

returned with a statement made out by his attorney to the effect that I would be in no way responsible for the outcome in case I operated. With him he brought some friends to urge this on me. On opening the skull we found absolutely nothing in the area of the cuneus. Evidently the original injury was a laceration deep in the basilar area.

The second case was that of a man with fractured skull due to a rock falling on his head from a height. The cutaneous wound was small, but the fracture involved the major portion of the left side of the skull. There was no paralysis, but complete aphasia; neither could he write. His understanding of written language was questionable, likewise that which he heard. The bone just above the commencement of the Sylvian fissure was most depressed. This was removed. The remaining area on the side of the head was left intact after adjusting the fragments of attached bone as best I could. A primary healing followed, and at present he can speak well enough to get about and ask for necessities. The distinct localization made it tempting to explore further in each case, but I am sure it would have been more harmful than beneficial.

DR. W. H. EARLES, Milwaukee, Wis., closing—This paper has been read in the hope that it may stimulate a more thorough application of the knowledge we have on this subject. The point that I especially wish to emphasize is that we do not exercise that amount of care and judgment that we should in these cases. Nowhere else in our operative work are we so tempted to hurry up the operation without satisfying ourselves as to the exact conditions present.

A few years ago I was called to treat a man who was suffering from epilepsy. He gave a history of good health until one year prior to the time that I saw him, when he fractured his skull in jumping from a fourth-story window. He told me that he had a silver plate in his skull. I did not credit the silver plate part of the history, and did an operation on the injured side of the head, when I found this plate (showing plate). His epilepsy, however, continued. I was satisfied that there was some condition present closely associated with his fits, and, after waiting two weeks, I had his head again shaved. On making the second examination I found on the opposite side of the head from that operated on, a very small scar and beneath it a depressed fracture. The scar was so small as to have escaped my attention at the time of the first operation, and the original wound had apparently been so insignificant as to have escaped the notice of the operator at the time of the primary operation. He had seen the injury on one side and performed an operation for its repair, but the injury on the other side being insignificant in appearance, did not receive apparently the attention it deserved. After the second operation the epileptic seizures discontinued, and did not reappear as long as the man was under my observation—about six months. I do not know what the final results were.

I cite this case to show the necessity of great care in examining the class of injuries referred to. I think if we will exercise what knowledge we have, and be more careful in our primary examination of the patients, we will have fewer cases of traumatic epilepsy.

**Intoxication with Croton Oil.**—The *Bulletin of the Societe de Pharmacie* of Bordeaux gives the details of a criminal case in which a wife killed her husband by adding two or three drops of croton oil twice daily to his food, for five months, with rare exceptions. The symptoms induced were a smarting and burning in the throat and stomach, violent vomiting after meals, daily repeated copious alvine discharges, with intense colicky pains for hours, and death at last in extreme emaciation. The medical experts were unable to detect the croton oil by any know test in the cadaver, even after the wife had confessed, but Barthe was able to identify it in spots on a cloth with which the bottle had been wiped. He also emphasizes the siccativ properties of croton oil. The stomach and small intestine showed a number of superficial erosions and hemorrhagic dots, the organs much congested. No characteristic lesions were noted in the large intestine or other organs; the kidney and liver were apparently normal, as also the brain, etc.

## CLINICAL DIAGNOSIS OF INTESTINAL PARASITES.\*

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In diagnosing intestinal parasites, we may use various methods, but the best method is undoubtedly the microscopic examination of the feces.

### DIAGNOSIS BY SYMPTOMS.

The practitioner who relies on symptoms alone in his diagnosis will undoubtedly often successfully recognize the true nature of the trouble, especially in the infections. For instance, when we are in the area of hookworm disease and meet a typical case we note a complex of symptoms which is quite characteristic, and in most cases of this kind a microscopic examination seems unnecessary. In numerous cases and in practically all light cases of this disease, however, a diagnosis on symptoms alone is uncertain unless we find severe cases, such as clay-eaters, in the same family. Outside of the infected area, probably few physicians would care to risk a definite diagnosis of this disease on symptoms alone even in the severe cases, while in medium and light cases it would be most folly to do so.

### BLOOD COUNTS.

Blood examination has become almost a matter of routine in the better hospitals and also in the practice of many physicians, and in all such examinations we should bear in mind the important fact that an increased eosinophilia is an indication of parasitic infection with animal parasites. Hence, when an increased eosinophilia is noticed, we should immediately make a microscopic examination of the feces for ova or embryos of parasites, and if these are not found should consider the possibility of trichinosis, especially in obscure typhoid-like cases.

### GROSS EXAMINATION OF THE FECES.

Physicians in general appreciate the importance of gross examination of the feces of infants, but less attention is given to an examination of the stools of adults.

In some cases a gross examination of the stool may reveal segments of a tapeworm, or in some cases of nematode infection the adult worms may be found. This, it seems, is more likely to occur after a patient has taken calomel or a small dose of some anthelmintic or after food has been withheld for twenty-four to forty-eight hours. In the first stage of trichinosis, especially where the diarrhea is severe, as in children, the trichinae may sometimes be found. In hunting for trichinae the stools should be diluted with warm water and examined in a flat glass dish held over a black background.

The color of the stools is occasionally suggestive of infection with blood-sucking parasites, such as hookworms. The hookworm stool (such as usually found in very severe cases) is reddish brown in color.

### BLOTTING PAPER TEST.

In hookworm infections a very simple test may be made with blotting paper or even with an ordinary white paper. Several ounces of the stool should be wrapped up in paper and allowed to stand for a few hours. In severe cases and in many median cases it will be noticeable.

\* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Practice of Medicine, approved for publication by the Executive Committee: Dr. Anders, Frank A. Jones and W. S. Thayer.

that a distinct reddish-brown stain is formed on the paper. In this test, however, there is an error of 30 per cent. or more.

**Odor and Litmus Test.**—While the odor of feces from parasitic infections is sometimes offensive, I have not been able to discover anything sufficiently characteristic about it to attract special attention. The litmus paper test is of no value, so far as my observations go.

#### MICROSCOPIC EXAMINATION OF FECES.

I believe that a routine microscopic examination of feces should be made in all hospital cases and also in all private cases so far as practical. The results which the Zoological Division of the Hygienic Laboratory has recently obtained in examining the patients at the Government Hospital for the Insane amply demonstrated the value of such work, for we found that 3 per cent. of the first 500 cases examined showed hookworm infection.

There seems to be an impression that fecal examination involves very disagreeable work. While it must be admitted that some stools are offensive, I would personally much prefer to make a feces examination than a sputum examination, for in working with feces one is much less likely to experience that nauseating sensation so commonly resulting from an examination of sputa.

#### TECHNIC.

The technic involved is exceedingly simple, since it is not necessary to stain the preparation. A portion of the feces, say 1 to 5 grams, is taken from the stool, wrapped up in a piece of paper and taken to the laboratory. Or, if it is desired to test for protozoa as well as for worms, it is better to place the specimen in a bottle so that the material will not dry. To avoid errors in interpretation it is well to make the examination as promptly as possible, although an experienced operator may examine the specimen even if it is a week or so old. In examining old specimens, however, it must be recalled that the older the specimen the more likely one is to fail to recognize protozoan infections.

An elaborate series of instruments may be used in preparing the slides if desired, or, if instruments are not at hand, a match will suffice.

For slides I prefer the large 2 by 3-inch, such as are used for large sections or for trichina inspection, rather than the 1 by 3-inch slide generally used in bacteriologic work. These larger slides are much more easily handled than are the smaller sizes. Having thoroughly cleaned the slide in order to remove any eggs which may have clung to it from some former examination, a drop of water is placed on it; next take a minute portion of feces on the end of a match or a glass rod and thoroughly mix it with the water so that the resulting mixture is not too thick; add more water if necessary. Next cover the mixture with a cover glass (square cover glass preferred) and the preparation is ready for examination. As many as two to four cover glasses may be conveniently placed on one slide and at least ten cover-glass preparations should be examined before a negative opinion is given.

In the work several very simple precautions are to be observed, namely, the specimen and the preparations are to be kept protected from flies, the hands are to be immediately cleaned if accidentally soiled with the feces, especially if nothing is known regarding the condition of the patient, and all glassware is to be thoroughly cleaned (hot water or hot water and soap). In case of the presence of *Tænia solium* in man, double precautions are to be observed, as the egg is infectious for man. In case of examining feces from dogs, the possibility of

the presence of *Tænia echinococcus* and its transmissibility to man should be held in mind.

The biologic principle on which fecal examination rests is that the eggs of different animals are more or less characteristic. Accordingly, to properly carry out the examination one must become familiar with the eggs and embryos of different species, also with the form of certain plant cells and fibers which might be mistaken by the uninitiated for eggs or embryos of parasitic worms.

Not every egg found in the feces indicates an infection of the intestinal tract. In the case of infection with liverflukes, for instance, the eggs are discharged in the stools, and some of these forms resemble more or less closely the eggs of certain intestinal parasites. In lungfluke infection the eggs of *Paragonimus* may be found both in the sputum and in the feces. In blood-fluke infection the eggs of *Schistosoma* may be found both in the feces and in the urine. In certain cases, therefore, it is necessary to examine either the sputum or the urine in addition to the examination of the feces.

For illustrations of the eggs most commonly found, I refer you to any work on clinical diagnosis or to Bulletin 10, Hygienic Laboratory, U. S. Public Health and Marine-Hospital Service.

#### A CONTRIBUTION TO THE STUDY OF THE SUMMER DIARRHEAS OF INFANCY.\*

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It is with great hesitancy that any attempt is made in this paper to enter a field that has been so thoroughly investigated during recent years as that embraced in the title of "The Summer Diarrheas of Infancy." The zeal with which these intestinal disorders of children have been studied lately is in direct ratio with their neglect by early medical writers. Although, as Dr. Booker<sup>1</sup> has shown, there are occasional references among the ancients to diarrheal troubles in infants in the summer months, there is no clear history of these diseases prior to their appearance among the colonists in this country. As he suggests, the importance of human life in this newly-settled land may have called sharp attention to a malady which was each summer carrying away the children of the settlers in large numbers. The malady, called the "dread of parents and the opprobrium of physicians," was thought at first peculiar to America. The yearly outbreaks in the larger towns scattered along the Atlantic coast were recognized and described under various names by local physicians, but the first adequate description of these maladies seems to have been made in 1773 by Dr. Benjamin Rush.

Knowledge of these disorders spread gradually in this country and in Europe, and it was not until the early part of the last century that their great importance was recognized. As is the case with other diseases, the clinical descriptions of many of these early observers leave but little to be added by their successors. They ascribed the causes of the disorders to various conditions, some of which will pass muster to-day, to the character of the atmosphere, cold, moist or hot, to direful miasms, to overcrowding, to improper food, to teething, to faulty

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