any sort of fixation or embedding, but it is rather hard on the razor, and staining is interfered with. It occupies less time, and is fairly trustworthy. The method given is, however, much superior.

As has been pointed out, doubtful tissue removed for diagnosis should always, if possible, be examined rapidly. Examples of what seem to me dangerous uses of diagnostic removal of doubtful tissues are found in the gynaecologist's curettings. By the curette, in the case of malignant disease of the uterus, all the favourable conditions for wide implantation of cells are supplied. Malignant cells are embedded in perhaps normal tissue, a large lymphatic area is trenched upon, and, if embolic dissemination by lymphatics or blood vessels be accepted as a possibility, the risks are much increased. But the greater danger of continuous permeation of lymphatics over an increased area is courted when a few days are allowed to elapse between the curetting and the major operation.

From the pathologist's point of view, diagnosis from uterine scrapings is always difficult and liable to frequent errors. The tissue removed is divorced from its surroundings; its proper relationship is often indeterminable. A negative diagnosis is generally worthless, and in practice is not relied upon; a positive diagnosis is frequently untrustworthy. In the absence of the surroundings several conditions are liable to be mistaken for carcinoma or sarcoma even by the most competent pathologists: inflammatory conditions, sloughing fibroids, hypertrophic and hyperplastic endometritis, adenomyoma, decidua, and conception products. Short of hysterectomy in doubtful conditions, there are no present methods of procuring portions of the suspected tissue otherwise than by the curette, for the reason that it is impossible, without actually seeing the interior of the uterus, to determine the position of the lesion. This, of course, does not apply to the cervix or endocervix. When scraping is resorted to the methods of diagnosis should be rapid, and as trustworthy results can be obtained by the freezing method above indicated as by any other.

But though the problem is different in many respects, it should not be impossible to apply indirect methods of inspection comparable to those adopted in the examination of hollow viscera such as the bladder, or more or less direct methods, as in the case of the oesophagus or rectum. By these means the disease could be located and a portion removed in the condition most suitable for pathological investigation.

THE INCIDENCE OF MORGAN'S BACILLUS NO. 1 IN THE NORMAL FAECES OF YOUNG CHILDREN.*

BY

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In this JOURNAL (April 21st, 1906, and July 6th, 1907), Morgan (who was at that time Ernest Hart Memorial Scholar) published the results of a bacteriological examination of the stools of children suffering from epidemic infantile diarrhoea. The examination was confined to the group of non-lactose fermenting bacilli, which includes several well-known pathogenic organisms, such as typhoid and the various forms of dysentery bacilli. As a result of his work, Morgan concluded that in this country epidemic diarrhoea is not occasioned by one of the forms of dysentery bacilli, as was the case in some outbreaks investigated in America; but a particular organism, hitherto undescribed, called by him No. 1, was discovered in the stools of 50 per cent. of the cases. The biological characters, the pathogenicity, and reasons for regarding this organism as a factor in the causation of infantile diarrhoea were detailed by Morgan in the papers referred to.

The etiological importance of Morgan's organism in epidemic diarrhoea has been further investigated during

the last two summers by Morgan and several members of the staff of the Lister Institute, and during the summer of 1908 a small share of the collective investigation was assigned to the Bacteriological Department of Guy's Hospital—namely, to control the investigation of diarrhoea cases by examining faeces from practically normal children (or children suffering from diseases other than those of the alimentary system), in order to determine whether Morgan's bacillus No. 1 was present, and, if so, in what percentage of the cases. These control cases were examined during the epidemic period of the year.

Material was obtained either from cases attending the out-patient department of the Surrey Dispensary, from healthy children accompanying mothers under treatment, or from healthy children belonging to families in which some other member was being attended by the district nurses instructed by that dispensary. No attempt was made to select children of any particular age period other than the broad one comprised between birth and 13 years, but the cases investigated are comprised in the following classification:

TABLE I.

Cases Investigated from July 24th to September, 9th, 1908.

Age Period.	Male.	Female.	Total.
0-1	5	6	11 (1)
1-2	5	4	9 (1)
2-3	1	2	3
3-4	5	9	14 (1)
4-5	1	4	5 (1)
5-6	2	2	4
6-7	0	1	1
7-8	0	1	1
8-9	0	1	1
9-10	0	3	3
10-11	0	1	1
11-12	0	1	1
12-13	1	1	2
Not specified	3	4	7
	23	37	60 (4)

In all 60 cases were examined, 23 males and 37 females. These were scattered, so far as their homes were concerned, over the district bounded by the River Thames, Blackfriars Bridge Road, New Kent Road, Old Kent Road, and Bermondsey New Road, a poor and densely-congested area. The general condition of health in the selected cases was not, as a rule, first-class; but care was taken to avoid actual cases of intestinal disease, as well as children belonging to households in which sporadic or epidemic cases of diarrhoea had occurred. Such children as were themselves patients at the Surrey Dispensary suffered usually from some sequel to an infective fever, as will be seen from the following list, which accounts for 41 of the 60 cases:

<i>Sequelae of Infective Fevers.</i>			
After scarlet fever (nephritis)	...	...	1
After measles	...	...	7
After varicella	...	...	1
After pertussis	...	...	9
Malnutrition	...	...	8
Bronchitis	...	...	7
Chorea	...	...	2
Convulsions	...	...	1
Rickets	...	...	1
Congenital syphilis	...	...	1
Tuberculous joint	...	...	1
Chlorosis	...	...	2
			41

The remaining 19 children were, so far as can be ascertained, perfectly normal. The period of time over which the investigations extended was nearly two months, from the fourth week in July, 1908, to the second week in September.

Collection of Faeces.

The apparatus employed for the collection of each sample of faeces consisted of a large-sized specimen vial

* The expenses of this investigation were defrayed by a grant from the Scientific Grants Committee of the Royal Society.

containing a small metal spoon fixed to the cork which closed the mouth of the vial. The apparatus was sterilized in the hot air oven at 180°C. In taking the specimen the spoon was filled with a portion of the freshly-voided material, and replaced in its vial, which was then marked with the serial number.

After consultation with Dr. C. J. Martin and Dr. H. de R. Morgan, the following procedure for the detection of Morgan's bacillus No. 1 was agreed upon:

1. Bile-salt agar containing 1 per cent. mannite, and coloured with neutral red was chosen as the *selective* medium. It was used for the purpose of surface plate cultures—the medium being poured in Petri dishes, allowed to set, and dried for an hour at 43° C. before planting.

2. As soon as possible after collection, usually within an hour, a loopful of the faeces was transferred to the surface of the selective medium by means of a sterile platinum loop. An ordinary L-shaped glass or aluminium spreader was then used to distribute the material uniformly, and two or more further plates of the same medium were inseminated "in series," in order to ensure adequate dilution. This first stage yielded nearly one hundred (?) non-fermenters.

3. After forty-eight hours' incubation at 37° C. such colonies, if any were present, as had failed to ferment the mannite were picked from the plates and planted upon sloped tubes of ordinary nutrient agar; after incubation at 37° C. for twenty-four hours these agar cultures were stored in an incubator at 20° C. until the entire series of cases had been examined.

4. Next these agar cultures containing the presumably "non-fermenters" of mannite were replanted on the selective agar, in order to determine the purity of the cultivations thus obtained. [This step is essential, for, as all who have worked at the bacteriology of faeces are aware, it is quite a usual thing, on plating out the growth from what appears to be one single colony on a plate, to find two or three or sometimes more organisms present. This is probably due to the faecal mucus holding several organisms in close contact, and at the same time so firmly that the ordinary method of spreading the faecal material over the plate fails to separate them.]

5. After incubation for forty-eight hours at 37° C., individual non-fermenting colonies were picked from each set of plates and subcultivated once more on to nutrient agar for twenty-four hours at 37° C. At this stage the (?) non-fermenters were reduced to about 60.

6. Each organism was transplanted from the agar into mannite broth tinted with litmus and incubated for forty-eight hours.

7. Such strains as failed to ferment mannite in the fluid menstruum were again plated, this time on Eyre's nutrose agar (prepared with ox serum) containing lactose, as well as on the selective medium, neutral red-mannite-peptone-salt-

meat-agar, and the plates incubated for forty-eight hours. At this stage the (?) non-fermenters were reduced to six.

8. From each set of plates several colonies representing each strain of non-fermenters were isolated and planted upon gelatine, the reactions upon the various carbohydrate media carefully studied, also the indol-producing capacity of each strain investigated, together with the action of each upon litmus milk. In this final study strains were run in parallel series with a cultivation of Morgan's Bacillus No. 1, obtained for the purpose from the Lister Institute from Dr. Morgan himself. This final stage resulted in the isolation of four strains of Morgan's Bacillus No. 1, a percentage of 6.3. The identity of these with Morgan's bacillus are best shown in tabular form (see Table II).

On referring to the original notes relating to the source of origin these four strains were found to have been derived respectively from the four following cases:

Serial number ...	13	22	24	32
Date of examination of faeces	July 24th	July 31st	Aug. 5th	Aug. 12th.
Sex of child...	Male	Female	Male	Female
Age of child ...	4 years	1 year 2 months	5 years	3 months.
Clinical condition...	Malnutrition	Normal	Rickets	Whooping-cough
Place of residence...	Sumner's Buildings	Southwark Bridge Road	Barnham Street	Douglas Buildings

Beyond the fact that six other children from Sumner's Buildings were examined, with negative results, the above details call for no comment.

THE EMPLOYMENT OF IODIPIN IN SYPHILIS.

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IODIPIN has proved itself of such pronounced value in the treatment of certain syphilitic affections, that I do not think it would be out of place to give a short account of the method of its administration, and the special varieties of the diseases in which it is of value.

In 1897 Winternitz¹ made some experiments on animals, by feeding them on iodized fats, and after death he found traces of iodine in nearly all their tissues, especially in the bone marrow, liver, and mesenteric fat. From these results he concluded that, by the administration of an iodized fat, iodine may be supplied directly to any diseased tissue, and so develop its specific action. He also found that the iodine in these iodized fats—that is, mesenteric fat, etc.—through oxidization in the blood, combined to form an alkaline iodide, and from this it would appear that iodine so combined would have the same therapeutic action as potassium iodide.

In 1898 an additive compound of iodine and sesame oil, called iodipin, was introduced by Merck. It is prepared by repeated iodization of sesame oil by means of iodine monochloride in alcoholic solution. Iodipin is a light oily liquid, and is prepared in two strengths—10 per cent. and 25 per cent. The specific gravity of the former is 1.025, and of the latter 1.227. Iodipin at low temperatures becomes of a honey-like consistency, but it liquefies and becomes clear again if gently heated on a water bath. If exposed to a bright light it in time becomes brownish-yellow in colour, but this is no bar to its subsequent use, provided it remains clear and transparent; but a blackish tint, as well as flocculence or precipitates, renders it unfit for use. More recently a solid iodipin has been introduced, and is supplied in yellow-coated tablets of 7½ grains each, containing ¾ grain of iodine, corresponding to 1 grain of potassium iodide.

Iodipin may be administered by the mouth, or by subcutaneous or intramuscular injection. The last method is that most commonly employed on the Continent. The 10 per cent. iodipin was introduced for internal administration, and the 25 per cent. for subcutaneous or intramuscular injections. The 25 per cent. is now nearly always used in both these methods. Iodipin taken by the mouth is passed

TABLE II.

	Morgan No. 1.	Serial No. 13.	Serial No. 22.	Serial No. 24.	Serial No. 32.
	Acid Gas	Acid Gas	Acid Gas	Acid Gas	Acid Gas
Dextrose ...	+	+	+	+	+
Laevalose ...	+	+	+	+	+
Galactose ...	+	+	+	+	+
Maltose ...	—	—	—	—	—
Lactose ...	—	—	—	—	—
Saccharose ...	—	—	—	—	—
Raffinose ...	—	—	—	—	—
Dulcitate ...	—	—	—	—	—
Mannite ...	—	—	—	—	—
Glycerine ...	—	—	—	—	—
Inulin ...	±	—	—	—	—
Dextrin ...	—	—	—	—	—
Indole ...	+	+	+	+	+
Litmus milk*	± to 0	± to 0	± to 0	± to 0	0

* ± = faintly acid; 0 = no change.