Correspondence.

Nebraska and the Sugar Beet Industry.

To the Editor of the SCIENTIFIC AMERICAN:

As a constant reader of your instructive scientific journal, permit me to call attention to two communications which appeared lately, calculated, by inference at least, to do injustice to a part of this State, touching an industry in which we are all very much interested, viz., sugar beet.

Your issue of November 27 contained the following:

"Nebraska, also, is not likely to show rapid or immediate progress in the industry. Drouth and the lack of sufficient surface water to make irrigation practicable debar a considerable portion of the State from profitable agriculture, and, while eastern Nebraska has some very fine sections of land that in a normal year can be depended upon for crops that will compare favorably with Europe, the general results have not been good enough to warrant anything but most cautious progress. Two of the most desirable sites are now looking for a factory, and if such a one were built of not less than 500 tons capacity, it could, without doubt, be made to pay well. To sum up, therefore, the future of the industry in California and New Mexico is quite rosy; in Nebraska and Utah it is somewhat problematical, though by no means dark."

In a letter written by "Sarkander," which appeared in your issue of the 25th inst., he supplies statistics touching rainfall in the eastern part of this State. The writer says:

"The reports of the Weather Bureau are easily obtainable and ought to be made the basis of all such deliberations, for they are the only reliable source of information on subjects in regard to this new industry. A study of these reports bearing on the climatic conditions of the eastern half of Nebraska will convince every unbiased observer that these conditions are most favorable for the successful development of the beet sugar industry. Essential tests, quality and quantity, of beets grown in the State, in the existing sugar factories have proved this to be the case beyond any doubt or negation."

The reader is left to infer that the western half of Nebraska does not show as favorable conditions as the eastern half, or other parts of the United States. Had he examined records of the Chemical Department, State University, Lincoln, he would have discovered that, while the eastern half grows the larger tonnage of beets to the acre, the western half grows a beet richer in saccharine qualities. Also, that experiments generally teach that as they are extended toward the East, the tonnage gets greater and sugar qualities less, while toward the West, the "land of sunshine," which a beet must have, the tonnage grows lighter, but sugar qualities (saccharine and purity) greater. For instance: A recent bulletin issued by the State Experiment Station of Missouri advised farmers not to engage in the sugar beet growing, as results had been unsatisfactory, quality too low; while the following appears from South Dakota: "Out of four hundred tests of sugar beets made at the South Dakota Experiment Station at Brookings, many gave over twenty per cent sugar. Some farms give as high as twenty-four per cent. These are believed to be the most remarkable beet tests ever made."

So far as experiments in this State go, I understand that Sioux County, in the extreme northwest, has shown best results.

President Oxnard, of the two Nebraska and one California factories, has recently stated that results of this season's run in Nebraska are in every particular equally satisfactory with that in California, which ought to settle the question of any advantage that State has over us. Furthermore, certainly a difference of some two thousand miles nearer point of distribution and consumption ought to be in favor of this State.

Western Nebraska has land that can be obtained cheap, which has no superior for growing a rich beet; plenty of sunshine; limestone, building stone and the very purest water. Therefore, when capital begins in earnest to look up locations for factories, we hope we may not be overlooked on account of conclusions arrived at upon reading the two communications referred to.

C. H. CORNELL.

Valentine, Nebraska, December 31, 1897.

$100,000 for One-third of His Patent.

Millard F. Field, of Newport, has invented a machine for drawing in warps for looms, and has sold a third interest in his patent to B. P. Cheney, of Boston, for $100,000, says The New York Sun. It gages its work automatically, and it draws in 2,000 ends properly in seven minutes, something that would require the most expert workman about three hours to perform.

AN Englishman has just completed a journey of 1,600 miles on a motor car through England and Scotland. He was five weeks traveling and used 114 gallons of oil, which made his traveling cost him three farthings (a cent and a half) a mile.

Science Notes.

That birds build their nests by imitation has been called in question by Mr. A. G. Butler, of London, who says that the reason why many of them at the beginning of the season trifle with building material for some time before they produce a satisfactory result is that they are unable at once exactly to remember what the character of the nest was in which they first saw the light of day.

It has been noticed that in times of epidemics tanners are surprisingly free from attacks of the illness. This is due to disinfectant action of tannic acid. The cholera periods of 1850 and 1880, and later still the Hamburg epidemic in 1892, have clearly shown the comparative security of tanners. They are, however, attacked by two diseases peculiar to their trade, and caused by the manipulation of the skins. One particularly occurs frequently, attacking the finger tips and making the person afflicted unfit for the work. —La Science en Famille.

From the United States Monthly Weather Review for August we learn that the Postal Telegraph Cable Company is co-operating with the United States Time and Weather Service Company, of New York, in establishing throughout the city a number of handsome clocks which shall exhibit standard time, not only by the face of the clock, but by the dropping of a time ball at noon. Under the dial are panels which are filled up partly by special advertisements and partly by the latest Weather Bureau reports and forecasts, which are thus made known two or three hours before they appear in the afternoon papers. The stands contain, in addition, a barometer and thermometer. The clocks have also been erected in many Western cities, and the arrangement is somewhat similar to the so-called Urania columns, in Berlin, where they are said to be very popular.

After a long experience with typhoid patients, Dr. Ussery, of St. Louis, maintains that the best food for them is the banana. He explains by stating that in this disease the lining membrane of the small intestines becomes intensely inflamed and engorged, eventually beginning to slough away in spots, leaving well-defined ulcers, at which places the intestinal walls become dangerously thin. Now, a solid food, if taken into the stomach, is likely to produce perforation of the intestines, dire results naturally following; and this being the case, solid foods, or those containing a large amount of innutritious substances, are to be avoided as dangerous. But the banana, though it may be classed as a solid food, containing as it does some 95 per cent nutrition, does not possess sufficient waste to irritate the sore spots; nearly the whole amount taken into the stomach is absorbed, giving the patient more strength than can be obtained from other food.

A general professional indorsement is accorded views expressed by Prof. Allport, of the University of Minnesota, on some of the means at present required to protect the eyesight of children. He asserts that primarily in the structure of a school building as few obstacles to vision as may be should be permitted; ample illumination, whether natural or artificial, should be had from the left side of the desks; the desks themselves should be of such sizes as to permit the pupils' feet to rest firmly on the floor; they should also be provided with comfortable backs and slightly slanting tops, the latter placed at such distances from the eyes as to render sight easy without the close approximation of books; the blackboards, maps, etc., should be so situated as to be readily seen; an erect style of handwriting, less irksome to the eye than slanting characters, should be taught; and frequent changes of study or intervals of intermission should be secured, so as to avoid continuous work of one kind. Finally, school principals should be trained in the detection of eye disorders and in a system of notification to parents of discovered defects requiring attention from competent authority.

M. Raoul, a navy pharmacist of the first class, has just returned from a scientific mission to the far East. The object of his voyage, made on behalf of the French government, was to endeavor to find new plants likely to be of use in commerce and industry. The results of his mission are said to be of considerable importance, both from a commercial and scientific point of view. He penetrated into the interior of the island of Sumatra, and has written with some enthusiasm on the richness of the land. According to him, gold, petroleum, resin, India rubber, gutta percha, etc., are to be found there in plenty, but all cannot be utilized, because the natives are apathetic and will not work. He is said to have brought back rare plants, diverse in variety, which it is hoped to cultivate in the French colonies, and some are thought to be quite new. The task has not been an easy one, and toward the end he was taken seriously ill, and had to be carried for thirteen days through the forest and brushwood toward the coast. Some of his assistants and carriers were bitten by serpents, but they appear to have been satisfactorily treated by injections of Dr. Calmette's serum. That gentleman is director of the bacteriological institute of the island.

Miscellaneous Notes and Receipts.

Practical Production of Medicinal Soaps. — Thiosavonal is the name of new sulphur soaps soluble in water. For their production sulphurized oils are used (Ph. Centrh.) Grube gives the following directions for the preparation of thiosavonal. Soft sulphur soap: The thick liquid thio oil is made fluid with alcohol and gradually mixed, while being constantly stirred, with an equivalent volume of potash lye which is likewise thinned with alcohol. The addition of large quantities of potash lye at one time produces separation of sulphur, but this danger becomes less toward the end of the saponification. At last a small excess of potash lye is used. (The fact that all the thiosebacic acid has saponified is indicated by the liquid appearing clear as a whole and a sample taken being clearly soluble in water as well as in alcohol.) The excess of alkali is neutralized by volatile fatty acid. The soap solution thus obtained is freed from the alcohol in a steam bath and boiled down to the consistency of soft salve, being occasionally tested for neutrality. 85 parts of this soap are mixed with 15 parts glycerine. The percentage of water in this mixture is 12, that of thiosebate of potassium is 5.

Liquid Sulphur Soap.—The mode of production is the same as above described, but the soap solution is only boiled down to the consistency of sirup; 88 parts of this liquid soap are mixed with 12 parts glycerine; There is 29·6 per cent water in this mixture and 4 per cent thiosebate of potassium. Both thiosavonals may be readily mixed with larger quantities of tar, the salvelike thiosavonal at a moderate heat.

The mixing and determination of a new shade of color, in all branches of industry, such as cloth and carpet factories, cotton print works, dye houses, colored paper and wall paper factories, picture-printing establishments, paint shops, etc., as weli as in art, says the Färben Zeitung, is a very tedious and laborious process the way it is now performed. The testing and mixing of a new tint may be accomplished in a simple and quick manner by the dry process, using gelatine or glass plates for this purpose, which are dyed in all primary colors and some mixed colors, with all the gradations from light to dark of each color. If two or more of these colored plates are put together and held against the light, the effect of the mixture can be seen immediately. Suitably arranged in a receptacle, these colored plates are the simplest and most convenient means of producing any desired color mixture and testing the effect at once. This may be regarded as a crude method, compared with the rotating disks already described in the SCIENTIFIC AMERICAN.

Gutta Percha Paper.—According to a patented process, says the Rundschau, a fabric saturated with glue or gelatine solution and subsequently treated with gaseous or dissolved formaldehyde furnishes a good substitute for gutta percha paper. The formaldehyde renders the glue or gelatine insoluble in hot water and prevents cracking.

For Drilling Glass.—An optician recommends the following method: Dip a drill borer heated to white heat first into quicksilver, whereby it is excellently hardened, and sharpen by grinding on a whetstone. If the drill thus prepared is moistened with a saturated solution of camphor and oil of turpentine and the borehole is kept rather moist, glass may be drilled like wood.

Lubricant for Plaster Moulds.—The mixtures, greases and oils usually employed for this purpose have the disadvantage of being sticky or of easily attracting dust. According to Puscher, this drawback is avoided if stearic acid is used instead. Melt one part stearic acid in a glass by immersing the same in boiling water and add four to five parts alcohol (95 per cent). Agitate the clear solution until cold, whereby a thin paste of very finely distributed stearic acid is formed, with which the moulds are coated by means of a painting brush. The spirit evaporates at once and leaves a very thin layer of stearic acid, which admits of readily freeing the cast from the mould.

Leaks in steam pipes may be stopped with manganese cement, which hardens in a few hours. The composition of the cement is as follows: 4 parts black manganic oxide, 10 parts litharge, 5 parts red lead, 5 parts unburnt limestone and 5 parts yellow ocher. Pulverize, mix well and knead into dough, adding a little boiled linseed oil and asbestos fibers.

Black Leather Varnish.—Into a spacious glass flask pour 4 liters of spirit, to this add, somewhat reduced, 150 grammes of the finest shellac, 50 grammes of sandarac and 20 grammes of mastic and dissolve completely, shaking frequently. To this still brittle varnish add 100 grammes of pure Venetian turpentine. When the whole has dissolved uniformly clear, it is dyed deep black with nigrosine (aniline black) soluble in spirit or in water. For this purpose lampblack is also recommended. The varnish should always be kept well closed up, and if it should thicken in time, owing to the spirit evaporating, it can be diluted again with spirit. The process can, of course, be carried out on a larger scale.—Färben Zeitung, November 10, 1897.