Correspondence.

Fruchtzucker.

To the Editor of the SCIENTIFIC AMERICAN:

I beg you to convey to your readers through your columns that the fruchtzucker received by the Van Bibber Roller Company from Dr. Follenius (mentioned in the SCIENTIFIC AMERICAN of August 25) was another article than that which has been so highly spoken of in the American press throughout the United States, and which will absolutely not crystallize. This circumstance has in the meantime been explained to the V. B. R. Company, who will no doubt corroborate my assertion. Thanking you for your courtesy in giving publicity to this letter, I remain, yours, etc., S. H. ROSENBLATT.

New York, September 14, 1894.

Artichokes.

To the Editor of the SCIENTIFIC AMERICAN:

I want to say to farmers, plant less corn and more root crops for winter food for stock. I have cultivated and fed the white Jerusalem artichoke four years. They excel other root crops by their not being injured by freezing and thawing in the ground during winter. They need not be gathered and stored away as other roots, thus saving a great amount of labor. They withstand either dry or wet weather better than other crops and can be planted either in spring or fall. The way we feed them to hogs is just to turn them in when the tubers are matured and let them root the tubers from the ground. Cows, calves, and colts winter nicely on them. For these we plow out and pit for winter feeding. After the first planting there are always enough tubers left in the ground to produce the next crop. ELI HEATON.

Russiaville, Ind.

A Proposed Ship Canal.

To the Editor of the SCIENTIFIC AMERICAN:

Of the many plans which have been proposed for ship canals between the Hudson and the Great Lakes, none, so far as I have learned, embraced the features of the following, which has to recommend it that it is the shortest and has the fewest locks, as well as that it passes the summit at the lowest point.

Mr. McAlpine's report, made to the Oswego Board of Trade, some years ago, gives the distance by his proposed canal from West Troy to Lake Ontario at Oswego as 191½ miles. The distance by this proposed route from a point eight or nine miles south of West Troy, below Albany, would be about 166 miles—thirty-three miles shorter.

Our plan is substantially this: Make Lake Oneida the summit and use it as our summit reservoir, and enter the Hudson near Albany, or rather south of it, near where the Delaware and Hudson Railroad curves to the west. The section extending from the Hudson inland would join the Erie Canal at or near Schenectady, and would be as straight as it could be made, the distance being between these points sixteen or seventeen miles, instead of thirty, as at present by way of West Troy and the Erie Canal. From Schenectady the line would follow the Erie Canal to Utica. Thence a straight cut would be made to Lake Oneida, from the western end of which the canal would be excavated to Lake Ontario, joining it at or near Oswego.

We avoid crossing the Mohawk by keeping to the south of it. We avoid locking up sixty or seventy feet, going east from Lake Oneida, as in Mr. McAlpine's plan, by deep excavations from Little Falls, or near there, to the lake and passing beneath the "long level" of the Erie Canal from sixty to eighty feet. The rise from the Hudson to Schenectady, being about 200 feet, would necessitate twenty locks, and about the same number would be required from there to the point where we would reach our long level at Little Falls or near there, to and through Lake Oneida to the first lock beyond, a distance of from sixty to seventy miles.

There would be needed six or seven locks between Lake Oneida and Lake Ontario. The present outlet of Lake Oneida would be closed and Oswego River would be left alone, except to feed the canal. At the points where the canal enters and leaves the lake, gates would be placed to accommodate the varying height of the water.

Oswego Harbor would require deepening to accommodate boats of twenty feet draught, provided our canal passed boats of that size.

The prism of the proposed canal would be large enough to pass any boat that could pass the Welland Canal.

The question of water sufficient for the needs of the canal is satisfactorily settled by this plan, Oneida Lake furnishing the supply to pass the summit both ways. The demands west of the lake are supplied in part by Oswego River and east of the lake by the Mohawk. There would be some very heavy excavations on this line, but none, I believe, deeper or but little deeper than on the Suez Canal.

There can be no doubt that there exists a most urgent need for a ship canal from the Hudson to the Great Lakes, and we believe that this route is practically at the only point where one can be built. In calculating the benefits that would follow from a ship canal, one would be the opening of ocean transit to the heart of the continent by way of the port of New York. Another would be that the chances of shutting off communication between the East and the West by railroad strikes would be materially lessened, if not entirely removed.

As to the cost, I have made no estimate, but I do not doubt that it would cost to construct the canal proper, not taking into account the improvement of Oswego Harbor, $150,000 000, perhaps more. But this is pure guess work. If it be thought best to have a waterway entirely within the United States, then the expense of a canal around Niagara Falls—from La Salle to Lewiston—would be a large additional expense.

It is claimed that a large percentage of the ocean freight is carried in boats of fourteen feet draught and less. We would regulate the depth of the proposed canal, if entirely within the United States, to pass any boat drawing fourteen feet in salt water.

Elmira, N. Y. IRVING BOARDMAN.

What Dr. Lardner said about Transatlantic Navigation.

It has been frequently said, and it is generally believed, that Dr. Dionysius Lardner publicly asserted before the voyages of the Great Western and Sirius were accomplished facts, that a steam voyage across the Atlantic was a physical impossibility. What he did say was, however, quite different, viz., that such vessels could not be made a paying investment for such a voyage without government assistance or a subsidy, in the then state of steam navigation.

He says:* "It cannot be seriously imagined that any one who had been conversant with the past history of steam navigation could entertain the least doubt of the abstract practicability of a steam vessel making the voyage between Bristol and New York.

"A vessel having as a cargo a couple of hundred tons of coals would, cæteris paribus, be as capable of crossing the Atlantic as a vessel transporting the same weight of any other cargo. A steamer of the usual form and construction would, it is true, labor under comparative disadvantages, owing to obstructions presented by her paddle-wheels and paddle-boxes; but still it would have been preposterous to suppose that these improvements could have rendered her passage to New York impracticable. But, independently of these considerations, it was a well known fact that, long antecedent to the epoch adverted to, the Atlantic had actually been crossed by the steamers Savannah and Curacoa. . . . Projects had been started, in 1836, by two different and opposing interests, one advocating the establishment of a line of steamers to ply between the west coast of Ireland and Boston, touching at Halifax, and the other a direct line making an uninterrupted trip between Bristol and New York. In the year 1836, in Dublin, I advocated the former of these projects, and in 1837, at Bristol, at the next meeting of the British Association, I again urged its advantages, and by comparison discouraged the project of a direct line between Bristol and New York. When I say that I advocated one of these projects, it is needless to add that the popular rumor that I had pronounced the Atlantic voyage by steam impracticable is utterly destitute of foundation."

The meeting took place August 25, 1837, and the report of the Times' special reporter, which appeared in that paper on the 27th, says:

"Dr. Lardner said he would beg any one, and more especially of those who had a direct interest in the inquiry, to dismiss from their minds all previously formed judgments about it, and more especially upon this question to be guarded against the conclusions of mere theory; for if ever there was one point in practice of a commercial nature which more than another required to be founded on experience, it was this one of extending steam navigation to voyages of extraordinary length. He was aware that, since the question had arisen, it had been stated that his own opinion was averse to it. This statement was totally wrong; but he did feel that great caution should be used in the means of carrying the project into effect. Almost all depended on the first attempt, for a failure would much retard the ultimate consummation of the project.

"Mr. Scott Russell said that he had listened with great delight to the lucid and logical observations they had just heard. He would add one word. Let them try this experiment with a view only to the enterprise itself, but on no account try any new boiler or other experiment, but have a combination of the most approved plans that had yet been adopted.

"After some observations from Messrs. Brunel and Field, Dr. Lardner, in reply, said that he considered the voyage practicable, but he wished to point out that which would remove the possibility of a doubt, because if the first attempt failed, it would cast a damp upon the enterprise and prevent a repetition of the attempt."*

"What I did affirm in 1836-37," continues Dr. Lardner, "was that the long sea voyages by steam which were contemplated could not at that time be maintained with that regularity and certainty which are indispensable to commercial success by any revenue which could be expected from the traffic alone, and that without a government subsidy of a considerable amount such lines of steamers, although they might be started, could not be permanently maintained."

He then proceeds to show, up to 1851, the commercially non-success of transatlantic steamers that were not subsidized, and adds:

"Thus it appears, in fine, that after a lapse of nearly fourteen years, notwithstanding the great improvements in steam navigation, the project advanced at Bristol, and there pronounced by me to be commercially impracticable, signally failed."—Admiral Preble, United Service.

* Museum of Science and Arts, vol. x., 1856.

Antarctica.

The time has come when it is possible to state, with a considerable degree of accuracy, the physical conditions of the Antarctic regions, much in the same way as constructive geography assigned an extensive plateau to the center of Africa, before the genius of Stanley Africanus outlined for the world the Congo basin with its million square miles. The adventurous voyages of Cook, Palmer, Bellinghausen, Weddell, Balleny, D'Urville, and especially of Wilkes and Ross, definitely determined the location of certain isolated points, while the admirably planned and skillfully conducted cruise of the Challenger resulted in such a wealth of physical observations that Carpenter and Murray have been able to read the riddle of Antarctica, as Murray terms the southern continent.

Scarcely an attentive physicist doubts that this land, of quite continental area and inconsiderable average elevation, is covered by an eternal yet ever-changing ice sheet that swallows up all but its highest peaks. Formed from successive snowfalls of centuries, the ice cap moves, in the line of least resistance, seaward, through the interactions of various forces, of which that arising from changes of temperature seems most potent. Its outward march into the ocean, unwasted by the freezing temperature of the sea water, presents a towering perpendicular front of from 1,000 to 2,000 feet thick, which plows the ocean bed until, through flotation in deep water, disruption occurs, and a floeberg is born. The unvarying temperature of the Antarctic sea, from surface to bottom, proves that no stratum of colder water exists poleward, and the thickness of the ice barrier proclaims a continental or extensive land area, on which only such unparalleled ice sheets could have been formed. The most marvelous aspects of these desolate regions are the active volcanoes, which rear their glowing cones, and pour forth their showers of scoriæ, and rivers of molten lava, to the south of both Patagonia and New Zealand, on opposite sides of the Antarctic circle.

Thus Antarctica is a continent of wonderful contrasts and unsurpassed desolation. The severity of its wintery summer offsets the comparative mildness of its sunless winter. While a fauna peculiar to its icy waters obtains over its ocean bed, with vegetable life more abundant than in any other sea, yet its barren land furnishes forth no trace of vegetation—not even a lichen or a seaweed. The sea is so filled with animal life, small crustaceans, that the Challenger's tow nets occasionally burst from repletion, while fish and seal, whale and penguin, abound. On its desolate shore, for a few weeks each year, the nesting sea bird finds perfect solitude—the only absolute solitude on the wide earth—that means safety to its broods. Here notice a manifestation of universal law, that the ceaseless, silent and seemingly feeble forces of nature, which create and maintain the ice cap, are more potent than the terrible, intermittent and seemingly irresistible forces, as seen in the volcanoes. And thus it is that the eternal ice sheet, which grinds forever its continental rocks—granite, diorite and quartz—reflects definitely back, through long months of polar night, the upshooting pillars of fire from numberless volcanoes that dot the land of Antarctica.—Gen. A. W. Greely, in the Cosmopolitan.

HON. CHAUNCEY DEPEW, President of the New York Central Railroad, says that 90 per cent of the defalcations and thefts and ruin of youth among people who are employed in places of trust are due directly to gambling. "I have seen in my vast employment so much misery from the head of the family neglecting its support and squandering his earnings in the lottery or the policy shop, and promising young men led astray in a small way, and finally becoming fugitives or landing in the criminal dock, that I have come to believe that the community which licenses and tolerates public gambling cannot have prosperity in business, religion in its churches, or morality among its people."

* London Times, August 27, 1837.