latter, that is of Hancock's patent of 1843."

Comment is quite unnecessary. This decision is entirely in accordance with the late decisions of the majority of our Supreme Court in

two recent great patent cases, namely, the Woodworth Planing Machine, and the Morse Telegraph cases. HORACE H. DAY.

New York.

[The above communication relates to the English patent law case, which we published on page 373, with such comments as naturally arose from an account of the trial in our London cotemporaries. In the account presented by the "London Mechanics Magazine," Hancock, the plaintiff and English patentee, said he had not been led to make his experiments to produce vulcanized india rubber, until he had seen specimens of American rubber manufactured by Goodyear. The letter of Mr. Day places the matter in an entirely different light from that which the public has entertained respecting what constitutes the heart of the invention or process for making vulcanized india rubber. The combination of sulphur with india rubber at a high heat has been held to embrace the principle of the invention, but Mr. Day says that it is the action of steam upon the compounds of sulphur and india rubber, that constitutes the core of the invention. If steam then is the main feature of the invention, and if that is Hancock's, then Goodyear's patent must be invalid, that is, if he cannot and does not produce a useful manufacture by it. Steam, then, by this view of the question, is the pivot on which the whole matter turns.

(For the Scientific American.)  
**Circular Saws.**

In former numbers of the "Scientific American" there is much information given concerning circular saws, but there appears to be some information yet wanting by many persons: the quantity of lumber that they should cut in a given time, and the power necessary to drive them, do not appear to be generally known. They take much more power than is generally supposed, if they do a good business.

The Messrs. Stevens, of Dyersburgh, Tenn., have a steam mill with a sixty-inch circular saw, for the purpose of cutting lumber from logs. In their ordinary sawing they saw 100 feet, surface measure, in two minutes; they cut through a line 22 inches deep and 12 feet long in 15 seconds, and back and start in 10. They say they have cut through a line in 8 seconds. Is 100 feet in two minutes' good sawing? Their engine makes over 60 (three and a half feet) double strokes, in a minute, with a ten inch cylinder—equal to about one horse power for each pound of steam per square inch in the cylinder. And from their having an extra weight on the lever of the safety valve, it was supposed they had at least a hundred pounds to the inch in the boiler.

The quantity that a circular saw can be made to cut, seems as yet only to be limited by the power—none having as much power applied to them as they will bear. They may be made to revolve 1,000 times per minute, and cut two inches forward at each revolution in a two feet log. But it would take an immense power (perhaps 150 horse) to drive them.

There are three things requisite in order that a circular saw may cut a straight line and not heat:—First, a good saw. Some saws are not good when they first come from the factory, and others do well at first, but soon get spoiled. If all parts of the saw are not of equal temper, and equally stretched, they will not do well; but they may be repaired by hammering by one who understands it. Second, the journal of the shaft should have end play; it is impossible to run a circular saw successfully unless it can play laterally: for the least spring of the log, or variation in the cut of the saw, will cause the wood to press against the side of the saw, and heat it, unless it can yield to the pressure.

Third, the teeth of the saw must be in order; they should be so spread at the point that but little set is required, and that no part but the points will touch the wood. The front of the teeth should be so inclined that a line drawn with them would cut off a segment of one-fourth of the diameter of the saw.

With a good saw, having sufficient end-play in the shaft and guide rollers properly adjusted, and the teeth in good order, a circular saw will never heat or cut a crooked line.

Jackson, Tenn. J. B. CONGER.

(For the Scientific American.)  
**The Dark Day.**

In the "Scientific American" of June 24th, page 327, is the following:—

"H. D. B., of Cal.—Your question propounds to us the very subject we have been wishing information upon for some time. Who among our intelligent readers will impart some facts concerning the remarkable dark day of which we have all heard from the lips of our grandmothers? Was the phenomenon ever accounted for? What was the terrestrial and celestial appearance of the universe? Who will enlighten our inquirer and ourselves upon this matter?"

The dark day here referred to, it is presumed, was the one which occurred on or about the 1st of May, 1780. Of the appearances I have only traditional information, but believe the following to be substantially correct. The sun was visible a part of the day, red and without beams. A part of the day was cloudy with some rain. At 12 o'clock, or at the dinner hour, it was so dark that candles were used. Towards night the darkness abated, but during the following night it was intensely dark, so much so that persons lost their way though near home. During the whole time the wind was quite light. The darkness continued about twenty-four hours, and the foregoing were the phenomena while it lasted.

The following is offered as a solution:—The red and beamless appearance of the sun was caused by the smoke arising from numerous and extensive fires, common at that time in the spring. Storms are of two kinds: the first when the current of air is in one direction; the second when the storm is a whirlwind.—The great snow storm in the latter part of Feb., 1802, is an instance of the former; the snow storm in the beginning of March, 1853, is an instance of the latter. I am obliged now to write from recollection but believe that by turning to the papers of the day it will be found that it snowed in New York State on Wednesday, at Washington on Thursday, and in South Carolina, early on Saturday morning. In a whirlwind or cyclone storm, the extent the force of the current, and duration are exceedingly various. In the snow storm last mentioned, the air was light, and shifted to every point of the compass. In the middle of the whirlwind there is a calm, which will terminate as the whirlwind moves on. The duration of the calm will depend on the extent of the whirlwind and the slowness with which it moves.

From the foregoing it will appear that the cause of the dark day of May, 1780 was a whirlwind or cyclone storm. That the storm was of great extent, the center of it darkened by rain clouds and by smoke accumulated from numerous and extensive fires, and driven thereby light currents of air in every direction.—Finally, that the motion of the whirlwind was slow, which is indicated by the long duration of the darkness, and the absence of high wind. I have used the word storm for want of a better, because the darkness was accompanied with rain.

MANNING BELCHER.  
Laurensville, Aug. 20th, 1854.

(For the Scientific American.)

**Treatment of Persons Struck by Lightning.**

In No. 38, on page 298, present volume of the "Scientific American," Mr. E. Merriam, the Meteorologist, of Brooklyn, renews the recommendation, "that persons struck by lightning should be drenched with cold water, even to the continuance for hours, to restore suspended animation." Having seen the article copied in many papers, and circulated all over the Union, I am induced to send you the following:—As a general rule, when it can be applied immediately after the occurrence, it may have the wished-for effect, but if some time has elapsed, I very much question the propriety of using cold water. My reasons are these:—On the 20th of July, 1847, I was struck by lightning,—I was under a shed at the time and asleep. I knew nothing of the occurrence; I was found on the ground about an hour afterwards and carried to the house; two medical gentlemen were sent for post-haste, and after the lapse of another hour both arrived nearly at the same moment. The younger of the two

advised the application of bucketsfull of water; but fortunately for me the counsel of the elder, and I think wiser, of the two prevailed, and as soon as the water could be heated, I was placed in a warm (blood-heat) bath. The consequence of this course was, that in a few minutes I became sensible, and then began to feel the most excruciating pains in my arms and legs, and at once knew what had happened. The pain in the lower extremities passed off immediately, but in the arms I suffered to such an extent for months that I could not sleep—could not lay in bed—had no rest day nor night—was so much worried and worn out by constant wakefulness, that I would frequently fall into a doze while walking the room. I was bled after coming from the bath, and once each successive day for six days,—near a quart each time; I then became so weak that further depletion was considered dangerous. Still the pain remained in my arms, and time alone brought relief; but even now, after seven years have passed away, I feel it occasionally, and cannot bear fatigue. I will not, however, trouble you with a full history of my case, but merely wish to caution the public against an indiscriminate use of cold water in all cases. Cold water may, if it can be applied immediately before the system becomes chilled, and in many cases not doubt has, relieved the patient; but, as in my case, after a lapse of some two or three hours, cold water would have checked the circulation as well as animation at once and forever.

Such are my views, gained from actual experience. J. B. GARBER.  
Columbia, Pa., Aug., 1854.

**Effect of Occupation on Health.**

It has oftentimes been asserted that those exposed to severe labor in the open atmosphere, were the least subject to sickness. This has been proven a fallacy by Mr. Finlaison, Actuary of the National Debt Office in London. Of persons engaged at heavy labor in out door exposure, the per centage of sickness in the year is 28.05. Of those engaged at heavy labor in-doors, such as blacksmiths, &c., the per centage of sickness is 26.54—not much difference to be sure; but of those engaged at light occupations in-doors and out, the per centage of sickness is only 20.80,—21.58. For every three cases of sickness in those engaged at light labor, there are four cases among those whose lot is heavy labor. The mortality, however, is greatest among those engaged in light toil, and in door labor is less favorable to longevity, than laboring in the open atmosphere. It is established clearly, however, Mr. Finlaison says, "that the quantum of sickness annually falling to the lot of man, is in direct proportion to demands on his muscular power." How true this makes the assertion, "Every inventor who abridges labor and relieves man from the drudgery of severe toil, is a benefactor of his race." There were many who looked upon labor-saving machines as great evils, because they supplanted the hand toil of many operatives. We have helped to cure the laboring and toiling classes from entertaining such absurd notions. A more enlightened spirit is now abroad, for all experience proves that labor-saving machines do not destroy the occupations of men, but merely change them. Man is relieved from drudgery by the iron sinews of the machine, and his own are left to move more lightly and free in pursuing avocations demanding less physical but more mental and noble exertion.

**Legislation, Gloves, and the Ladies.**

Since we published the account of the influence of white kids, and that of certain ladies, at the fine suppers given to elevate the feelings of M. C's., in relation to the Colt patent, a number of our cotemporaries have been induced to view the matter in a rather unfavorable light, respecting the female lobby members of Congress. This is all wrong; those ladies belong to the "Women's Rights" party, and being deprived of a voice on the floor of Congress, have only resorted to this kind of tactics in insuring a voice in the legislation of our country. What is the remedy? Give them seats in Congress, and then the gloves can be given direct to the right persons, without any second handed work about it.