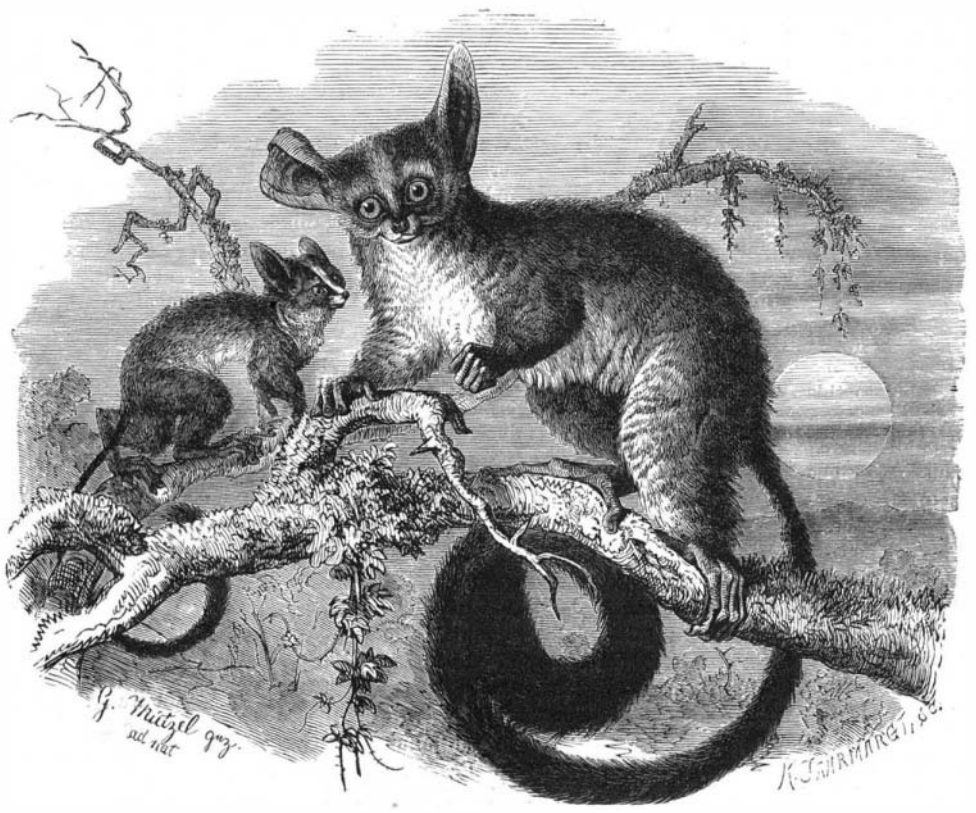
THE MOHOLI GALAGO.

The moholi galago is nearly sixteen inches in length, inclusive of the tail. Its color is gray, with irregular markings of a deeper hue. The under parts of the body are nearly white, and the limbs are slightly tinged with a golden luster. The tail is not very bushy, excepting at the extremity, and its color is a chestnut brown. The texture of the fur is very soft, and there is a slight wooliness in its setting.

Nocturnal in habits, it sleeps during the day, with its large ears folded over the head in such a manner as to give it the aspect of an earless animal. More active than the loris, the moholi does not secure its prey by stealing on it with slow and silent movements, but leaps upon the flying insects on which it loves to feed, and seizes them in its slender paws. Besides insects, various fruits form part of the moholi's food, more especially such as are of a pulpy nature, and it is said that the moholi eats that vegetable exudation which is known by the name of gum senegal. Its diurnal repose is taken in the curious nest which it builds in the forked branches of trees, using grass, leaves, and other soft substances for the purpose. In this lofty cradle the young are nurtured until they are of an age to provide for themselves.

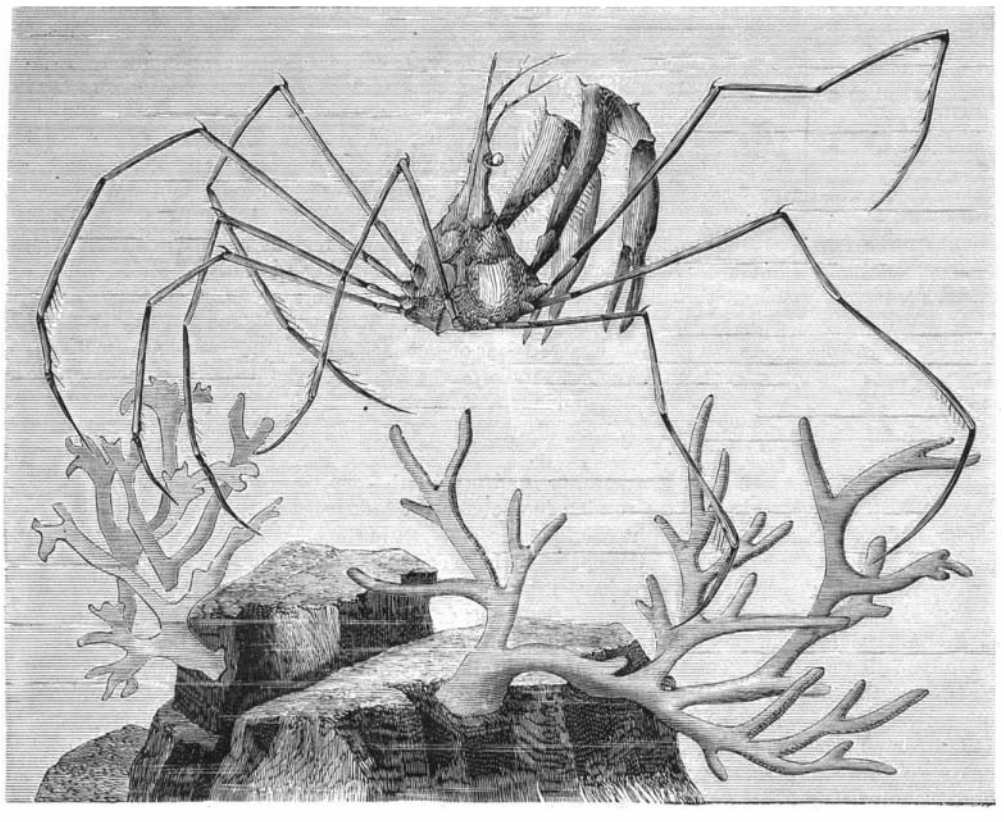
The face is full of expression, in which it is aided by the large and prominent ears; and the creature is said to contract its countenance into strange grimaces, after the fashion of the ordinary monkeys. Like the monkeys, too, it can leap for some little distance, and springs from one branch to another, or from tree to tree, with agility and precision. The moholi galago is an inhabitant of Southern Africa, having been found by Dr. Smith hopping about the branches of the trees that bordered the Limpopo river, in twenty-five degrees of south latitude.



MOHOLI.—*Galago Moholi*

SPIDER CRAB.

The body of this singular little crustacean is almost triangular, with a pointed protruding head. Notwithstanding its long slender legs it moves very slowly, never swimming, but crawling without touching its body to the ground. All kinds of sea tangle, plants, and sponges plant themselves on the backs of these crabs, sometimes completely enveloping them. These growths are so constant and so rapid that the creature can only free itself at the time when it changes its skin. This portable garden furnishes the crab with food which it gathers with its shear-like claws.



SPIDER CRAB.—*Stenorhynchus Longirostris.*

Hybrid Geese.

Mr. Charles Darwin communicates to the current number of *Nature* an interesting case, in which hybrid geese, the offspring of two distinct species, have proved quite fertile *inter se*. The common goose and the Chinese goose are so distinct that they have been placed in different genera or sub-genera; and yet they interbreed, and their offspring prove fertile. Mutual sterility is, therefore, shown to be no safe or immutable criterion of specific difference.

We have, however, says Mr. Darwin, much better evidence on this head, in the fact of two individuals of the same form of heterostyled plants (those in which the style varies in length in different flowers) which belong to the same species, yielding, when crossed, fewer seeds than the normal number, and the plants raised from such seeds being, in the case of *Lythrum salicaria*, as sterile as the most sterile hybrids.

Buried Oak Timber.

In deepening a river in the neighborhood of Norrköping, says the *Timber Trades Journal*, in order to make it accessible for ships of heavier draught, among several objects of interest brought up from the bottom, eight oak trees were found at a depth of seven feet under the old bottom. The bark was almost decayed, and when it was taken off the wood was found to be hard and black, resembling ebony. The trees are supposed to have been lying in the earth 900 years. The trees have been sold to a firm of joiners, who intend using them for cabinet work.

NATURAL HISTORY NOTES.

Insects Destroyed by Fungi.—Dr. Hagen, of Harvard University, in a paper on the destruction of obnoxious insects, after describing some experiments which had been made by Mr. J. H. Burns and others, draws the following conclusions: 1. That the common house fly is often killed by a fungus (*Sporendonema*), and that in epizootics a large number of insects are killed by the same vegetable parasite. 2. That the fungus of the house fly works as well as yeast for baking and brewing purposes. 3. That the application of yeast on insects produces in them a fungus which becomes fatal to insects. 4. That in the experiment made by Mr. Burns, all potato beetles sprinkled with diluted yeast died from the eighth to the twelfth day, and that the fungus was found in the vessels of the wings. He admits that further experiments are necessary to find out the most convenient method of application.

The Floating Fern.—One of the most widely disseminated tropical ferns is *Ceratopteris thalictroides*—a plant easily cultivated and propagated. Mr. Curtiss, in the *Botanical Gazette*, records the fact that he has collected fertile specimens of it in Florida. It appears to exist under widely different conditions, and it is very variable in size, and in the cutting of the fronds. Several of the forms have been described as species, and they are also cultivated under the generic name of *Parkeria*. Regarding the forms as belonging to one species, varying according to its habitat, it is generally dispersed in tropical and sub-tropical Asia, Africa, America, and Australia. Sometimes it grows in the muddy banks of rivers, in marshes, and other wet places, rooting in the ground. It is often found floating, however, like *Pistia* and *Azolla*. Mr. Curtiss found it floating free in water ten feet deep. Like some species of *Asplenium*, it propagates very freely from the buds which are abundantly produced on the fronds. Sometimes, as Wilson observed in Jamaica generally, the floating wild plants are much smaller than the cultivated ones, ranging less than six inches in height, including the fertile as well as the rosette of broad sterile fronds.

"Voice" in Fishes.—In a recent number of *Nature*, Mr. S. E. Pool gives an interesting account of an observation made by him in support of the claim that fishes are endowed with the faculty of voice. He stated that while engaged in a survey of the Disang River, in Eastern Asia, some six years ago, he had occasion to sound the depth of a pool. When seated in a small canoe and slowly nearing it, he suddenly became aware of the presence of a number of fishes called "mahsir." They were evidently attracted by the canoe, and Mr. Pool surmised that they might possibly think it a huge dead fish. While watching their movements he became aware of a peculiar "cluck" or percussive sound, which was frequently repeated on all sides, and coming from below, but near by. This was soon traced to the "mahsir," and one of them made distinct sounds which were answered by others. He states that in some parts of eastern Assam a large bivalve sings in concert with others.

The apparatus by means of which certain fishes are enabled to produce sounds has, according to the *Correspondance Scientifique*, been studied quite recently by a Danish naturalist, M. W. Sorensen. This gentleman, during his residence, in 1877 and 1878, at the point where the Riacho del Oro empties into the river Paraguay, discovered that the principal organ of sound was the swimming bladder. This, in the siluroids, is somewhat elastic throughout its whole length, while in the characins the elasticity depends especially on flat bands or round cords in its walls. The swimming bladder, as an organ, acquires its greatest development in the siluroids. In the species of the genera *Platystoma* and *Pseudaroides* it is divided by one longitudinal septum, and several transverse ones, into a few chambers or cells which communicate freely with each other. In the genus *Doras*, the swimming bladder has numerous appendages which are divided internally by incomplete septa, into a large number of small cells. In all these fishes the transverse apophyses of the first two or three vertebræ, and often a portion of the arch of the first vertebra, are not only joined together, but also with the posterior part of the cranium and the apophyses of the first vertebræ, by very strong elastic membranes. The transverse apophyses of the second and third vertebræ are in the form of very powerful springs, and are closely connected with the swimming bladder. The sound is produced by the action of muscles, which are inserted either directly on the swimming bladder or on the transverse apophysis of the third vertebra. In the characins, the elastic parts of the swimming bladder are stretched longitudinally by the contraction of the muscles, and the vibration which results from this rhythmical movement is transmitted to the air contained in the cavity of the bladder. In the siluroids, the anterior part of the bladder is drawn alternately backward and forward by the contraction and relaxation of the muscles; and during these movements the air, in passing through the incomplete transverse septa, sets the latter in vibration, and thus a sound is produced. The loudness of the sound emitted is in direct proportion to the velocity with which the springs vibrate. The fishes studied by M. Sorensen in connection with this subject belonged to the genera *Ageniosus*, *Doras*, *Platystoma*, *Prochilodus*, *Chalcinus*, and a few others.

An Open Winter and Spring Flowers.—At a meeting of the Torrey Botanical Club, on January 13, one of the members reported that he had found the liver leaf (*Hepatica triloba*) and the field chickweed (*Cerastium arvense*) in flower on the 11th of January of the present year, at Riverdale on the Hudson; and it was also stated by another member that the flower buds of the trailing arbutus gave evidence that

they would soon open if the present warm weather continued.

The Sagacity of Penguins.—In the report of M. E. Mouchez on the Transit of Venus Expedition to the Island of Saint Paul, now being issued by the French Academy, the author, in speaking of the habits of the penguins, as observed on that island, gives the following instance of their sagacity. When these birds, which are extremely awkward and slow in their movements and incapable of flight, come to a perpendicular wall of rock, and can find no way of passing around it, they prepare to scale it in the following manner: The first arrived squat down close to the base of the rocks, then those which follow press up closer and closer, and, climbing over the backs of the former, make, in their turn, a gradual series of short steps, over which the remainder pass. Unfortunately M. Mouchez neglects to inform us how the birds which form the bottom rounds of the ladder manage to get over!

The Utility to Flowers of their Beauty.—Mr. Darwin, in his "Origin of Species," says that "flowers rank among the most beautiful productions of nature, and they have become, through natural selection, beautiful, or rather conspicuous, in contrast with the greenness of the leaves, that they might be easily observed and visited by insects, so that their fertilization might be favored. I have come to this conclusion from finding it an invariable rule that when a flower is fertilized by the wind it never has a gayly-colored corolla. Again, several plants habitually produce two kinds of flowers—one kind open and colored, so as to attract insects; the other closed and not colored, destitute of nectar, and never visited by insects. We may safely conclude that if insects had never existed on the face of the earth, the vegetation would never have been decked with beautiful flowers, but would have produced only such poor flowers as are now borne by our firs, oaks, nut, and ash trees, by the grasses, by spinach, docks, and nettles." With this for his text, the Hon. Justice Fry, in an interesting article in the December number of the *Contemporary Review*, proceeds to discuss the facts bearing on the case, both such as have been observed by himself and by others, and arrives at the following conclusions: 1. That conspicuousness is a step toward fertilization in one mode, and might therefore well be used by an artist loving at once beauty and fertility. 2. That there is no such preponderating advantage in beauty as should convert the ugly wind-fertilized flowers into the brilliant insect-fertilized flowers. 3. That in an infinite number of cases beauty exists, but without any relation to the mode of fertilization. 4. That it is maintained in many cases where the uglier and less beautiful plant is more useful, as in the case of the violet. 5. That even where conspicuousness is useful, it furnishes no complete account of the whole beauty of the flower.

As to the application of these facts to the two rival theories: if, on the one hand, nothing has become beautiful but through the utility of beauty, the latter will be found where it is useful and nowhere else. But investigations show that beauty is found where there is no utility; so the theory, in our present knowledge, is inadmissible. If, on the other hand, there be an artificer in Nature who loves at once utility and beauty, he may use the one sometimes as the mean to the other, or he may use beauty without utility; and the presence of beauty without utility is intelligible.

Peach Tree Borer Infesting Almonds.

During the past half dozen years the double white and pink almond shrubs growing in my garden have shown signs of being badly diseased. At first I thought little of it, as these shrubs are plentiful and multiply quite rapidly by suckers, but so many died outright that I was led to make a careful examination of their roots, and in these, and in the stems just below the surface, large numbers of the larva of the common peach tree borer (*Ægeria exitiosa*) were found. Peach trees being but little grown in my neighborhood the borers took to the almonds and here kept at work until few good plants are left.

Having quite a large number of the almonds, and seeing that the borers were well established, I concluded to leave them undisturbed in order to watch their progress during the summer, and ascertain if Harris was correct in saying that the moths appeared at all times from June until October. At various times during the summer I dug up almond plants, and invariably found grubs of all sizes, from those a few days old up to the nearly or quite full grown, but no pupæ were discovered under the bark or in the earth immediately surrounding the wood, a fact that leads me to believe that the grubs go a much greater distance from their burrows before passing into the pupa state than is generally supposed. Pupæ that are so frequently found in the gum exuding from peach trees are probably imprisoned there and cannot get away, else they would do so and find a more congenial place for passing through their final transformation. Harris states that the pupæ are found in the gum of peach trees; also under the bark and in the ground; but so far as my own observations extend I conclude that they will always seek the latter.

The old dwarf almond bushes in gardens are excellent breeding places for this insect, and it would be well for all who love such plants to examine them occasionally, and destroy all the grubs found. Peach trees may be protected with tar paper bands, but this is not practicable with such slender and free sucking plants as the dwarf flowering almond.—*A. S. F., American Entomologist.*

Saccharomyces Exiguus.

This variety of alcoholic ferment was identified by Rees, who met with it in the fermented juice of fruits. The cells are elongated and almost cylindrical in form, and are generally joined together so as to give a star-shaped appearance; their average length is 0·000118 inch, and their diameter only 0·000098; they are therefore much more minute than the ordinary yeast cells, and on this account are somewhat difficult to detect under the microscope; like all the other varieties of this species they multiply by budding and sporation. We are led to give these particulars of this form of ferment, says the *Brewers' Guardian*, in consequence of some recent researches of Muller and Hauer, which seem to prove that the deterioration of beer is largely due to the presence of this organism.

Some few years since Engel stated that the existence of *Saccharomyces exiguus* in beer ultimately produced a most unpleasant flavor, and these latest researches corroborate this view; we are now told that beer containing this ferment rapidly undergoes change; its brilliancy and pure flavor disappear, and soon becomes cloudy and acquires a greenish-gray tinge, and develops a most unpleasant taste and smell. It is, therefore, of the utmost importance that brewers should examine their seed yeast most carefully with a powerful microscope, in order that they may reject any samples which contain this most injurious ferment; its detection is not easy, on account of its extreme minuteness, but with practice the cells may be identified.

The Germs Floating in the Atmosphere.

An elaborate series of experiments has been undertaken by M. E. C. Hansen, at the Carlsberg Laboratory, with the object of identifying the various organisms which float about in the atmosphere, and which are found in worts and beer. These investigations form a valuable addition to those of Pasteur and Tyndall, who have already placed on record the results of their experiments in the same direction. It has been observed that the germs of yeast proper are very seldom met with in the atmosphere, but an infinite variety of moulds abound in almost all parts Pasteur found that besides moulds and bacteria, he occasionally met with the following organisms: *Mucor racemosus*, *Saccharomyces mycoderma*, *S. pastorianus*, *S. ellipsoideus*, *S. apiculatus*, *S. cerevisiæ*, and bacteria, producing butyric and lactic acids.

M. Hansen found in his experiments that saccharomyces are very seldom met with in the atmosphere; bacteria are usually present, but they are not nearly so plentiful as the various kinds of moulds, among which *Penicillium glaucum* is the most common. In very cold weather it was noticed that all varieties of saccharomyces disappeared, but even then moulds and certain forms of micro-bacteria were to be met with.

One Year's Production of Petroleum.

The petroleum business during the year just closed has been marked by many results never before attained. The enormous production of crude (nearly 20,000,000 barrels) exceeded the production of any previous year by about 5,000,000 barrels. The average price of crude at the wells for the year was 94⅜ cents per barrel, being 39⅝ cents less than for the year 1874, which has been heretofore considered the "cheap oil year."

The number of wells drilled during the year was 3,038, which number was not greatly in excess of former years; only about 6¼ per cent of the wells completed proved to be dry or worthless, against 11⅛ per cent of dry holes developed in 1878. The shipments out of the producing regions have been larger than in any previous year, amounting to nearly 16,000,000 barrels, which exceeded the shipments of 1878 nearly two and a quarter million barrels. The accumulation of stock in the producing regions of Pennsylvania during the year has been without a parallel in the history of the trade; the amount of stock January 1, 1879, was 4,615,299 barrels, and on January 1, 1880, 8,470,490 barrels, being an increase of 3,855,191 barrels in 1879.

The great Northern, or Bradford district, has contributed largely to these results; in fact for the last two years this field has been the chief point of interest in the oil country, where most of the operators have congregated and most of the developments have taken place. In the last five years there have been about 6,000 wells drilled, 5,100 of which are now producing oil at the rate of about 45,000 barrels per day. The total production in that district from August, 1875, to December 31, 1879, was 21,991,544 barrels, and the shipments out were 15,771,214 barrels, leaving a stock in tanks of about six and a quarter million of barrels. The exports of petroleum for the year have been unprecedentedly large, exceeding all former years by many million gallons. The stocks held in European ports are also quite large, exceeding the amount held at the same time in 1878 some 500,000 barrels.

The maximum production of crude petroleum in the Pennsylvania oil fields was reached in August, 1879. Since that time the production has undoubtedly been steadily on the decline, and from present indications we may look for a continued decline, slowly but surely, until some new and now unknown field shall be found which shall yield the precious fluid bountifully.

There was a steady increase of stock at the wells during the first eight months of the year, which was not reported and did not go into the account in making up productions and stocks. The pipe lines prior to September did not take from the wells their production, which was evident from the overflowing tanks everywhere to be seen in the Bradford district. Since the month of August the wells have not only been relieved, but the lines have been taking all the production and steadily drawing on well stock. The month of December shows that the stock at the wells has been depleted about 182,250 barrels, which we have credited to productions and stock by distributing 750 barrels a day through the first eight months of the year.—*Stowell's Reporter.*

Fluid for Preserving Organic Substances.

M. Wickersheimer, of the University of Berlin, has invented a fluid for the preparation of animal and vegetable tissues, which surpasses anything before known in its power of preserving the color, form, and elasticity of specimens treated with it.

The fluid may be injected into the veins of the body to be preserved by it, or the entire object may be immersed in it. In either case the elasticity of the tissues and the flexibility of the joints are preserved.

At a recent meeting of the Philadelphia Academy of Natural Sciences, Professor Barbeck described a number of skeletons, which showed beautifully the combined movements of the chest, larynx, and other parts engaged in the mechanism of breathing. Several skeletons of snakes, which had been treated with the fluid more than a year previously, permitted of undulatory and spiral movements. Lungs thus prepared may, even after years, be inflated by means of bellows. Such old lungs were seen to swell to ten times their size in the collapsed state, the lobes became distinct, the brown color gradually changed into red, and the whole organ appeared as if taken from a fresh body. Sections of delicate tissues, morbid formations which have been removed by an operation, will appear after months as if in a fresh state, and may thus be preserved for future study.

All sorts of vegetable organisms may also be preserved in this fluid. A colony of exquisite fresh water algæ, which had been in the fluid for a year, appeared to be growing in the water.

The Prussian Government has purchased this valuable discovery, and the Minister of Instruction has published it in his official organ for the benefit of the scientific world. The formula for the preparation of the fluid is as follows: In 3,000 grammes of boiling water dissolve alum, 100 grammes; common salt, 25 grammes; saltpeter, 12 grammes; carbonate of potash, 60 grammes; arsenious acid, 10 grammes. After cooling and filtering, add to every ten liters of the solution four liters of glycerine and one liter of methylic alcohol.

The method of application differs according to the nature of the objects to be preserved. Anatomical preparations that are to be preserved dry are immersed in the fluid from six to twelve days, according to their size, then taken out and dried in the open air. Hollow organs, such as the lungs, etc., must be filled with the preserving fluid, then laid in a vessel containing the same liquid, and afterward distended with air and dried. Smaller animals, such as crabs, beetles, lizards, frogs, etc., if the natural colors are to be preserved unchanged, are not to be dried, but put immediately into the preparation. The same fluid may be used for the purpose of preserving human bodies during transportation, or even for more permanent embalming.

Milk a Forbidden Food in China.

The Chinese, who esteem rats to be a delicacy, are down on the use of milk. The following translation of a Chinese placard regarding the highly immoral practice of consuming cow's milk is sent to the *Foochow Herald* for publication: "Strictly refrain from eating cow's milk! Man should not rob the beasts of their food. Moreover of all beasts the cow is the most useful and meritorious. Men who do not discriminate between mankind and beasts are worse than senseless. Those who sell milk darken their consciences for gain, and those who eat cow's milk foolishly think they are benefiting their bodies. Men who take medicine should first carefully investigate and find out its nature. Why do not those who eat cow's milk consider and inquire into its origin? For instance, men beget children, and while the children are small they depend upon milk for their nourishment; so it is also with beasts. But when men buy milk to eat, do they not do injury to the life of the calf? And is there not bitter hatred and distress in the minds of both cow and calf? Beasts cannot speak; how then are they able to tell the man that, in eating the milk of beasts, his body becomes like that of birds and beasts? But if men wish to take strengthening medicine, there are numberless other articles in the world that are beneficial; and what necessity then is there for taking cow's milk? Besides this, the death and life of men have their fixed number and limit, and this cow's milk cannot lengthen out and continue the life of man. Since, then, all know the truth—that it cannot do this, all ought to act with loving and benevolent spirit. Especially all who receive this exhortation should keep from eating milk. The children of those who cause their families to refrain from eating milk will be preserved to grow up; they also will thus lengthen out their own lives, and will escape from evil in time of fatal epidemics. If such persons be able also to exhort others, who are ignorant of first principles, to leave off the eating of milk, their descendants shall surely prosper. Published by the Hall of Good Exhortations. The Xylographic blocks are deposited in the Ung Ling Kóh."

It is said that the adhesiveness and durability of a solution of 100 parts gum arabic in 250 parts water may be increased by adding 2 parts of sulphate of alumina.