Mr. R. A. Proctor attempts to explain how earthquakes are caused, in the June number of *Harper's magazine*, and attributes their energy to the action of interior heat on percolating water, and their opportunity to the time of changing pressures caused by atmospheric or tidal loading and unloading of the sensitive crust of the earth. Formidable numbers represent the tons of air or water brought on or taken off certain parts of the earth's surface in the passage of cyclones and anticyclones, and in the rise and fall of tides: but it may be strongly questioned whether these changes of pressure are very effective in determining the time of earthquake snaps; for the changes are gradual and short-lived, the pressures are relatively light, and the surfaces on which they have effect are so broad that the extremely small deformation needed for adjustment of equilibrium might be produced without any cracking or snapping. The omission of clear reference to orogenic earthquakes in such an article is very unfortunate, for Mr. Proctor will have many readers who take him for an authority on such matters; and, in the present attitude of seismology, the orogenic theory is certainly strongly supported by those who give the study the closest attention. It is rather remarkable to find no reference to gravitative distortions of the earth's crust, except in explaining the heat of the interior, after Mallet's method, and no mention of earthquakes following the making of cracks that are freely assumed as the passages by which water enters the subterranean regions, there to be exploded into steam.

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.*

Real and imaginary Americanisms.

In the *verbatim* report of Sir William Thomson's famous Baltimore lectures occurs the expression, "and that is why I cannot get the electromagnetic theory." To this, Mr. George Forbes, in his commentary in *Nature* for April 30, appends a footnote: "These reports are generally quite *verbatim;* but I am sure Sir William Thomson is not responsible for this characteristic Americanism." Is it not, rather, a Scotticism? It is no Americanism at all. Although an American of long standing and considerable observation in such matters, I never heard 'get' by itself used in the sense of 'comprehend' or 'understand.' To 'get hold of,' is a not uncommon colloquial form. But in the same paragraph Mr. Forbes passes unnoticed a real and most prevalent Americanism: 'I do not think I *would* like to suggest,' etc. And again, at the close of the lectures: "I *would* be most happy to look forward to another conference." This substitution of 'would' for 'should' we should charge to the reporter, and feel sure that he was born west of New England and New York, where the just distinction between 'will' and 'shall,' 'would' and 'should,' is innate, while it is lost farther west and south. But the confusion is reaching England, as some recent books and newspapers show. I do not believe that Sir William Thomson has caught the prevalent epidemic, much as he has been in the affected districts. A. G.

The cholera bacillus.

The exact *rôle* of the 'comma bacillus' in the etiology of cholera Asiatica remains unsettled. Arguments for and against the conclusions of Koch are perhaps equally strong on both sides, as evidenced by the discussions in the conferences on cholera held in Berlin, Munich, and London. Inoculation which completes the chain of evidence required to make good Koch's case, has in his hands, and in those of Nicati, Rietsch, Ermengen, Babes, and Watson Cheyne, produced positive results. Dr. Crookshank of King's college hospital, London, who has been working in the bacteriological laboratory here, and to whom I am indebted for the accompanying drawings, tells me that in Babes's cases three guinea-pigs, out of six

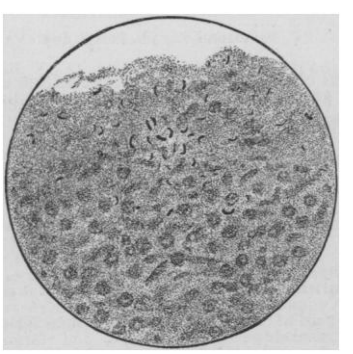

Fig. 1. — Section of intestine in cholera showing Koch's bacilli in the superficial layers.

inoculated in the duodenum, presented the lesions of cholera; and pure cultivations of the bacillus of Koch were obtained from the intestinal contents. Koch has just introduced a new method of operation without the production of any external lesion, and he reports the cases as completely confirming the view of the pathogenic nature of the bacillus. Klein and Gibbs have denied the existence of the cholera bacillus in the intestinal tissue. On the other hand, since Koch's original proof, they have been demonstrated by Babes, and confirmed by Crookshank, by staining the sections after the method introduced by Babes (*vide* figure). This consists in cutting very thin sections in close proximity to a Peyer's patch, placing it in an aqueous solution of good fuchsin for twenty-four hours, washing in a sublimate solution (1–1000),

passing rapidly through alcohol and oil of cloves, well drying with pressure of blotting-paper folded four times, and mounting in Canada balsam. In its

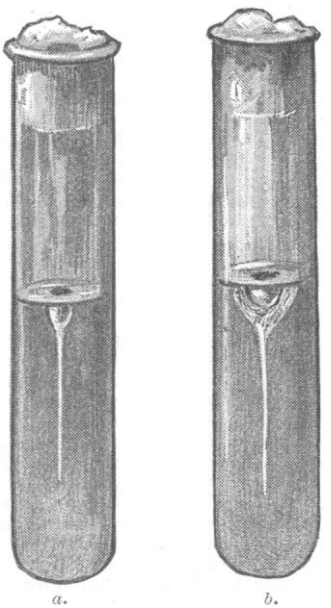

FIG. 2. — CULTURE OF KOCH'S COMMA BACILLUS OF CHOLERA IN NUTRIENT GELATINE.

a, second day; *b*, fourth day.

biological characteristics, Koch's bacillus differs from that of Finkler and Prior, as will be seen from the following table: —

Koch's bacillus.	*Finkler's bacillus.*
Plate-culture. — Colonies faintly golden red; irregular, indented margins.	*Plate-culture.* — Colonies liquefy gelatine much more rapidly; faint, brownish-yellow tinge; larger and rounder margin, well defined.
Tube-culture. — Fig. 2, puncture in nutrient gelatine. Liquefaction commences slowly at upper part of needle-tract; forms a funnel-shaped excavation enclosing a bubble of air; lower part of needle-tract resembles a white thread, and remains so for several days.	*Tube-culture.* — Fig. 3, puncture in nutrient gelatine. Liquefaction more rapid; extends along whole length of needle-tract, and forms a conical, misty culture, gradually resembling the finger of a glove turned inside out.
Surface-culture. — (Agar-agar). Forms semi-transparent, white plaque; liquid at bottom of oblique surface; becomes milky.	*Surface-culture.* — (Agar-agar). The same forms much more quickly; and in addition, after a certain time, a characteristic coffee-colored stratum appears at the bottom of the liquid.
Potato-culture. — Only grows at temperature of the blood (37° C.), forming a transparent, slightly brownish layer.	*Potato-culture.* — Grows at ordinary temperature; culture brown, with whitish margin. Surface of potato appears corroded.

Babes and Crookshank have examined over one hundred pure cultures of Koch's bacilli of various ages and on various media. The round bodies frequently found, either alone, or accompanying filamentous and irregular spirilliform developments of the comma bacilli, were found in all cases to be perfectly sterile. At the recent meeting at Munich, von Pettenkofer and Emmerich bitterly opposed Koch's conclusions, and asserted that his bacillus had never been found in the mucous membrane of the intestine. The drawing here given, taken from a section of intestine of a patient who died of Asiatic cholera, and prepared by Babes and Crookshank, — a preparation which I have seen many times, — is rather damaging to the Munich school.

I have several cultivations of the Finkler. Prior, and Koch bacilli under observation, and the biological and morphological characteristics of each are distinct and sharply defined.

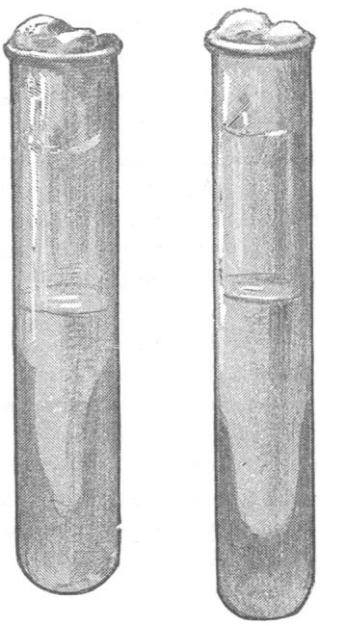

FIG. 3. — CULTURE OF FINKLER AND PRIOR'S COMMA BACILLUS OF CHOLERA NOSTRAS IN NUTRIENT GELATINE.

a, second day; *b*, fourth day.

Raptchievski (Wratch., 1885, No. 7) reports an interesting case from St. Petersburg. A microscopic examination of the dejections showed, 1°, long and narrow bacteria, as found by Bienstock (*Zeitschr. klin. med.*, vol. viii.) in normal fecal matter, such as produce putrefaction in albuminous matter; 2°, chains of oval micrococci, similar to the microbes found by the French commission (*Archives de physiol.*, 1884, No. 4, pl. 11, fig. 6); 3°, a bacillus exactly similar to that described by Koch; 4°, another in greater quantity, found by Finkler and Prior in cholera nostras. HORATIO R. BIGELOW, M.D.

Berlin, Germany, May 5.

The reddish-brown ring around the sun.

The ring of reddish-brown color surrounding the sun, and enclosing a disk of glowing whitish light, to which Prof. G. H. Stone called attention in *Science* for May 22, p. 415, has been most carefully studied by Kiessling of Hamburg, who has shown clearly that it is due to diffraction on minute particles suspended in the air. Careful observers agree that it was not seen before November, 1883; but since then