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Attention is called to the "Wants" column. It is invaluable to those who use it in soliciting information or seeking new positions. The name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

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CREMATION OF CHOLERA CORPSES.

BY ALBERT S. ASHMEAD, M.D., LATE FOREIGN MEDICAL DIRECTOR OF TOKIO HOSPITAL, TOKIO, JAPAN.

JAPAN has almost everything, or believes that it has almost everything, to learn from us; but there are a few things which it would be wise for us to consent to learn from Japan. The Japanese, a prey from time to time, like all Oriental countries, to cholera epidemics, and, having the cholera always with them endemically, have early found out that the cholera corpses should be burned.

There are in the city of Tokio six crematories. They are not only destined to the incineration of cholera corpses; for cremation is imposed as a religious duty by a number of Buddhist sects. In the oldest cemetery in Japan, that of Koya-san, near the great water-falls in Wakayama-Ken, 700 English miles south of Tokio, cremation has been practised, as is generally believed, as a religious rite these 1200 years.

Naturally, the rite of incineration had no difficulty in that country in passing from the religious conception to a sanitary application. The first sanitary cremation edict was issued by the government in 1718, during an epidemic which seems to have been very destructive. Japanese documents speak of that period with trembling awe; 80,000 a month died in the city of Yedo; undertakers could not make coffins fast enough; grave-yards were all filled up. The Japanese are singularly struck by the idea that the men who worked at the cremation furnaces after sunset were themselves changed into smoke before sunrise, and that the tomb stone cutters of a day found (*horribile visu!*) their own names carved on the morrow's tombstones! Finally the priests of all the sects united in asking for a general application of the cremation rite; ashes alone, they said, should be buried; at every burial-ground mountains of casks discouraged the diligence of the grave-digger; a multitude of corpses (the Japanese documents have the simplicity to add that they were mostly poor persons) remained unburied for weeks. The Japanese have long believed that this was a cholera epidemic, the first that ravaged the *fertile sweet-flag plain;* but that is a delusion. Cholera paid them its first visit more than a hundred years later. It was then that the religious character departed once for all from the cremation rite; for the government, seeing that the fire was too slow, ordered the bodies, wrapt in mats and quick-lime, to be sunk into the sea; cremation ever after was only a sanitary operation.

In the past thirteen years there have been 456,080 reported cholera patients in the empire; of these 303,466 died, that is, 66½ per cent. Every one of these corpses has been burned. Under police regulations, in the city of Tokio, there may be eight public crematories (of course, this has nothing to do with the private establishment of each Buddhist burial-place), placed outside of the city-limits. The law requires that they shall be constructed of brick and large enough to burn at least twenty-five corpses at a time. Each furnace must have a chimney over thirty feet high. Each crematory is expected to have a separate furnace for burning discharges, and a separate disinfecting room. This furnace is to be of brick and capable of incinerating at least twenty-five casks (bushels) at a time; its chimney must be thirty feet high. The law requires further that the disinfecting compartment shall be divided into two spaces, one a bath-room, not for the corpses, of course, but for persons suspected of harboring the disease; the other a fumigating place. Cremation can only be performed from sunset to sunrise; the corpses are not stripped of their clothing, and are one and all accompanied by their burial certificate.

In the Buddhist cemeteries cremation is thus performed. The corpse is brought in a square wooden box or barrel (the regular Japanese coffin) in a sitting position, according to the national custom. A hole in the ground with sloping sides awaits it, at the bottom of which are two stones, upright and parallel; across the top of these stones fire-wood and charcoal are piled. Around the corpse, placed upon the pile, a circular wall is built up, formed of rice-straw and chaff, perhaps to a height of five or six feet, and the wall itself is wrapped in wet matting, which during the whole operation is continually moistened. The fire is kept up during twelve hours, after which the ashes and bones are picked up with chop-sticks by the oldest representative of the family, enclosed in a funeral urn, and buried after seven days of various religious observances.

It is most regrettable that cremation has not with us that religious origin which recommended it first to the Japanese. Reason and good sense have never proved such strong foundations; otherwise the advisability of the cremation of cholera corpses would have occurred to us long ago. It is useless to object that these precautions do not preserve Japan from cholera epidemics. The disease is kept up there by causes which cannot be reached by cremation. The houses are built in unhealthy places, they are squalid and in every way insalubrious; the water is wretched, infected by impurities dropping from ill-kept closets. There would be no end, if we tried to enumerate all the causes of disease, which render the wisest precautions useless. None of these causes exists in our western countries, and the cremation of cholera corpses would have yielded its whole sanitary benefit. If we burned our corpses, the bacillus would be destroyed effectively; in Japan, the dejections of the living, contaminating the well-water, the system of promiscuous public bathing, etc., keep it alive in spite of the cremation.

When the cholera, some years back, made its appearance, not in New York, indeed, but in its harbor,—that is, in the quarantine station,—having been brought by an Italian

immigrant ship, the dead were buried on Staten Island at the quarantine burying-grounds. If we were as ready to profit by past observation as we ought to be, cremation would have been introduced then and there. For in 1866, when some cholera immigrants had been buried on Ward's Island, an epidemic started almost immediately in the part of the city nearest to that burial-ground; there, in 93d Street and 3d Avenue, the first case occurred. This was certainly a fact to be taken into serious consideration. No man interested in the health of his fellows will be content to say that this was only chance. And if it is more than chance, why then has it never been proposed to prevent the propagation of the disease by fire, as other peoples have long been accustomed to do?

There are four rules, by observing which we can absolutely prevent cholera from setting foot on this continent: —

1. Let the drinking-water be perfectly isolated; that is, keep the cholera germs from the drinking-water.

2. Let the fœces and other discharges be disinfected with quick-lime or common white-wash. This is, by the way, what Professor Koch recommended to the Central Sanitary Board of Japan.

3. Let the clothing be disinfected with dry heat, 100° C., and afterwards with steam.

4. Finally, let the cholera corpse be cremated instead of buried.

4 King Street, New York.

ACORN-EATING BIRDS.

BY MORRIS GIBBS, M.D.

IN Michigan there are, to my knowledge, six species of birds which feed on acorns. Of these, the passenger-pigeon and mourning-dove swallow the acorn entire, with its shell intact, only removing the cup or rough outside covering. The white-bellied nut-hatch occasionally hoards the acorns away, and only draws on its store after some months, and when the firm shelly covering readily gives away to its sharp, prying bill. The other three are the well-known blue-jay, common crow-blackbird, and red-headed woodpecker. The methods employed by these birds in opening an acorn are so entirely different, that a description may not be uninteresting to your readers.

Kalamazoo City is nestled in a valley which was once nearly filled with oak trees, and large numbers of the burr-oak, *Quercus macrocarpa*, are still standing. The acorns of these trees, sometimes called over-cup or mossy-cup, are nearly ripe and are now falling, and the birds which feed on them gather to satisfy their love for the nutritious kernels. So far as I am able to learn, the birds, except in rare instances, do not pick the acorns from the tree, but have to content themselves with the fallen fruit. Occasionally one sees a bird attempting to pick an acorn, but it is rarely a success, as the twigs are small and do not accommodate the swaying bird well, and, moreover, at this season of the year, many acorns are still strongly attached.

The red-head, deigning to descend to the ground, seizes an acorn, and flying with it in its bill to a spot where there is a small cavity in the dead portion of a trunk, or to a crevice in the bark, immediately begins to hammer it with its sharp-pointed bill. In a couple of strokes it has removed the outer shell or cup, and at once attacks the still green-colored shell which directly surrounds the meat. The inside, or shell proper, quickly gives way, usually nearly in halves, and the woodpecker enjoys the kernel. The red-head rarely comes into the city, and is never here continuously, but at this season he is quite often seen and heard, and I have thought that the acorns brought him. The woodpeckers are as nearly strict insect-feeders as any birds we have, unless an exception is made of the swifts and swallows, yet here is an instance of a varied diet. However, the red-head is quickly satisfied in the acorn line, and soon begins circling the trunk, or more often limbs, for his legitimate food.

The blackbird confines himself to the ground in his efforts for acorn meats, and I have yet to see him in a tree with one. Walking up sedately to an acorn, and making no effort to seize or confine it, it strikes savagely and almost aimlessly. Its bill frequently glances, and the splintered shell dances about, until at last a huge piece of the kernel is dragged out, after which the bird leaves for other quarters or begins on another acorn.

The jay swoops down with flaunting blue wings, and, seizing the largest acorn on the ground, flies to the nearest convenient limb or onto the decayed ridge-board of an adjacent building. There, firmly pressing the nut between his big, black feet, he hammers away with a vengeance, and quickly tears off nearly half of the shell, after which it proceeds to pick out the meat in small bits. The cup is often left nearly perfect, the jay never making an effort to secure the nut entire, which he could easily do.

Walking under the oaks, one can readily tell whether the woodpeckers, blackbirds, or jays have been at work among the acorns, by the appearance of the mutilated shell-remains lying about.

Kalamazoo, Michigan.

LETTERS TO THE EDITOR.

**** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

The Intelligence of a Horse.

CAN a horse reason, or does he act solely from instinct? Many believe that he has reason and intelligence; others attribute all his acts to instinct. As a help to elucidate this question, I wish to present the readers of *Science* the following statement of facts based on long and close observation.

I have a horse, now nineteen years old, that I have owned thirteen years. I have used him all this time almost every day, harnessed to a buggy, in going back and forth to my office. He is very gentle, good-natured, and kind, and has never shown any vices. Soon after I commenced using him, I noticed that on Sundays, whenever I drove him down-town, he strongly insisted, by pulling on the lines, on going to the church where I had been in the habit of attending. I watched this disposition constantly after that, and on every Sunday since, when driven out, he has continued to do the same thing, and, if left to his own will, invariably goes to the church and stops. I thought it possible that he was guided by the ringing of the church bells, and tested him by driving him down-town at all hours of the day, before and after the ringing of the bells; but the result was the same. He invariably insisted on going to church on that day, no matter how often I drove him down-town. My office is one block west and one north of the church, and a half-mile west of my residence. In going to church I usually turn south one block east of the office, but sometimes go around by the office, where I usually drive him every morning and afternoon. In going to my office he never offers to go to the church except on Sunday, but on that day he invariably begins to turn south to the street leading to the church, from fifty to a hundred feet before reaching the crossing, and, if not checked, turns into the street and hurries to the church. He has kept this up for at least twelve years. He never does this on any other day than Sunday. In bad weather or in good weather it is the same, although at the office much of the time he has had stable protection from bad weather. On week-days he often insists on going to the stable in bad weather; but on Sunday, even when I compel him to go by the way of the stable, he pulls over to the opposite side of the street, and hurries on to the church, if permitted, though he may have to stand out in the cold, rain, or snow.

Sometimes, from one cause or another, he has not been taken away from home from one to four weeks, and I supposed that he would lose the run of time, or at least show some hesitation and uncertainty; but not so. On the first Sunday after I drove him out, he insisted, as before, on going to church. He never offers to go