bark, twigs, leaves, etc., I found in this quantity of the drift, by actual count, 1,583 seeds and fruits of more than 55 species of plants. These are without exception substances which have been found in the stomachs of birds. What a rich variety of food there is in the drift heaps, and what a truly enormous quantity there must be in the cast-up material which lines the shores of all of our waters. Besides the vegetable matter there were also several insect pupæ and a few living chrysomelids and weevils.

The following seeds and fruits were contained in a half pint of drift collected along Northwest Branch, Montgomery County, Md., March 19, 1905: Tulip-tree (262), pigweed (199), purslane (145), cowbane (124), elderberry (108), witch grass, etc. (98), oats (75), black mustard (74), common ragweed (51), sedges of genus *Carex* (44), buttonweed (39), pale persicaria (38), *Polygonum* spp. (35), lamb's quarters (31), spotted spurge (31), blackberry (28), great ragweed (21), green foxtail (18), yellow sorrel (18), beaked rush (17), yard grass (17), white ash, (12), mountain laurel (10), rice cut-grass (9), pokeweed (8), sedges beside *Carex* (8), black bindweed (7), Pennsylvania persicaria (6), aster (5), alternate-leaved dogwood (4), basswood (4), tubers of sedge (4), wild turnip (3), cockspur grass (3), broad-leaved dock (3), kinnikinnik (3), water oak (3), summer grape (3), green ash (2), touch-me-not (2), broad-leaved arrowhead (2), poison ivy (2), *Paspalum* sp. (2), water plantain (2), cocklebur (2), nightshade (2), corn cockle (1), bloodroot (1), scarlet sumac (1), spiderwort (1), beggar's ticks (1), mulberry (1), pine (1), spatterdock (1), sourgum (1).

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AN UNDESCRIBED ALTERNARIA AFFECTING THE APPLE.

An apparently undescribed species of *Alternaria* was found on a single specimen of apple a year ago while the writer was investigating apple rots at the Michigan Agricultural Experiment Station. On coming to this place the same fungus was found to be one of the most common causes of rot in apples in the state of Colorado. Professor W. Paddock, of the Colorado Experiment Station, had already done some work with this fungus.

The disease manifests itself by attacking the blossom end of the fruit, causing a decayed area of a very dark brown color. This area may remain quite small or it may gradually enlarge until the whole fruit is involved, after which the decayed specimens dry down to a shrivelled, hard mass. The fungus appears to affect different varieties to an unequal degree, some apple growers having reported that it is almost impossible to secure ripe fruit of certain kinds because of the attacks of this disease. In other cases it has been found associated with a blackened condition of the seed cavity in ripe fruit, the carpels being much discolored on the inner side. This condition may also be accompanied by a kind of core rot due to the invasion of the flesh around the carpels by the fungus.

Inoculation experiments are being carried on with a view to determine other possible hosts, as well as the characteristic effects of the fungus on the apple.

The fungus is apparently carried through the winter on portions of the flowers and fruit that were attacked by the fungus during the preceding season and which are still attached to the trees. Reports indicate that the fungus can be readily held in check by spraying with Bordeaux mixture.

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January 18, 1905.

ON THE USE IN SURGERY OF TENDONS OF THE ARDEIDÆ AND GRUIDÆ.

The subject of sutures and ligatures and their proper sterilization and use has long been an important subject in the realm of modern surgery. Various materials have from time to time been recommended, many to drop by the wayside, and we find even in the materials of the present day, namely, catgut, kangaroo tendon, silk, silkworm gut, horse hair and silver wire, great difference of opinion in the minds of surgeons as to their use.

The recent introduction* by Dr. Kieffer of an entirely new material will be of much interest to the surgeon, but it likewise will be of no less interest to the American ornithologist. Dr. Kieffer found after a series of experiments that the tendons of the Ardeidæ and Gruidæ made an excellent suture and ligature and, moreover, that they seemed to possess some advantages over the present materials, principally kangaroo tendon and catgut. The flexor and extensor tendons of the great blue heron (*Ardea herodias*) were first made use of, and later those of the sand hill crane (*Grus canadensis*) and whooping crane (*G. americana*). The tendons were readily made aseptic by the Claudius method of sterilizing catgut.

Regarding his experiments Dr. Kieffer says: "There is still room in the armamentarium of the surgeon for a reliable, slowly absorbable suture and ligature material. I have been recently investigating a material which I believe to be entirely new. Dr. Geo. P. Johnson, of Cheyenne, called my attention to the long and strong tendons in the legs of the bird commonly known throughout the United States as the blue crane. He had used this material with excellent results as a suture for the aponeurosis in a case of hernia, the suture giving no trouble and apparently being absorbed in time. I obtained from him a number of these tendons and immediately began a series of experiments to test their value. * * * As a result of these studies I have come to the conclusion that we have not only a valuable suture and ligature material, but one easily obtained in all parts of the world." It is to be wondered that the tendons of the larger grallatorial birds were not long ago thought of as suitable material for surgical purposes. Dr. Johnson is to be commended for his originality.

Thus the herons and cranes are given an economic value which unfortunately must further add to their destruction. Think of the thousands of these birds which would have to be killed annually should this material be adopted for ligature and suture purposes by even a small proportion of our American surgeons.

It is the least of my desire to criticize the author above referred to. His well-conducted experiments are commendable, but only to voice a word of warning to what at present might prove the extermination of the larger members of two great families of birds.

Unlike the Anseres (ducks, geese, swans) and members of the order Gallinæ, notably the bob-white (*Colinus virginianus*), the members of the Ardeidæ and Gruidæ are far from prolific breeders. Members of the latter-named families rarely lay over five eggs, while certain ducks lay as high as fifteen and the bob-white often more than twenty. Moreover, the latter two species often raise more than one brood in a season, and it is doubtful if the herons and cranes ever do. This will partially account for the survival of the game birds in spite of the inroads caused by gunners. Furthermore, herons build in colonies termed heronries, so that once the breeding place is located their capture is made easy. Thus the herons (*A. herodias*) of any one county of Michigan, for instance, might be exterminated by one hunter in the course of a season, should there be demand.

Unlike a great proportion of our American birds, little can be said of the economic value of members of the above-mentioned families, either as benefactors to agriculture as insect and weed-seed destroyers, or as articles of food.

A plea for the herons and cranes then can be made solely on sentimental grounds. It is their esthetic value, not as songsters, but their beauty, the grace which their presence adds to the landscape of the various portions of our continent. The history of a departing race is always a sad one and, judging from the thousands of dollars which are spent annually on our zoological gardens, we are inclined to believe that our people admire rather than desire to exterminate any of our native fauna. Truly the places occupied by our herons and cranes is a typical one, and as ornithologists we should aim to preserve rather than destroy.

Already some members of the tribe have

*'A New Material for Sutures and Ligatures,' Charles F. Kieffer, M.D., *Jour. Am. Med. Assn.*, 1904, pp. 1519–1522.

been driven to the verge of extermination by the plume hunters. A strong public sentiment has been raised of late in favor of these species, not only in this country, but in various countries of Europe. Under the present conditions the organized bird protectors of this country, the Audubon societies, had looked for an increase in these species under our more recent laws regarding birds, but it is plain to see that should the tendons become popular with our surgeons for ligature and suture purposes the birds might have a still greater enemy. I do not consider the statement sweeping when I say that the extermination of some species would be only a matter of time.

However, as the author concludes: "Think of the comfort to the civil or military surgeon in isolated places of knowing that he can have a suture material at the end of his shot gun."

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Note on the Occurrence on Grain of Organisms Resembling the Bacillus Coli Communis.

It is a well-known fact that bacteria exhibiting the reactions of the *Bacillus coli communis* are widely distributed in nature, being found even on material least liable to pollution from any animal sources. Thus Prescott* has shown the occurrence of colon forms in wheat flour, corn meal, breakfast foods and various other food-stuffs only remotely liable to infection, as they are handled only on the large scale and in the open field or large mill. He also demonstrated their constant presence on certain grains—oats, barley, rye, wheat, buckwheat—taken directly from seed-warehouses and stores but slightly liable to contamination. Papasotiriu† has also demonstrated the presence of such forms on grains, showing them to be commonly present when small numbers of grains were studied. In his investigations cultures of ten kernels each of wheat, rye, barley, oats, peas, beans and corn were made in dextrose broth in triplicate, fourteen out of the twenty-one cultures giving positive results. The presence of these simulating forms in dough and articles manufactured from the hexoses has been studied carefully, especially by Lehmann and his pupils;* since, however, during the preparation such food-stuffs could become readily infected by the necessary handling, the results have less importance from the sanitary standpoint.

During the past months I have made some further investigations to determine whether bacterial forms simulating closely in their behavior the *B. coli communis* were present on grain which in all probability could not have become contaminated by direct contact with fæcal matter. In all investigations thus far reported some doubt may be cast on the integrity of the samples, or at least there is a possibility of contamination from handling or manufacture. In November, 1904, a field of rye was found in western Massachusetts which, owing to the scanty growth, had not been cut. The field is on light soil, on a level, open, sandy plain, and stands well back from a country road not heavily traveled. Inquiry showed that the field had not been fertilized and that no cattle had ranged through the grain during the fall. This stand of grain, therefore, may be taken as a typical open country growth free from contaminating influences. From this field heads of grain were picked with sterilized forceps and put into sterilized glass tubes. These heads were incubated separately in bouillon for twenty-four hours and then differentiated out through lactose-litmus-agar into pure culture, following the usual procedure. At the first test eight heads were thus treated and one gave abundant growth of an organism which repeatedly showed the characteristics of *B. coli communis,* and allied groups of organisms, solidifying and decolorizing litmus milk, giving a white expansive growth on agar, a heavy growth in bouillon, fermentation in dextrose broth with fifty to eighty per cent. gas production, fermentation in lactose broth with thirty to forty per cent. gas production, heavy indol reaction, heavy reduction of nitrate and a dirty yellowish growth on acid potato.

* See papers in *Archiv für Hygiene.*

* Science, New Series, Vol. XV., No. 375, 1902, p. 303.

† *Archiv für Hygiene,* 1902, Vol. XLI., pp. 209–210.