GOOD HEALTH.

The Human Frame.

No. 7—The Brain.

In taking up this subject we enter upon a field wherein science has made but little progress. The brain, being undoubtedly the special organ and throne of the mind, will never be entirely understood until that mysterious link which binds the finite to the infinite shall have become acquainted with itself; and so, whenever the mind endeavors to analyze its own origin, powers or manner of action, it draws back awe-struck and dazed at the glimpses of that infinity which lies so thin-veiled and bewildering just beyond its limited horizon. It has been the subject of deep and searching investigation; and, apart from its connection with the mind, no organ is better understood. Taken from the skull of the human body, it presents a mass of a fatty structure so frail and delicate of organization that we almost wonder how it is preserved from injury or destruction, even among the ordinary occurrences of our every-day life; and well illustrates the steps by which matter becomes more and more refined as its connection with mind assumes a higher and closer relation. It is composed, as is well known, of a gray and a white substance, that are formed into a series of convolutions, the shape of which is familiar to all. Of these two, the gray is supposed to be the actual communicating link between the mind and its servant, the brain, while the white connects this with the coarser tissues. This gray matter is made up of tiny cells, which vary from one three-hundredth to one four-thousandth of an inch in diameter. The white substance, which forms by far the greater part, is composed of delicate filaments which are from one two-thousandth to one ten-thousandth of an inch in diameter. In the brain, the gray substance is spread mostly on the surface; its disposition in the nerves will be given when we take up that subject.

It would be interesting, did space permit, to trace the evolution of the brain from the lower forms of animal life up to that of man, but we can only give the shadow of an outline. It begins as a simple ganglion of nervous matter, and is situated near where it is needed, regardless of any "head." In the five-rayed star-fish, for instance, there is a ganglion at the base of each limb, so that this familiar little fish has the advantage over mankind of possessing five distinct brains. A step higher, and one of these ganglia begins to assume a greater size than the others, and the animal begins to show signs of a centralization of intellect, or in other words a head is added to its organization. This step is illustrated by some of the molluscs and articulata, as the *Aplysia* and centipede. Higher yet, and this centralization begins to develop different convolutions, having different offices; and it is from a hair-splitting, unscientific application of this principle that the so-called "science" of Phrenology sprung, which now so delights the souls of ignorant quacks and pretended "delineators of character!" This step is illustrated in the vertebrata, and culminates in man; where matter has progressed so far that it is capable of union with intelligent, reasoning mind.

As a general rule, the size of the brain is in proportion to the intellect of the individual. In the male the average weight is about 49¼ ounces, in the female 44 ounces. Cuvier's brain weighed rather more than 64 ounces, that of Dr. Abercrombie 63 ounces, and that of Dupuytren 62½ ounces. On the other hand, the brain of an idoit seldom weighs over 23 ounces. The human brain is heavier than that of all the lower animals, except the elephant and whale. The brain of the former weighs from 8 to 10 lbs., and that of the whale, in a specimen 75 feet long, weighed rather more than five pounds.

It can sustain severe inflammations and injuries to its substance; some of the most remarkable recoveries from injuries in the annals of surgery being those of the brain. Of these, the most famous occurred several years since, in this State. It is that of the miner who, by a premature discharge of a blast, had a "tamping iron" over two feet long and an inch in diameter driven entirely through his skull from below upwards, and who, strange to say, recovered and lived several years after the accident. His skull is now in a museum at Boston where it is kept as a curiosity to show the fearful apertures made through it by the iron as it entered and made its exit.

POISONING BY CARBOLIC ACID.—A patient in a hospital, through mistake of the attendent, took a tablespoonful of a solution of one part of carbolic acid and six parts of water, instead of an infusion of senna. A burning sensation in the throat, vomiting, and contraction of the pupils of the eyes ensued. As soon as medical aid was at hand, the stomach was cleansed three times with water, by the aid of the pump. Still the patient suffered severe pain, and became insensible to light. The pulse became rapid. A cold, clammy sweat, deep sleep, and finally death ensued. A post-mortem examination of the contents of the stomach, of the liver, the heart and venous blood, and of the urine was made. No carbolic acid was detected except in the stomach, from which it was inferred, either that the acid had not been diffused through the system, or that it had been diffused in so small quantity as to escape detection.—*Amer. Chemist.*

TRAINING OF BOAT ROWERS.—An exchange says: "At some of the colleges the training of the racing crews is about as follows: In the morning an easy walk of an hour's length, at noon a quicker walk of half an hour, and in the afternoon a pull of seven or eight miles, after which comes a bath and a good rubbing down. The system of diet is rather one of proscription than prescription. Certain articles well known to be unwholesome are proscribed. Other things may be eaten. Pastry, tobacco, coffee, pork, and all stimulants are ruled out. The crew pulls a plain forward and back stroke, with no special attention to style or scientific points, making generally 32 strokes to the minute." To this we may add, that a crew trained in the manner described would have small chance of winning a race, at least against a crew in perfect condition. The rowing is now nearly always divided into two parts, morning and afternoon, and made so light as never to tire the men—a most important point, according to new-school theory and practice. The diet is but little restricted. But a crew which pulls a "plain forward and back stroke, with no special pretension to style," is always at a disadvantage when pitted against those who know how to make the best use of their strength. There is a prevailing impression that "style," as it is termed, is merely for show; the truth is that a well-trained crew does not waste an inch of movement nor a particle of muscle, but simply rows in the manner which experience has taught is the most effective. Sheer strength may sometimes win a single scull race; but a truly successful crew is one which rows with precision.

"PREVENTIVE medicine," says Dr. Henry Bowditch, in an admirable and exhaustive paper on the subject, "is the natural outgrowth of modern thought and resources, stimulated by centuries of suffering and by the sacrifice of multitudes of human beings."

Cheese as Food.

The *Live Stock Journal* has some interesting analyses of this article of food, with deductions founded thereon, from which we obtain the following abstract: It will be seen if we compare lean beef, or lean mutton, or lean poultry, with skim-milk cheese, that one pound of this cheese is equal in supplying muscular force to one and three-fourths pounds of beef or mutton, and one and a half pounds of poultry; is superior in fat or heat-producing power, and has more than double the nutriment per pound. And a comparison of whole-milk cheese with fat beef, mutton, or pork, shows it more than twice as rich in muscular force, and not inferior, except to pork, in heat or fat-producing qualities. It is more than twice as valuable per weight as eggs.

Comparing it with the farinaceous grains, cheese is seen to contain two and a half times as much muscle forming food as either wheat flour, rye meal, Indian meal, barley meal, oatmeal, rice or potatoes. But when we compare the carbonaceous matter of these grains (starch, sugar and fat) with cheese, they may appear to have the advantage. But one pound of fat is reckoned by physiologists equal to two and one-half pounds of starch or sugar as food; and thus the fat in cheese, instead of being represented by 27.50, would be represented by 68.75, making it equal to the starch in wheat flour. And here the dietetic philosopher will perceive the true use of animal and concentrated food. There is no source from which we may derive the carbonaceous elements of human food as cheaply as from the farinaceous grains. Many of these are relatively deficient in the nitrogenous elements—giving muscular force and power. They are also less easily digested than animal food and produce their results more slowly; but when properly mingled with more nitrogenous food, such as milk, cheese, beef, mutton, fish and other flesh, they form a diet leaving nothing to be desired in respect to health or agreement with taste. A small quantity of cheese taken with farinaceous food would make a proper balance of constituents to build and sustain all parts of the system. Less than half as much cheese would be required as beef, or mutton or eggs.

Cheese, therefore, among the foods easily obtained, appears, chemically, to be the most energetic in sustaining the vital force of the human system.

Liebig well says: "There is a law of nature which regulates these things, and it is the elevated mission of science to bring this law home to our minds; it is her duty to show why man and animals require such admixture in the constituents of their food for the support of the vital functions, and what the influences are which determine, in accordance with natural law, changes in the admixture. The young animal receives in the form of casein (cheese) the chief constituent of the mother's blood. To convert casein into blood, no foreign substance is required; and in the conversion of the mother's blood into casein, no elements of the constituents of blood have been separated. When chemically examined, casein is found to contain a much larger proportion of the earth of bones than does blood, and that in a very soluble form, capable of reaching every part of the body. Thus even in the earliest period of life, the development of the organs in which vitality is, in the carnivorous animal, depends on the supply of a substance identical in organic composition with the chief constituent of its blood."

THE HORSE.

Itching Manes and Tails.

Nearly every day I see horses with manes and tails injured by rubbing. From my first experience with horses, I have been more or less troubled by their rubbing these parts, generally during warm weather. I have carefully noted the inquiries and answers in the *Rural New-Yorker* concerning horses, and am not surprised to find on this subject, as on every other, a great diversity of opinion. Some of the remedies given in the *Rural* for itching manes and tails are good. Judging from my own experience, I think I have a better one. It is better for the reason that it is cheap, always at hand, easy to be applied to the diseased parts, and in its well tried efficacy. Without attempting to convince the reader of the cause of itching manes and tails, or to persuade those who believe no remedy is good, without it is a compound of many ingredients difficult to obtain and more difficult to apply, I give the remedy and the manner of its application, and verily believe that many a horse owner will be pleased with the result when he has tried its merits.

Take common kerosene and put it in a spring bottom tin can, such as can be found in the tool box of every mowing or reaping machine, on any carpenter's bench, or at any hardware store; take the itching tail in one hand and raise it by the long hair, so that the small end of the dock will lie the highest; then squirt the kerosene on the end of the dock. In a very brief time it will spread evenly all over the tail. Then part the mane, if also diseased, and put the kerosene along the whole length. A small quantity will do, as it spreads readily and will reach every spot. The kerosene will dry off in a day or two and will do no harm, even if the parts are not washed. This, however, all careful horsemen will do as a matter of neatness, though it is not necessary, and the tail will look no worse than if no application had been made. One or two applications were in every case, in my experience, either cured, or at least been attended with very satisfactory results.—*Cor. Rural New-Yorker.*

Treatment of Colts.

Colts should be handled when quite young; better commence at once with them, and teach them to expect nothing but kindness at your hands. Don't try to "break them," as the saying is, but patiently *teach* them what is expected of them—above all, let them repose confidence in you, that they may trust you and love you, instead of standing in constant fear and dread of you. Have a pet name for them; they like it. Let them hear your voice—the more the better, so that it is gentle. Give them frequently some little tit-bits from your hand—a piece of potato, apple, carrot, or anything that is wholesome for them, and which they like. They will very soon learn to follow you, come at your call, etc.

It is astonishing how much you can teach young horses if you are firm, gentle and patient with them. Control your own temper always, and you can the better control theirs. Don't fool with them or teach them tricks, which may be pretty when young, but grow to viciousness in age. When you groom them do it with care; never bear on too hard, especially when cleaning over the cords or joints. Always afford them a comfortable shelter. It is all nonsense talking about toughening colts by exposing them to bad weather, coarse, tainted food, and other privations. It is a good way to *stunt* them, but not to improve them. See that good water is always accessible to them. Don't ask of them what they *cannot* perform. Don't over-feed.

Practice the above, and if there is any good blood in your foal, you will be liable to raise a valuable horse.—*Exchange.*

THE DAIRY.

European Varieties of Cheese Made in America.

The manufacture of Swiss and Limburger cheese is now quite extensively carried on in this country, and it is said to be of excellent quality—quite equal to any that is imported. The Limburger variety, when in its prime condition, according to the German taste, requires to go into consumption at once, as it is liable to deteriorate if kept long after it is fully ripe. On this account there is considerable risk in its importation; and, besides, the cost is more than for the cheese made in America. Probably the largest quantity of Limburger made in one locality is in Northern New York—Jefferson county taking the lead. In previous numbers of the *Rural* we gave a pretty full account of the Limburger factories of Jefferson county, some of which are very elaborate and expensive structures. They are modeled after European plans, though of course much larger than the German establishments. There is quite a number of factories manufacturing Swiss cheese in New York, and a good article is produced. We do not know to what extent Limburger and Swiss cheese is manufactured at the West, but a considerable quantity is made in Wisconsin. In Greene county alone more than half a million pounds were produced during the year 1873—the milk of 1,880 cows being used for the purpose. For the present year it is estimated that the milk of 2,310 cows will be employed in making Limburger cheese in the county of Greene. A number of factories in the vicinity of Oshkosh, Wis., are engaged also in the manufacture of Limburger and Swiss cheese. These varieties of cheese command a larger price than the ordinary style of American cheese, they being mostly retailed at from 23 cents to 25 cents per pound.

Where experienced and skilled German manufacturers are employed to take charge of manufactories, the net returns to dairymen delivering milk at these factories are much better than at the ordinary factories for making American cheese. There are several other European varieties of cheese that could be made in this country with profit, and we hope to see some of our dairymen engage in the production. There is a demand for Edam cheese in our large cities, especially in New York, and a considerable quantity of this variety, we understand, is imported from abroad. We ought to be able to make all the cheese needed in the country and we ought to make it of as fine flavor and quality as that which is produced abroad. It would be well if some of our factories should turn their attention to some of the varieties of European cheese for which there is a demand in this country, but which have not heretofore been produced by us.—*Rural New Yorker.*

The Prices Obtained for Young Bulls.

The following extract from a correspondence in the *Country Gentleman* was written by one of the most successful breeders of Short-horn cattle in the country:

The sales of a few weeks past have demonstrated that the Short-horn interest is covering a large amount of territory, and that it is losing nothing in the vicinity where the sales are held, as at each one a new set of local bidders are seen and many purchases are made by them. The great difference in the price of bulls and cows is commented on by some as a bad omen—as ruinous to breeders, with the remark that there are too many of them, and that they should be castrated, etc. I think quite the reverse, because where the animal is well enough bred with form, color, etc., sufficient to make him good enough to go to the head of a Short-horn herd, it is the exception for him to bring prices that cannot be afforded by his breeder. This is as it should be, for unless he is a combination of all that is good he should take his rank among the high grades and common cows of the farm.

Almost any breeder can take a desirable cow or heifer with advantage into his herd at a reasonable price—hence they are customers at the sales, with ideas educated up to better prices than novices. Not so with bulls; they (the breeders) are sellers, not buyers. The young and cheaper class of bulls then find customers among the farmers, who can always use them to good advantage on their native and grade cows, and not being educated as to the real advantage in their use, do not pay at first what should be paid for such stock, but having once used a thoroughbred bull they are sure to be better customers forever afterwards.

Even through Central Illinois there is scarcely one good Short-horn bull to a township, while there should be one within a short distance of every farmer's cows, if not on every farm, and this will answer the question of the number being too large. Who can say then that it is not better to put the young bulls up at public sale and sell them, though they do not bring so large prices at present as we would like—to have them at work as missionaries, bringing money into the farmers' pockets who use them, and thereby making them better customers to all future sales, than to have them bottled up in our barns waiting better prices.

HARD ON THE CITIES.—One of our cotemporaries, in commenting on the high prices sometimes paid for butter in the cities, is disposed to consider them as no indication of the value of the butter, because the people in the cities see so little really prime butter, that they are not qualified to judge on so fine a point. Perhaps there may be some truth in this, but we are inclined to regard the city people as pretty good judges on this point. There is no class of people in the world so particular as to what they eat as the residents of cities, and no mode of life so well calculated to create and nourish fine distinctions in the matter of flavor. Let anyone take a plate and make the rounds of the city markets, and he will travel far, as a general rule, before he finds butter as rank as that which can be found at almost every country store; and the commodity which the merchant keeps for sale is a pretty fair indication, the world over, of what his customers demand. So far from the city people lacking in a discriminating taste in the matter of butter, we have sometimes thought them over nice in this particular, displaying altogether too much taste. Let no one delude himself with the idea that he can make an inferior article of butter and succeed in working it off on city people under the impression that it is a choice article.—*National Live Stock Reporter.*

GARGET REMEDY.—Dr. Bronson of Michigan writes the New York Tribune: My remedy for garget is one tablespoonful of saltpeter every other day for three days, then skip a few days, and feed again if a cure is not effected. I think three doses will heal the most obstinate case. By-the-way, any person who keeps cows, should feed to each the above dose of saltpeter once in two weeks through the milking season, and there will be no complaint of garget.

HARRIS LEWIS says he has found as high as 30 per cent. of cream in the last pint of milk drawn from a cow, when the first pint from the same cow had only 9½ per cent.

GOOD dairymen are the men who have the good cows, because they are the ones who take good winter care of their herds.

Grass and Hay for Milch Cows.

A correspondent of the Utica *Herald* holds the following ground in relation to the feeding of milch cows on grass and hay. The important point to Western dairymen is one made in relation to cutting hay when young:

I find that grass alone, whether green or cured, answers all purposes the year round (by grass, I include clover), with this one important qualification—that it be cut green and well cured. This makes about half difference; that is, there is about as much available substance in one pound of green feed dried, as in two pounds when ripe. I know instances where cows have been kept during the winter on 25 pounds of ripe hay per day. They were, of course, not in good condition. But, instead, double the available nutritive substance, which an equal weight (25 pounds) of green-dried hay would have furnished, and you would have had double the nutritive benefit, which would have brought your cows to a high condition. Or supply the deficiency by grain, sufficient to reach this condition, and the amount would have been considerably more than is usually fed with old ripe hay, showing thus that good green hay takes the precedence over the usual ripe hay and grain, being besides much cheaper.

Grass, green or dried, if of a good quality, and fed all that is wanted, will produce a maximum quantity of milk, the superior quality of the milk more than making up what may be lacking in quantity, so that so far as milk alone is concerned, grass (green or dried) stands first as a feed, surpassing all other feeds, whether single or combined. And it will sustain the animal while giving milk and while in calf, and fat her when free of the drain. Grain doubtless would aid in the fattening process.

THE ORIGIN OF DUCHESSES.—A writer in the *Mark Lane Express* gives the following history of the most valuable family of Short-horns. He says: "As the Duchess tribe is so famous, and sells at such enormous prices, I may here give a few particulars concerning it. The first of the family we hear of, was bought by Charles Colling from the Duke of Northumberland's agent at Stanwix, a massive, short legged cow, of a yellowish-red color, with the breast near the ground. She had a wide back and was a great grower. Colling called her "Duchess," and had often described her to Bates as a very superior animal, particularly in her handling, and told him he considered her the best cow he had ever seen, but that he could never breed so good a cow from her. She was descended from the old stock of Sir Henry Smithson, of Stanwix. Thomas Bates bought from Colling one of the descendants of this cow in 1840, for 100 guineas, being the same I mentioned as being such a fine dairy animal, and he bought another at Colling's sale in 1810. For the latter he paid 183 guineas, and styled her "Duchess First," and from her all the present family descended. Bates said he was induced to select this tribe from having found that they are great growers and quick feeders, with fine quality of meat, consuming little food in proportion to their growth, and also finding that they are great milkers."

CAUSES OF ODOR.—Improper substances in the vicinity of milk and butter will taint them. A piece of veal on the cellar floor; a pond of impure, stagnant water; a kerosene lamp used in the milk room; a piece of soap left on a pan cover; coal oil in a country store; decaying vegetables; putrid animal matter in a cow pasture; cows drinking filthy water; partially decomposed milk, cream or cheese adhering to the dairy vessels, on the floor or shelving.

HORTICULTURE.

Accidental Naturalization of Plants.

It is well known that many of our most pernicious weeds are foreign plants, that have been accidentally introduced into this country, where they have become naturalized, and have spread in some cases far more rapidly than on their "native heath." M. Balansa relates two striking cases of this kind in his account of New Caledonia, the island to which so many of the French Communists have been transported. In the first instance, about four years ago, a gendarme, who was transferred to this island from Otaheite, brought with him a bolster filled with the feathery seeds of *Asclepias curassavica*. Having occasion to wash the tick cover, he opened the bolster at the Pont des Francais, when some of the seeds were carried off by the wind, and the plant has since then increased to such an extent as to seriously interfere with cultivation, its roots running under ground to considerable distances, and sending up shoots in all directions, so that it is difficult to eradicate it. In the second case M. Balansa relates that, a few years ago, some boxes arrived from Sydney containing various articles packed in European hay. This was thrown out and left on the ground where the boxes were unpacked. In the following year a new graminaceous plant was observed growing plentifully where the hay packing had been left. This proved to be common couch grass, (*Triticum repens*), and it has spread so rapidly that M. Balansa states it is already exterminating the native grasses.

MELON CULTURE.—The best soil, says *The Rural Messenger*, is that which admits of ready drainage. Watery as the fruit is, it does not require much rain to produce it. In fact, the vines flourish and bear even on a bank of sand. We would then select the lightest piece of ground available—gray and sandy—and put it in good order, using plenty of rotten manure to each hill. Digging holes of sufficient size, and depositing the manure in them during the winter, is doubtless the method to be preferred; but if this has not already been done, we must resort to some other plan. We would still make an excavation, and manure liberally, with a view of retaining moisture in time of drouth. Much depends on giving the plants a vigorous start. Force their early growth with a free application of bone phosphate to the hill. Keep the ground clear of grass and well stirred until the vines begin to cover it, but as the roots run to the full length of the vines, and grow as fast, the working should not be more than two or three inches deep. With this treatment, we believe there would be few failures in growing water-melons, and as they are a favorite with all classes, it is well worth the trouble, whether for market or private use.

DRYING FIGS.—Pick the figs when thoroughly ripe, dry them on racks, as you would other fruit, in the sun, four or five days, or until the water they contain is thoroughly evaporated. If there is any dew, cover them nights. Then place them in a vessel perforated with holes, like a colander, and dip them into boiling water for about one minute, after which again expose them to the sun until the surface water is evaporated; then lay them in wood, tin, earthen or other vessels, and press closely so as to exclude the air and cover securely. In this way it is asserted figs have been preserved equal to the best imported. The scalding answers the double purpose of killing all insect eggs and softening the skin of the fruit so that the sugar will come to the surface, as may be seen on imported figs.—*Moore's Rural New Yorker.*

MISCELLANEOUS.

Velocity of Nervous Impulses.

However slow the rate of nervous movement may be, as compared with the velocity of light or the still fleeter motion of electricity, it is nevertheless so rapid that until quite recently it was thought to be immeasurable, within the limited range in which our observation of it is possible. The most widely separated points in the course of any nerve allow but a few feet of difference at best for timing the periods of sensation or volition; and the nervous impulse travels so quickly that such small distances would seem to be wholly annihilated. To our conciousness a prick on the great toe is discovered as promptly as one on the cheek; and it is only by the intervention of the most delicate and ingenious of mechanical contrivances that the difference in time is made apparent.

In all the early experiments on motor nerves, the leg of a frog had been used. In 1867, Baxt and Helmholtz applied the test to man, using an improvement of the myographicon suggested by Du Bois Raymond. The result gave the rate of conduction for the motor nerves of man, corresponding to that already obtained by Hirsch for the sensory nerves. A very careful series of experiments by the same observers, in the summer of 1869, showed a mean rapidity for the motor nerves in man very much greater, or about 254 feet a second.

The measurement of the rate at which the nervous impulse travels brainward necessarily involves a process very different from any employed in the study of motor nerves. The problem was first attacked by the Swiss astronomer, Dr. Hirsch, soon after Helmholtz took up the other branch of the investigation, and his solution of it was as ingenious as it was successful. It involved the measurement, with the delicate chronometric instruments employed by astronomers, of the difference in time between the appreciation of impressions made at a distance from the brain, say on the great toe, and others nearer, as on the cheek. Roughly described, the plan adopted was substantially this: The observer sat with his finger on a signal key, with which he announced the perception of an electric shock as soon as possible after feeling it, thus closing an electric circuit which had been broken by the shock. The minute interval between the breaking and closing of the circuit measured the time taken by the transmission of the shock to the brain, the time required for the perception of the sensation, time for willing the movement of the signal key, time for the transmission of this volition to the proper muscles, time for the contraction of the muscles, and finally the time lost in the physical process of signaling. Obviously all these parts, except the first, must be substantially the same in all experiments by the same person, using the same finger for making the signal. Any difference in the whole time must therefore be owing to the greater or smaller distance of the particular point of impression from the brain. This difference being measured with tolerable exactness, it is possible to calculate pretty closely the rate at which the nervous impulse is transmitted. The estimate first made by Dr. Hirsch was, as already noted, 111 feet a second. More recent determinations give averages ranging from 97 feet, by Dr. Schleske, to 136 feet, Wittich's estimate for a nervous impulse excited by electricity. With a mechanical stimulus, he found an average velocity of 124 feet. These figures, of course, are to be taken relatively. The rate varies in different individuals, and, doubtless, in the same individual, with varying conditions of health, temperature, and so on, the general average being about that of a high wind, a race horse, or a locomotive. Light excels it about ten million times, and electricity more than fifteen million times.—*Scientific American.*

Spontaneous Combustion.

In a paper on the "Ignition of Cotton by Saturation with Fatty Oils," Mr. Galletly communicates some information confirmatory of the generally received popular opinion regarding the spontaneous kindling of cotton and other open combustible substances which may happen to have imbibed animal or vegetable fatty oils. The apparatus employed consisted simply of a box, in which the cotton saturated with the oily substances was placed, and the temperature then gradually raised in some cases to 130 deg. Fah., the temperature which a body acquires by lying exposed to the vertical rays of the sun; and in others to 170 deg. Fah., about the heat attained in the neighborhood of a steam-pipe, a heated flue, or in front of an open fire. With boiled linseed oil the author found that shortly after the material had reached the temperature of his warm chamber, 170 deg., the thermometer began to rise—from 5 deg. to 10 deg. every few minutes—so that in 75 minutes from the time the box was placed in the chamber, the heat indicated was 350 deg. Fah. At this point, smoke issuing from the box indicated that the cotton was in a state of active combustion; and on returning it to the free access of the air, it burst into flames. In another similar experiment, the temperature rose more slowly, but reached 280 deg. Fah. in 105 minutes, when, from the appearance of smoke, it was plain that the cotton was burning; and the whole mass was soon in a flame on being placed in a current of air. Raw linseed oil was found not to cause ignition of cotton so readily as the boiled oil, but under conditions similar to those of the above described experiments, active combustion was going on in one case in four, and in another five hours. With rape oil under the conditions of the first experiment, the result was that the box and contents were found in ashes in ten hours—the box being put up at night, the result was only observed in the morning. Olive oil caused active combustion within five or six hours. With castor oil the contents only charred on the second day of the experiment. Lard oil, specific gravity .916, produced rapid combustion in four hours. Seal oil, specific gravity .928, the same result in 100 minutes. Sperm oil gave negative results. The author, as the result of his work, advances the opinion, from a comparison of raw linseed with lard and seal oils, that the statement is not altogether correct that "drying oils are more liable to spontaneous combustion than non-drying oils; and that the rate at which oxidation takes place does not depend chiefly on the presence of small quantities of putrifiable matters, but rather upon the particular olein or liquid fat they contain." The results of the experimental trials are stated to have been remarkably uniform. The author states that the ignition of cotton can be calculated on for any oil with the same certainty as the point at which sulphur or other combustible matter inflames in air. The heavy oils from coal and shale were found to effectually check the phenomenon above described; for when mixed with the oils above named they gave no indications of heating whatever at 170 deg. Fah.

A FIBROUS bark of the sugar palm proves to be a good substitute for bristles and animal and human hair. The treatment is simple. The bark is first immersed in water and boiled for some time in an alkaline solution; the fibers are then soaked in an emulsion of fat, alkali and water for about twelve hours, after which time they are sufficiently hard and elastic for the above-named use.