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(Illustrated articles are marked with an asterisk.)

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IRRIGATION IN CALIFORNIA.

In 1871 the crops in the valley of the San Joaquin River, California, from a long drouth and severe north winds, were threatened with entire destruction. Some of the farmers then hurriedly cut a few ditches from the King River, and the flooding they thus obtained made the wheat yield from 30 to 55 bushels per acre, and land which had previously been hard to sell at \$2.50 per acre rose in value to \$25 and \$30.

IMITATIONS OF COSTLY LEATHER.

The custom of carrying lunch reticules, money purses, and traveling bags of leather has made an increased demand for the leather from rare animals, or for leather of attractive appearance. As the natural supply of alligator and the great python or boa skins is not sufficient to keep up with the demand, these skins—or the leathers from them—are imitated very largely by using the leather of commoner and cheaper skins.

As some of these leathers are too costly to be furnished at low prices, the million who desire the best, but cannot always afford the cost, are supplied by imitations which are not as durable as the genuine, serving in part the purposes of the costly leathers. These imitations are made by the aid of photography.

THE CHINCH-BUG IN NEW YORK.

Dr. Lintner, Entomologist of the State of New York, has recently issued a bulletin stating that the much dreaded chinch-bug, which has caused so much destruction to the crops in the West, is present in alarming numbers in some parts of New York.

A more widespread attack of the chinch-bug may be looked for next June, when it will be time to use other means of destroying this enemy to our grass and grain crops.

Professor Riley, the Government Entomologist, in the last issue of Science, states that he thinks that Dr. Lintner is wrong in his opinion that the chinch-bug was brought in a freight car from the West.

ADULTERATIONS OF FOODS—GLUCOSE IN SUGAR AND IN SIRUPS.

The fact is so well known as to be admitted by all, that a considerable part of the articles which we consume for food and for drink are open to the belief that "things are not what they seem." Meat and fish cannot very well be imitated, and we probably buy real beef, and veal, and chickens, and codfish, and halibut, though they certainly may be all of them so wonderfully fitted up for the purposes of sale as to impose on the purchaser.

We are apt to think that if we select a grade of high price in any special line, we are sure of getting what we profess to get, and perhaps it is a good plan to lay that flattering unction to our souls, for we feel better after it; but the simple fact is, that in general the higher the cost the better the adulteration pays, and as human nature is open to influences, the larger money brings us a more elegant style of imitation only.

Inasmuch, then, as the admixtures are so very common, it becomes for us a question of almost vital interest to know whether they are injurious to health, or whether they are harmless. If we barely lose our money, because we do not get what we think we do, that is bad enough; but if, on the other hand, we are at the same time poisoning or at least injuring ourselves and our families, the case assumes a very different aspect.

Our attention has been recently called to one form of adulteration which is so exceedingly common that we cannot go a single day free from it. We allude to the presence of glucose in sugars and in sirups, and we take up the subject in the hope that we may dispel some groundless fears. That the glucose is there is as sure as the sun rises daily. There may be some sugars and sirups that are pure and honest, but there are many which are not.

An apothecary submitted to our examination a sample of sugar from a lot he had just purchased for his pharmaceutical use, which had been recommended to him as absolutely pure; it showed over five per cent of glucose!

We do not, therefore, dispute the presence of the admixture, but it is a perfectly harmless substance and need never cause alarm to any one. This is what we meant by saying that we hoped we might allay groundless fears.

Let us look at it chemically. There are, as natural products, two forms of sugar everywhere diffused; they are known as cane sugar, and grape sugar. Taken as a rule, it may be said that cane sugar exists mostly in the sap or juices of plants, and grape sugar in the fruits, though there are many interchanging exceptions.

What we buy as sugar professes always to be cane sugar, made hitherto almost exclusively from the sugar cane. If now our grape sugar or glucose had been a natural product, say from fruits, there would probably never have arisen the prejudice against it which now exists.

That is one of the wonders of chemical combination—as much a wonder to the most thorough chemist as to any one else. He sees the work grow under his fingers, and what is done he does not know; he knows nothing but the result. He boils starch with sulphuric acid and water. The mixture instead of being very sour is sweet to a certain extent, that is to say, sugar is there, but the acid is also there, for the acid has changed the starch to sugar and yet has itself not been affected in the least.

The acid is gone, the starch is gone, and pure, harmless