

**THE ST. BENOIT TWINS.**

One of the most astonishing freaks of nature which has ever been brought to public notice is now on exhibition at the New York Aquarium in the so called St. Benoit twins. Two children, perfect in every respect above the lowest rib, at that point literally fuse into one. The perfect lower body of one child belongs to the perfect upper bodies of two, an arrangement, so to speak, readily comprehensible from the engraving given herewith. We lay especial stress on the word "perfect," because the most phenomenal feature of the children is that with the exception of their wonderful coalescence there are no exterior signs of anything abnormal. To classify them as a monster is to do violence to one's feelings. They are a pair of exceedingly pretty, healthy, wide awake babies, remarkably well developed for their age, and to all appearances possessing as good a chance for continued existence as any single infantile member of the human family. In a word, nature has seemingly taken a selection of parts of the bodies of two children and neatly joined them in this odd form.

The twins were born in January last in the parish of St. Benoit, about 40 miles north of Montreal, Canada. Their parents, Drouin by name, are French *habitans*, and stout, healthy people. Their former child, a girl, now two years of age, exhibits no abnormal peculiarities, nor have such appeared in any previous generation of the family. The twins, which are female, weighed at birth 13 pounds. They have been more than usually free from the ailments common to early infancy, and at the present time weigh 22 pounds. In individuality they are perfectly distinct, no nervous connection being traceable. One sleeps tranquilly while the other may be fretting, or one may be hungry while the other is not. Each controls the leg nearest it, and aperients administered to one do not affect the other. The latter result shows that there are distinct digestive systems, which are relieved, however, by a common passage into which both open. The kidneys and bladders are probably separate, but the generative organs are, it is believed, single and perfectly normal.

The union of the bodies occurs, as stated, just below the lower rib, the fork being smooth, and the navel situated on the median line common to both. As they lie on the nurse's lap, dressed, the twins appear to be simply two babies placed side by side, heads and feet in opposite directions, or rather the appearance is as if the upper portions of the two bodies had been squarely joined, a single pair of legs protruding at one side.

The science of teratology, under which is classed these strange inter-uterine phenomena, has been the object of much careful investigation, and M. Geoffroy Saint-Hilaire, some forty-five years ago, reduced it to concrete form. He classifies monsters into two grand divisions, first, those which have the elements of only a single individual, and second, those which have the parts complete or incomplete of two or more individuals. These classes he subdivides into orders, tribes, families, and genera, on the Linnæan plan.

The St. Benoit twins belong to the second division and to the so-called *autositaires*, in which the two individuals present the same degree of development, each having an equal share of life common to both; neither lives at the expense of the other. The tribes of *autositaires* include the most celebrated double twins. The negresses Millie-Christine which have been exhibited lately in Europe, and which we believe are still living, now aged 27 years, belong to the first tribe, being united only at a single region at the lower part of the backs. There are, however, two pairs of legs and united intestines. Their individuality is separate, but on the other hand there is a mingling of the sensory nerves at the lower part of the spine, so that they are not such distinct beings as are the St. Benoit twins. Their members are besides in some respects deformed, while in the St. Benoit twins there is no deformity whatever, but rather a tendency to fine development. The Siamese twins belonged to a subdivision of the same tribe. They were united at the xiphoid region of the sternum, and had but a single umbilicus in the center of a moderate sized connecting process. It will be remembered that these twins had perfect bodies but that post mortem examination showed that their livers were on adjacent sides of the two bodies and were connected by the ligament, in which last there was a region of common sensibility. The second tribe of *autositaires* include those connected above the umbilical region, and in the third must be classed the St. Benoit twins, inasmuch as the trunks are united in a single body. We know of no parallel instance where children have lived under these last conditions, and hence it is hardly necessary to point out the high scientific im-

portance of thorough investigation of the present case. In other respects many of the usual circumstances surrounding the existence of monstrosities are here discernible. It is not abnormal that the mother should have been in good health and previously have borne perfect children. The female sex is that which predominates in phenomena of this kind. The immediate cause is evidently absence of formation coupled with union of parts, but how engendered cannot be told. The period of gestation was normal and the presentation at birth such as to render delivery simple. The investigations which we recently published showing how monstrosities in chickens may easily be produced by the action of slight external causes go to indicate that to exterior influences on the mother are probably attributable the formation of unnatural embryos, but what these influences were in the case we have presented and what their course of action is a subject for future discovery.

**Improved Method of Milling.**

In the report of the Committee on Improved Methods of Milling, at the Fifth Annual Convention of the Millers' National Association, Mr. Homer Baldwin recommends an



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improved system of gradual reduction and thorough purification as follows: First, free your wheat of all impurities by means of separators, cockle machines, etc., then gently brushing or polishing it, thus completing the first step in purification. For reduction use stone, 4 feet in diameter, faced and furrowed with an emery wheel, and made as straight, true and smooth as skill can make them. They should have a much greater furrow surface than face, be as perfectly balanced and as well trimmed as can be done, using the best driving irons that can be obtained, sparing no pains whatever to make your stone as near perfect as possible. You are now ready for gradual reduction—run the stones slow, grind high, bolt well, and you have completed the first step in gradual reduction. Thoroughly purify your middlings, using good purifiers and plenty of them, regrind your purified middlings, bolt out the flour thus obtained, repurify the remainder, then regrind and repurify until you have reduced the middlings to flour and feed. Having used smooth stone and ground high, you cannot complete the thorough purification of your middlings without the use of rolls, iron or porcelain. I prefer iron rolls. After having carried the purification as far as you can do so with purifiers, you pass the large middlings intermixed with the germ through a set of rolls, reducing the middlings and fattening the germ, thus enabling you to complete the separation and purification. Next purify the bran and grind it, bolt out the flour, which will be a low grade, and you have the system of gradual reduction and thorough purification, and, as a result, you have a high grade of wheat flour, a high grade of middlings flour, and as high a grade of bran flour as can be made by cleaning the bran, and you have the grades all separate and can then make any mixture of the grades you desire. The wheat flour and the middlings flour mixed make the genuine straight new process flour.

**A Remarkable Meteoric Phenomenon.**

Mr. R. H. Earle, of St. Johns, Newfoundland, sends us sketches of a remarkable meteoric phenomenon visible in that city on the evening of April 30th last. It seems to have appeared as a serpentine tail of light having a brilliant nucleus or head. It then assumed a double form, with two nuclei, one of which apparently turned rearward and then resumed its forward motion, the whole streak meanwhile moving northward. The subsequent positions are exceedingly curious. In the course of an hour the light gradually faded away. No explanation has been sent us of the phenomenon, which seems to be of auroral nature.

**Drinking Water.**

Professor A. H. Church, Professor of Chemistry in the Agricultural College, Cirencester, Eng., has published a useful little treatise, calculated to be of great public service. The author speaks in the first place of water as forming part of the human body, as well as in plants and animals generally, and explains its physiological functions. He then turns to the proportion of water present in certain articles of daily food, which he illustrates by a diagram. An examination of our water supply next follows. Mr. Church explains the dangers of river water if used for domestic purposes, and the still greater risk attending the consumption of a supply from shallow wells. He gives a sectional diagram of a well sunk in a gravelly soil down to the clay, rock, or other more impermeable substratum, and in friendly proximity to the cesspool, an interchange of liquid taking place between the two according to its temporary height in each. As an instance in point, he mentions that a well which supplied several cottages with water suddenly failed. On examination the reason was soon discovered: the owner of an adjoining house had cut off the supply from a water closet, and substituted an earth closet. In all this account of

shallow wells and their feeders there is nothing in the least sensational or exaggerated. In country places we have repeatedly observed the well serving for a row of cottages separated from the cesspool merely by three or four yards of gravel or chalk, sufficient indeed to remove visible impurities and confer a delusive appearance of brightness, but utterly unable to remove dissolved impurities or those minute organisms which are supposed to convey cholera and typhoid fever.

The remainder of the work is devoted to a description of the means of testing waters, and of purifying such as are more or less charged with foreign matter. As he is addressing himself not to professional men but to the public at large, he does not, of course, enter into quantitative methods, but recommends the application of a few simple qualitative tests, such as nitrate of silver, molybdate of ammonia, permanganate, Nessler's liquid, along with a careful observation of the color, transparency, and odor of the water.—*Chemical News.*

**Where to Observe the Solar Eclipse of July 29th.**

General Myer, the Chief Signal Officer of the Army, has done an excellent piece of work in preparing a table for the benefit of intending observers of the solar eclipse of July 29th, which exhibits the chances of weather conditions favorable for observation at the United States stations and posts within or very near the path of totality. The total number of such points within the path is 36, and in the vicinity of the same, 31. The predictions are based on data collected by the Signal Service Department. The table shows the name of the place, whether it is a government or volunteer station of observation, its latitude, longitude, and altitude, besides other useful data which contribute to the determination of the percentage of chances of favorable conditions. There is one station, Fort Keogh, or cantonment on Tongue River, Montana, where the percentage is 100, and where consequently a good observation is considered a certainty. The following stations show a percentage above 90: Walla Walla, Washington Ter.; Camp Warner and Fort Klamath, Oregon; Boise City and Fort Boise, Idaho; Corinne and Mount Carmel, Utah; Fort Laramie, Wyoming; Castroville, Jacksboro Fort Duncan, Fort McIntosh, and Fort Davis, Texas.

**Explorations and Surveys.**

Major Powell's surveys during the coming summer will be more exclusively confined to the limits of Northern Arizona and Southern Utah. The new region lies mostly south of the Grand Cañon of the Colorado river and includes the plateau country on which are situated the famous Moqui towns. The plans of the Hayden and Wheeler surveys are not fully completed, but the field of the former expedition will be in Idaho and Montana, west of the 111th meridian.

Captain Howgate's Polar colonization scheme goes over until next session of Congress, the bill authorizing the appropriation of \$50,000 to carry it out having failed to pass. This unfortunately compels the return of the preliminary expedition sent out last season under command of Captain Tyson.

As a means of partially crushing grain before grinding, Mr. J. F. Gent, of Indiana, a well known mill expert, considers rolls superior to any process now in use. They are especially adapted for crushing those parts of the middlings which contain bran or germ. Chilled iron rolls are considered the best.

**Tests for Good Burning Oil.**

Professor J. Lawrence Smith, in his report as Centennial judge, says that good petroleum should have the following characteristics: 1. The color should be white or light yellow, with blue reflection; clear yellow indicates imperfect purification or adulteration with inferior oil. 2. The odor should be faint and not disagreeable. The specific gravity at 60° Fah. ought not to be below 0.795, nor above 0.84. 3. When mixed with an equal volume of sulphuric acid, of the density of 1.53, the color ought not to become darker, but, on the contrary, lighter. A petroleum that satisfies all these conditions and possesses the proper flashing point may be set down as a pure and safe article. Too much care cannot be exercised in examining this oil for household use.

**CURIOUS HEDGE FIGURES.**

It was the fashion, a century ago, to trim hedges and close-leaved trees into fantastic forms, resembling animals, buildings, etc. In many old gardens in France this custom is still maintained, and the visitor may walk through alleys on either side of which are high walls of dense verdure cut perfectly square, and occasionally arching overhead. At corners these fantastic figures in living green are often encountered, they being the product of the gardener's skill in training and clipping. Our engraving represents three quite large objects made in box, and exhibited growing in the Dutch Garden at the Paris Exposition.

**Food Supply of Paris.**

There are 26 millers in the environs of Paris, St. Denis, and Sceaux, who employ 234 men. There are, in the departments of the Seine, 1,694 bakers, who employ 7,264 hands, 2,251 being females. Besides these there are 1,062 pastry cooks, who employ 3,156 men and 555 women. In the mills the men get, on an average, 7s. per day; the bakers about 5s. 6d. for men in the town, and 3s. for women, in the suburbs the men 3s. 6d., and the women 2s. 3d. The pastry cooks in Paris get 6s. for men and 5s. for women; in the suburbs 3s. 6d. for men, and 2s. for women.

**THE LEONA GOAT SUCKER.**

The curious feature about this bird is the long and very elastic feather shafts which rise from the middle of the wing coverts and extend to a length of twenty-eight inches. They are totally destitute of barbs except at the extremity, where they suddenly give out a broad web of four or five inches in length. The object of these odd appendages is not known. They are found only on the male bird, and evidently bear an analogy to the train of the peacock and the long tail feathers of the pheasant among the birds, as well as to the beards, horns, tusks, manes, and similar masculine appendages of male quadrupeds.

The plumage of the Leona goat sucker is very prettily marked with spots and bars of rusty red and black upon the usual brown ground. Every primary feather possesses nine rusty red spots and as many of a black hue, and there are many other spots and bars scattered over the body and wings. The bird is not a long one, measuring only eight or ten inches in total length. It is a native of Western Africa. We take our illustration from Wood's "Natural History."

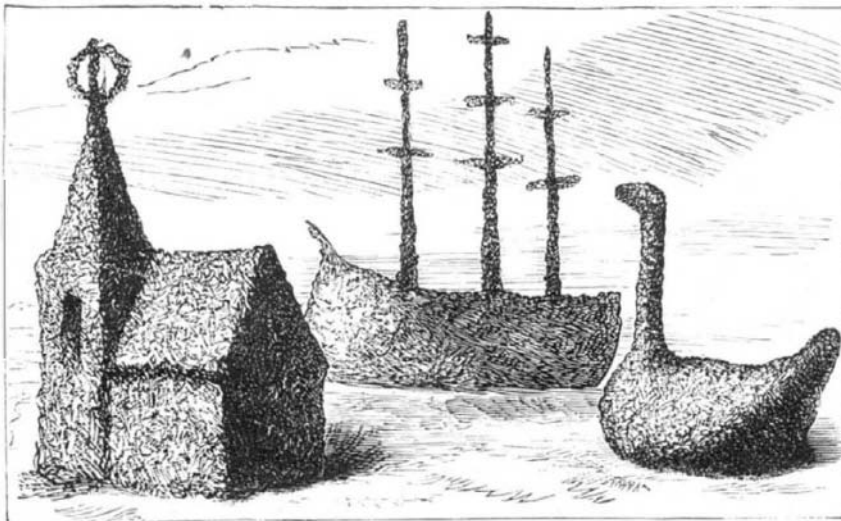
**Oatmeal.**

Liebig has chemically demonstrated that oatmeal is almost as nutritious as the very best English beef, and that it is richer than wheaten bread in the elements that go to form bone and muscle. Professor Forbes, of Edinburgh, during some twenty years, measured the breadth and height, and also tested the strength of both the arms and loins, of the students in the university—a very numerous class, and of various nationalities, drawn to Edinburgh by the fame of his teaching. He found that in height, breadth of chest and shoulders, and strength of arms and loins, the Belgians were at the bottom of the list; a little above them the French; very much higher, the English; and highest of all, the Scotch and Scotch-Irish from Ulster, who, like the natives of Scotland, are fed in their early years with at least one meal a day of good oatmeal porridge.

**Salt in Beer.**

The presence of a small percentage of salt in malt liquors may be unobjectionable, or even necessary to bring out the flavor of the principal ingredients; but it is impossible to veil the fact that, whether a very saline water is selected for brewing purposes or salt be introduced in any considerable

quantity during the manufacture of beer, the expedient is a device to create thirst and increase the demand for drink. It is, therefore, a matter of public interest to see that the adulteration of malt liquors with salt is prevented by the enforcement of the law. If the brewers take the hint given to them by Mr. Selater-Booth recently, and carry a representative case to the Court of Appeal, those who are anxious to minimize that excess in drinking which constitutes a ceaseless cause of loss and injury to the working classes of this country, should see that the true nature of the adulteration is exposed. We can easily understand that beer containing an "insufficient" quantity of salt will not be profitable. It may well find its way back to the brewers, because, the thirst producing element being absent, the publican would find the article lie on his hands. The mysteries of the trade in intoxicating beverages are many and bewildering, but we venture to hope the legislature and the public are too deeply impressed with the importance of encouraging temperance to be greatly moved by compassion for the



CURIOUS HEDGE FIGURES.

hard case of the makers and sellers of beer which cannot be sold in quantities satisfactory to its producers unless they are allowed to drug it with enough salt to render their customers inordinately thirsty!—*Lancet.*

**Dr. Morfit's Method of Preserving Animal and Vegetable Food.**

We have received a number of biscuits and other preparations containing preserved solid and liquid food, both animal and vegetable, which are the practical results of a new process lately patented by Dr. Campbell Morfit. They include substances of the most diverse nature, such as milk, cream, cheese, beef, garden rhubarb, cabbage, tomato, pork sausage, and a variety of other alimentary products, all of which are perfectly savory and toothsome, in spite of their being more than a year old. It is, however, more with Dr. Morfit's process than with its present results that we have

of temperature and moisture consequent on their having been kept for more than a year in the store room of an ordinary dwelling house—are still perfectly good and sweet, their natural characteristic flavors being well preserved. Some lime fruit juice biscuits, for instance, which are more than a year old, have preserved, in a very perfect manner, the peculiar flavor by which the juice of the lime can always be distinguished from that of the lemon.

The primary principle of Dr. Morfit's process is the getting rid of nearly the whole of the natural water contained in the substance to be preserved, by submitting it to a certain degree of heat, the place of the water being supplied by gelatin. The compound is then dried, and in this state it may be kept for any length of time, or else it may be made up into biscuits by incorporating it with biscuit powder.

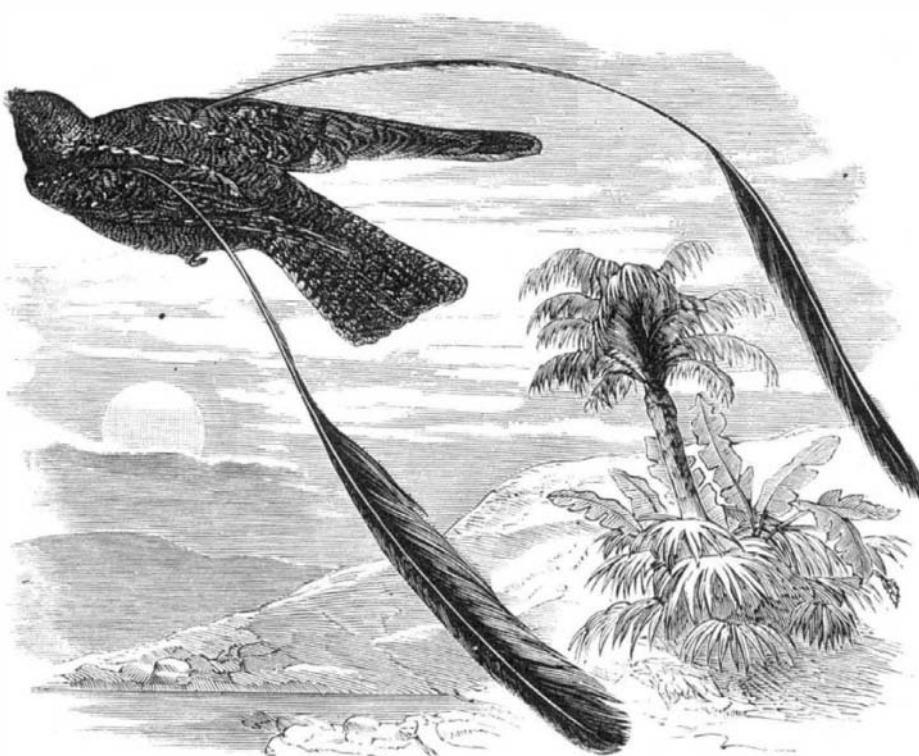
Let us take Dr. Morfit's method of preserving beef as an example. The beef must be as free from fat and bone as possible, and should be first stewed in its own liquor, or with the least possible quantity of water, and seasoned or not according to taste. The whole is then reduced, by any available mechanical means, to a state of smooth and fine pulp, and triturated with a solution of gelatin in water. One pound of gelatin is enough for 15 pounds of meat, fowl, or fish, the gelatin being dissolved either in a sufficiency of water or in the natural juice of the substance itself. In the case of fruit—such as gooseberries, currants, or plums—they are stoned or skinned when necessary, and cooked or not, as the case may be. They are then made into a pulp and mixed with gelatin dissolved in water or their own juice, heated so as to insure a thorough mixture of the ingredients, and then poured into coolers. In certain cases the gelatin may be replaced by mucilage of Irish moss, but the result, although cheaper, is not so good.

Dr. Morfit's method of condensing milk without the use of sugar is of great interest, seeing that the Swiss and other descriptions of condensed milk, which are now so largely sold, cannot be taken by delicate infants or by persons of weak digestion, owing to the large amount of sugar contained in them. One pound of gelatin is dissolved in one gallon of fresh milk at a temperature of from 130° to 140° Fah., the whole being allowed to set into a jelly, which is dried. The dried jelly is then dissolved in another gallon of fresh milk and allowed to set and dry as before, the operation being repeated with fresh milk until the original pound of gelatin has taken up eight gallons of milk or more. Consommé of meat may in like manner be condensed until one pound solid shall represent thirty times its weight of fresh beef. As may be readily guessed, the process may be carried on without any of the expensive plant and troublesome manipulation involved in the usual modes of condensing milk and making Liebig's extract, besides which, in the latter case, the whole of the nitrogenous parts of the meat is preserved intact.

From a hygienic point of view, the lime fruit juice biscuits ought to be admirably suited for use in the navy. Without entering into the question as to whether it is the citric acid, or the phosphatic salts, or the potash contained in the lime juice that is the real anti-scorbutic agent, it is sufficient to say that the 40 per cent of Montserrat lime fruit juice preserved by Dr. Morfit's process, and incorporated with the biscuits, has preserved all its properties without any change for more than a year, and, *a priori*, there is no reason to suppose that it would not keep good for ten or twenty times that period. It may be mentioned, in conclusion, that the different jellies may be dried into hard tablets or flakes at a uniform temperature of from 38° to 40° C., and sent into the market in this convenient form, as well as under the more bulky guise of biscuits. A few cases of lime fruit juice tablets, prepared according to Dr. Morfit's method, would probably have saved the lives of several brave men during the late expedition to the Polar regions.

Speaking from a purely scientific point of view, and judging by the results we have already described, the principle of Dr. Morfit's invention seems to be theoretically a sound one. These results we must regard at present as tentative, and it only remains to the inventor of the process to confer a large benefit on the community by extending its application, thereby notably increasing our not too abundant stock of hygienic and alimentary products.—*Chemical News.*

M. GARRIGOU has lately discovered that the salts dissolved in mineral waters have special properties which render their chemical reactions different from those of the same salts under ordinary conditions.



now to deal, for we must look upon his discovery as being as yet in its infancy.

Dr. Morfit's experiments, which he has prosecuted uninterruptedly for the last two years, seem to prove that ordinary gelatin, when it is once thoroughly diffused through a vegetable or animal substance, and dried in and with it, will protect it from decomposition or other alteration for a prolonged period, in spite of atmospheric or climatic changes. This is clearly proved by the samples submitted to us, which—although they have been exposed to the constant changes