DOES IT CURE?

The question of curability of the emetine treatment can be answered only after a long period has elapsed. Of the five patients that recovered, four have been heard from or seen and all have remained well. Patient 1 is still cured after three months and three weeks; Patient 3 after two months; Patient 4 after three months; Patient 6 after two months and three weeks. Patient 5 has unfortunately been lost sight of. While these intervals of good health are not long, the outlook is, however, very encouraging.

While no definite conclusions can be drawn from the observations of so small a number of cases, I believe that the results are highly suggestive that in the subcutaneous injections of soluble emetine salts an ideal method has been found of treating amebic disease. Time will soon show whether or not, as Rogers believes, another specific has been found.

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BUDDING AND OTHER CHANGES DESCRIBED BY SCHAUDINN FOR ENTAMOEBA HISTO- LYTICA SEEN IN A RACE OF *E.* TETRAGENA

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ANCON, CANAL ZONE

Schaudinn and Craig have described peculiar changes in a pathogenic entameba which have been figured by Craig and by Hartmann. These changes believed to be essential features in the propagation of the entameba known as *Entamoeba histolytica* are:

1. Reproduction by budding, consisting in the formation of daughter entamebas.

2. Reproduction by sporulation. This is accompanied by changes in the nuclear chromatin. The nuclear area becomes widened, stains diffusely and chromatin apparently diffuses out into the cytoplasm. The nucleus stains less sharply, appears to give up its chromatin to the cytoplasm and then degenerates. Often the nucleus is expelled after having taken up a position on the periphery. Small buds appear on the periphery ranging in size from 3 to 7 microns in diameter; these become separated and later develop a colorless double outline, becoming brown in color and apparently undifferentiated in the interior. Buds of ectoplasm filled with chromidia protrude and are budded off from the parent body which later disintegrates.

Schaudinn described these appearances from human material in which the number of individuals is always sparse compared with that encountered in experimentally infected kittens.

These budding forms described by Schaudinn and Craig are very rarely encountered in man, but may be seen on certain occasions in large numbers in cats experimentally infected with *E. tetragena*. I have seen them also in small refractile trophozoites in surface sloughs from a fatal case of tetragena dysentery. These trophozoites were of the "small generation" type, they contained chromidia, and hematoxylin stained specimens displayed the nuclear characters of *E. tetragena*.

Recently in experimentally infected kittens inoculated rectally with *E. tetragena*,¹ after the strain had

matured and at the time of or just before encystment when each nucleus had the characters of *E. tetragena*, that is a prominent karyosome, there occurred peculiar changes in some of the trophozoites, both in dry and in wet-fixed films. These changes as well as can be ascertained from Schaudinn's description and from Craig's and Hartmann's drawings are identical with most of the changes noted by Schaudinn and Craig in the development of the spore-cyst perpetuating forms of *E. histolytica*. The kittens had been inoculated rectally with trophozoites from a case of dysentery in man, and on the death of the first set, kittens of a second set were inoculated, and so on, until the strain matured. The material showing the budding forms was in the fourth remove, at the time of the death of the kittens, that is, when the strain had become mature or senile, reduced in size until it resembled *E. minuta*, when chromidia had appeared in every trophozoite and a few cysts had appeared. In wet-fixed hematoxylin preparations the peculiar changes noted in some of the trophozoites were as follows:

1. The appearance of buds of different sizes on the periphery of the trophozoites in question. These buds were usually clear and free from chromidia. Some, however, contained chromidia and not infrequently a bud contained the nucleus.

2. The extrusion of chromidia, nuclei and portions of cytoplasm. Chromidia was seen apparently being extruded. The nucleus always took up an extreme peripheral position in the cytoplasm, was frequently attached by a slim pedicle of cytoplasm and later detached. Round portions of the cytoplasm (buds) were extruded.

The staining qualities of the nucleus in these forms were always less sharp than in trophozoites and a few near-by apparently normal cysts. These findings can easily be confirmed by the rectal inoculation of kittens and search made in material from the last remove containing trophozoites with chromidia. While a final opinion as to the significance of the changes cannot be given now, the staining reactions in wet-fixed films indicate that they are all degeneration forms of *E. tetragena*. A fuller report with drawings will appear later.

It is believed that these findings in the cat establish a correlation between the findings of Schaudinn and Craig on the one hand and those of Viereck, Werner, Hartmann and others on the other, and it emerges that *E. tetragena* is the common pathogenic entameba of man as Hartmann has already stated and that *E. histolytica* is in all likelihood a spurious species, the alleged spore-cyst development having been described from degeneration forms in senile races of *E. tetragena*.

THE RELATIONSHIP OF VARIOLA AND VACCINIA

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The relationship of variola and vaccinia has been discussed since Jenner's day, but no satisfactory explanation found. Yet there is an explanation so simple, complete and satisfactory that as thorough an investigation of the literature as I have been able to make in Manila in three months does not reveal any evidence in opposition, and does yield an amount of support that seems almost to constitute proof.

1. The strain is regarded as being a pure race of *E. tetragena* for it was scrutinized from the patient through each remove, and in the third and fourth removes all trophozoites had the nuclear characters of *E. tetragena* and the fourth remove contained a few *E. tetragena* cysts.

I. BASIC FACTS

1. Small-pox contagion or inoculation gives rise in man to small-pox, a highly contagious, generalized disease of considerable mortality, characterized ordinarily by a preeruptive stage, and other stages related to the appearance, development and subsidence of the eruption.

2. Passed through monkeys and cattle for a few generations and brought back to man, the virus gives rise to vaccinia, a localized, non-contagious, mild disease, that in itself causes no mortality, though septic complications may cause some.

3. Having, by passage, once lost its power to produce small-pox, the virus *never regains* it, even though passed from person to person (proper hosts for variola virus) for from thirty-five to one hundred years.

II. EXPLANATION OF BASIC FACTS

Many explanations have been attempted by others and by myself, but all but two are at once rendered null by one or more of the stubborn basic facts. The two exceptions are:

1. The germ of small-pox by passage through certain lower animals loses (acquires) certain properties, and it transmits its altered condition to its offspring forever, a more striking instance of hereditary transmission of acquired characteristics than has ever before (so far as I know) been cited.

2. *Small-pox is due to a dual and divisible virus, one part of which causes vaccinia and the specific small-pox eruption, the other part being necessary for the production of the contagious, generalized, mortal disease with a distinct preeruptive stage and initial rashes.*

The latter is the favored explanation, both because it seems more reasonable and because it is supported by numerous well-established facts. Though these will not be considered at length here, the more striking ones will be indicated under three general heads.

III. EVIDENCE FAVORING THE EXPLANATION

1. More or less analogous close association of two viruses—hog cholera, dog distemper, etc. (filterable virus and bacillus). Hydrophobia is so closely analogous, street virus corresponding to variola and fixed virus to vaccinia, that the same explanation (duality of virus), probably applies to it.

2. Animal poxes and variolation of animals.

A. Small-pox, cow-pox, horse-pox and sheep-pox mutually protect one against the other (Immermann). Clinically and otherwise they differ.

B. It is very difficult and often impossible to carry small-pox direct from man to calf, the latter being highly resistant. Once established in the calf the pox virus becomes exalted to such a degree that it protects against later vaccination better than does an attack of small-pox, though the latter, by causing immunity to both parts of small-pox virus, affords better protection against that disease.

C. The part of the small-pox virus which is not concerned in pox formation, but is necessary for the development of the contagious, generalized, mortal disease with an initial stage and initial rashes (small-pox), dies or disappears after a few bovine passages. It is therefore unable to participate in the immunization resulting from vaccination.

3. Clinical observations.

A. The three forms of small-pox not showing a pox stage, or only an incomplete one, purpura variolosa, varioloid and variola sine exanthemate, occur in vacci-

nated persons as often as, or more often than, in unvaccinated.

B. *Vaccinia therefore protects against the pox stage of small-pox rather than, or to a greater degree than, against the whole disease.*

C. Twenty-two per cent. of 2,601 persons who had had variola or been variolated were still susceptible to vaccinia, though immune to small-pox.

A much longer exposition of the above facts, all quoted from other authorities, with a list of references, will soon appear in the *Philippine Journal of Science* and in the *Military Surgeon*. Meanwhile it is hoped that others, more fortunate than we in being able to get hold of small-pox cases, will if possible anticipate this board in experimental work on the subject. For some months there has been no small-pox in or about Manila.

TUBAL REIMPLANTATION

A NEW CONSERVATIVE OPERATION FOR STERILIZATION OF WOMEN

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Permanent sterilization of the female in some cases has been advocated and more or less imperfectly carried out for many years. The indications have varied considerably with different operators. Chronic heart disease, tuberculosis, nephritis, diabetes and hereditary mental taints are generally regarded as indications for sterilization.

A few enthusiasts, such as Spinelli,¹ Cramer² and Polack³ would add chronic anemia, persistent albuminuria, epilepsy, syphilis, contracted pelvis, diseases of metabolism, infections, cholera, melancholia and cirrhosis of the liver.

Sterilization has been obtained through various unnecessarily mutilating operative procedures on the uterus, ovaries or tubes. The French school seems to prefer supravaginal hysterectomy, an operation which must often be considered as heroically destructive in its results, even though there be no loss of the ovaries and the ovarian secretion, often so essential to metabolic activity in such cases. The "castratio uterina atmo-caustica" of Pineus⁴ or vaporization of the uterine cavity in order to destroy its mucosa, and the use of the thermocautery as advocated by Kussman⁵ are also permanently destructive in their results. Although oophorectomy was and is still too frequently performed, I believe that, to-day, no thoughtful gynecologist would perform a double oophorectomy with sterilization as the only object in view.

Tubal sterilization has been obtained by a variety of methods—total excision, partial resection of the tubes with or without suture of the stumps, and single or double ligation without section of the tubes. R. T. Morris⁶ ties a silk thread about each fimbriated extremity. The ligature becomes encapsulated and closes the

1. Spinelli, P. G.: Indicazioni generali e tecnica della sterilizzazione della donna. Arch. Ital. di ginec., Napoli, 1898, 1, 443.

2. Cramer, H.: Ueber prophylaktische Sterilisierung der Frau. München. med. Wehnschr., 1904, 1, 605.

3. Polak, J. O.: Sterilization in Cesarean Section, Tr. Am. Gynec. Soc., 1909, xxxiv, 73.

4. Pineus: Quoted by Sarway, Deutsch. med. Wehnschr., 1905, 11, 202.

5. Kussman: Quoted by Sarway (see Note 4).

6. Morris, R. T.: Buffalo Med. Jour., 1903, p. 387.