

assist the work, much on the same plan as State aid is now given in road building.

That the importance of the mosquito is truly understood as regards its relation to the public health in the Panama Canal territory is shown by the appointment of Dr. William C. Gorgas, Assistant Surgeon-General, U. S. A., who has instructions to provide drainage for swamps and all mosquito-breeding places in that district. He is now in Panama for that purpose.

The board of health of the village of Lyons, N. Y., has recently adopted a new rule, requiring that all open barrels, casks, or cisterns containing water shall be covered with mosquito netting, to prevent the escape of any mosquitoes breeding on the surface.

Under the right conditions it is astonishing what a large quantity of mosquitoes will develop and breed from a small amount of water.

There are localities under our own observation which have been free from mosquitoes for six years past, which for many years were unbearable to live in in hot weather, all due to the elimination of stagnant pools by simple drainage.

The extermination of the mosquito is a question of growing importance, and we hope will receive general attention among the various States and Territories of this country. The remarkable progress made in Havana, Cuba, in this direction in the prevention of yellow fever by protection from mosquitoes is a notable example of improvement resulting from hygienic scientific investigation.

A VEGETABLE BUTTER.

Our delicious table butter made supposedly from the cream obtained from cow's or goat's milk, besides having a dangerous competitor in oleomargarine, is menaced anew by a substitute no less formidable in character; this is an exotic product—the butter, in fact, extracted from the meat of the coconut. This must not be confounded with cacao butter, which, though sounding very similar to cocoa butter, is nevertheless prepared from an entirely different nut and used for quite other purposes.

The coconut tree, that most providential growth of the tropics, produces, without cultivation, a nut with which we are all familiar. Contained within its hair-covered and ovoid shell is a most delicious milk, a cooling draft which quenches the thirst of the way-worn and jaded traveler and refreshes the tired laborer. Science has made the important discovery, too, that its meat, of which there is always a generous supply, when dried and pressed furnishes a whitish substance which solidifies at 20 deg. C., but above this temperature runs into a yellow and translucent oil. The annual importations of cocoa-oils coming from India and Africa are considerable. The better grades are drawn from Cochin China, the island of Ceylon, from Australia, and from Karri-Kall, well down near the end of the Kara peninsula. These various commercial grades are obtained by pressing—first cold, then warm—the pulp extracted from the nut which has been previously divested of its shell.

This nut produces 60 per cent of oil, and the coconuts collected upon a hectare of land (a fraction over 2 acres) planted to these trees will yield an annual production of 800 kilogrammes of oil which readily oxidizes or becomes rancid, recalling, by its taste, the fruit from which it is derived. Till now this oil has had no other industrial use than furnishing the fats for soap or oil for the lubrication of machinery, the better sorts being employed in the preparation of textiles.

Under the name of "copra" the meat of this coconut comes to our shores and is here employed in the manufacture of this industrial oil, the residuum, in the form of a press cake, being fed to cattle to fatten them. According to a French publication, it is in France that this coconut oil is subjected to special treatment, from which it emerges to become the formidable rival above indicated of our cherished butter made from cow's milk.

A German chemist of prominence, Dr. Heuner, proposes to buy up all the coconut oils and to transform them into a succulent, savory, inodorous product which is soluble in ether and possesses no acid reaction; to this product he announces his intention of giving the name "vegetable butter."

Of all the vegetable oils, that extracted from the coconut is the one of which the composition approaches more nearly to the butter made from milk.

Like true butter, it contains 7 per cent of soluble acids, which are not found in such considerable proportion in any other fat. These are butyric acid, capric or decylic acid, which give to our table butter its pleasant aroma and a very pronounced taste of the hazelnut.

Moreover, cocoa butter contains from 25 to 30 times less water than true butter. It will keep 15 or 20 days without showing any acid reaction, and from this fact seems to offer a real superiority over animal butter for use in the preparations of dry pastry, biscuits, and such like.

The process advocated by Dr. Heuner for the treatment of coconut oils and from them thereby to obtain a butter in every way adapted for food is that which Dr. Schlink has already put into practice. It consists simply in relieving these oils of their fatty, volatile, and odorous acids, as well as of their other aromatic principles, by means of alcohol and bone-black. After this treatment the product obtained has the appearance of a whitish mass of the consistency of ordinary butter, possessing a sweet savor; it melts at 25 deg. C. and shows the following component parts:

Fatty matter	99.632 per cent
Mineral matter	0.011 per cent
Water	0.357 per cent

The price of cocoa butter, we are informed, is about 1 franc 60 centimes a kilogramme, something over two pounds, and is much lower than that of butter made from cream; moreover, since it contains little or no water, less of it would be required by weight, and, because of its slowness of oxidizing, confectioners and bakers would find it to their advantage to use it for cakes, pies, and other things in their lines, because they would not get stale and unmarketable so quickly.

From the standpoint of hygiene it may be well to remember that butter made from milk occupies the first rank among substances which are most favorable to the culture of microbes and of the worst ferments, while cocoa butter, on the contrary, seems to be an antiseptic medium very improperly qualified for the dissemination and propagation of bacteria. In this respect, comparative experiments made upon both of these substances have given results which do not admit of doubt as to which is the better antiseptic.

Finally, experiments upon the artificial digestion of this form of butter, carried out in the Central Hospital of Vienna, have given equally gratifying results and been confirmed later by other experiments in the different hospitals of Switzerland.

While it has not yet been satisfactorily demonstrated that coconut oil can furnish a butter capable of supplanting the delicious products of the dairies of Isigny and Brittany, it is, however, significant that the various boards of health have not raised their veto against the human consumption of this new product; which, let us hope, will not lend itself, like oleomargarine, to the fraudulent adulterations which defy the keen understanding of the chemist.—Translated from Science, Arts, Nature.

HISTORIC FOREST FIRES.

When all the conditions are favorable, forest fires sometimes reach gigantic proportions. A few such fires have attained historic importance. One of these is the Miramichi fire of 1825. It began its greatest destruction about 1 o'clock in the afternoon of October 7 at a place about 60 miles above the town of Newcastle, on the Miramichi River in New Brunswick. Before 10 o'clock at night it was 20 miles below Newcastle. In nine hours it had destroyed a belt of forest 80 miles long and 25 miles wide. Over more than two and a half million acres almost every living thing was killed. Even the fish were afterward found dead in heaps along the river banks. Five hundred and ninety buildings were burned, and a number of towns, including Newcastle, Chatham, and Douglstown, were destroyed. One hundred and sixty persons perished, and nearly a thousand head of stock. The loss from the Miramichi fire is estimated at \$300,000, not including the value of the timber.

In the majority of such forest fires as this the destruction of the timber is a more serious loss by far than that of the cattle and buildings, for it carries with it the impoverishment of a whole region for tens or even hundreds of years afterward. The loss of the stumpage value of the timber at the time of the fire is but a small part of the damage to the neighborhood. The wages that would have been earned in lumbering, added to the value of the produce that would have been purchased to supply the lumber camps and the taxes that would have been devoted to roads and other public improvements, furnish a much truer measure of how much, sooner or later, it costs a region when its forests are destroyed by fire.

The Peshtigo fire of October, 1871, was still more severe than the Miramichi. It covered an area of over 2,000 square miles in Wisconsin, and involved a loss in timber and other property of many millions of dollars. Between 1,200 and 1,500 persons perished, including nearly half the population of Peshtigo, at that time a town of 2,000 inhabitants. Other fires of about the same time were most destructive in Michigan. A strip about 40 miles wide and 180 miles long, extending across the central part of the State from Lake Michigan to Lake Huron, was devastated. The estimated loss in timber was about 4,000,000,000 feet board measure, and in money over \$10,000,000. Several hundred persons perished.

In the early part of September, 1881, great fires covered more than 1,800 square miles in various parts of Michigan. The estimated loss in property, in addition

to many hundred thousand acres of valuable timber, was more than \$2,300,000. Over 5,000 persons were made destitute, and the number of lives lost is variously estimated at from 150 to 500.

The most destructive fire of more recent years was that which started near Hinckley, Minn., September 1, 1894. While the area burned over was less than in some other great fires, the loss of life and property was very heavy. Hinckley and six other towns were destroyed, about 500 lives were lost, more than 2,000 persons were left destitute, and the estimated loss in property of various kinds was \$25,000,000. Except for the heroic conduct of locomotive engineers and other railroad men, the loss of life would have been far greater.

This fire was all the more deplorable because it was wholly unnecessary. For many days before the high wind came and drove it into uncontrollable fury, it was burning slowly close to the town of Hinckley and could have been put out.—Gifford Pinchot in Farmers' Bulletin.

SCIENCE NOTES.

It is not a pleasant thought that the brilliant white note paper which your hand rests upon may have in it the fibers from the filthy garment of some Egyptian fellah after it has passed through all the stages of decay until it is saved by a ragpicker from the gutter of an Egyptian town; and yet it is fact that hundreds of tons of Egyptian rags are exported every year into America to supply our paper mills. At Mannheim on the Rhine the American importers have their rag-picking houses where the rags are collected from all over Europe, the disease-infected Levant not excepted, and where women and children, too poor to earn a better living, work day after day, with wet sponges tied over their mouths, sorting these filthy scraps for shipment to New York. Our best papers are made of these rags and our common ones of wood pulp, which is obtained by grinding and macerating huge blocks from some of our soft-wooded forest trees.—David G. Fairchild in the National Geographic Magazine.

Major James Harrison has just returned to England after a prolonged journey through the dense forests of Central Africa, during the course of which he saw the okapi in its natural habitat. Major Harrison penetrated the Stanley Forest to the region peopled by the pygmies, in search of this animal. His efforts in this country were, however, not successful, so he directed his way to Jabir, and thence into the great forest of De Melley. This forest is particularly dense, the trees being thickly interwoven with dense creepers and tangled undergrowth; in fact, it could only be penetrated by crawling on the hands and knees, a most difficult and arduous operation. On the sixth day after he had entered this forest, his party encountered the spoor of the okapi. This was followed for several hours, when suddenly the party came upon the animal some fifteen feet in front of them. The animal was startled by their approach, and before the major could obtain his rifle from one of the natives accompanying him, the animal had darted into the thick undergrowth. The view that the hunter obtained, however, was sufficiently long to enable him to observe its general characteristics. The animal stood between ten and eleven feet in height, was of a general tawny color about its body, and was striped over the loins. The truth of Major Harrison's story is vouched for by the natives and pygmies who accompanied him on the expedition, and they say he is the first white man who has seen the animal in its native wilds.

An expedition is being organized in Great Britain for the exploration of those regions of British Northern Nigeria Protectorate situate nearest the western shore of Lake Chad. The object of the expedition is to survey and investigate thoroughly, and to gather some zoological knowledge indigenous to the country traversed. Some three months will be spent at a place called Tonga on the Gongola River, one of the northern tributaries of the Benue, which is conveniently situated for exploring the provinces of Southern Bornu and Bauchi. The expedition is equipped with two steel flat-bottomed shallow-draft boats. These have been built in sections for easy transit to Africa, and will there be reassembled. They have been provided to facilitate navigation of the shallower rivers, and will prove of great assistance in both the survey work and the collection of zoological specimens. After completing all the work that can be accomplished from the Tonga base, the expedition will move northward into the basin of the Koma-Lugu River, where a considerable area of little-known country will be mapped and explored. Proceeding down the river to Lake Chad, Kuka will be reached. Thence it is hoped that the party will be able to proceed to the German and French spheres of influence on the southern shores of the lake, and the return journey will probably be made by way of Shari and Logone Rivers, past Lake Triburi, to the Kebbi, which is a tributary of the Benue.