above sea-level. The wind-vane turns the pointer on the dial (seven feet in diameter) so that the wind-direction can be read with a glass from the town below. The Robinson anemometer is connected by wire with Mr. Child's office, where it has made continuous record since June 1. During the summer, there has been a Draper thermograph belonging to the New England meteorological society inside the shelter, and a corresponding instrument belonging to Mr. Childs in the town below. Next summer it is proposed to add self-recording instruments of the Richard-frères pattern. During the winter, the weekly ascents of the mountain, required for attention to the thermograph, have to be given up.

— M. Meguin claims to be able to determine the date of death by studying the generations of Acarina which have been at work upon the body. Brouardel produced the cadaver of a young woman before the French academy of medicine, which had lain in a cellar for a year. He was able to trace five different species of Acarina, and the order of succession and duration of each species. He found dermestes sarcophagus, laticrus, and lucina cadaverina. One species consumes the fatty acids, another absorbs the fluids, and each dies when its work is ended. The period of life of each in summer is from six to eight weeks. In a case of murder in which the remains of the victim were discovered in a garden, Meguin was able to establish the date of burial with great accuracy. The value of these observations and deductions, if confirmed, cannot be overestimated, as hardly a month passes without the discovery of a murdered body, and in the course of the prosecution the probable date of death is always an important factor. So far as we know, no one has taken up this work of Meguin, Brouardel, and Laboutbene in this country, and yet it would seem that no field offers more inducements to the medico-legal expert than the one just opened by these enterprising French *savants*.

— Dr. Lemuseau, in *Le moniteur du practicien*, gives a *résumé* of the progress made in the examination of blood and its detection during the last fifty years. At the present time there are four methods employed for the determination of the presence of blood. The first is that by means of the haematine crystals, due to Teichman, and improved by Struve and Morache. The second method is spectroscopic examination. The third is that of Taylor, consisting in the employment of tincture of guaiacum, which, combined with the essence of turpentine or ozonized ether, yields a beautiful blue color if blood be present. The fourth is microscopic examination. In reference to the possibility of determining whether a given specimen of blood is human or not, Vibet says it remains impossible to assert with positiveness that a blood-stain is formed of human blood. It is in certain cases only admissible to say that it may be caused by human blood. Sometimes it can be affirmed that the stain is of the blood of some other kind of mammalia, but not of man; but in order to justify this opinion it will be necessary that the blood-corpuscles of the alleged animal be much smaller than those of man.

— Dr. Tipton of Selma, Ala., in the *Sanitarian*, gives some very interesting facts and figures, the result of his life among the blacks of the south. He claims that their death-rate exceeds their birth-rate, the mortality being 30 per 1,000. While during the slave state consumption was practically unknown, now it is the principal factor in the diminution of the race. One-half the male population is syphilitic, and most of the women have uterine disease. Hysteria, rheumatism, and alcoholism are common. If Dr. Tipton's opinions are correct, it is only a question of time when the whole race becomes extinct, unless by intermarriage with the whites the otherwise inevitable result is altered. Even this will but postpone the blotting-out of this people, if disease prevails to the extent indicated.

— Lieutenant Yate, who accompanied the Anglo-Russian boundary commission as a correspondent, has in press a book entitled 'England and Russia face to face in Asia.' It will describe the work of the boundary commission, the topography of the country, and the character of the native tribes. Lieutenant Yate is expected to throw new light on what the diplomatists unite in calling the 'affair' at Penjdeh.

LETTERS TO THE EDITOR.

The teaching of natural history.

IN the last number of *Science* 'A teacher' complains rather bitterly of your review of French's 'Butterflies,' and adds some comments on methods of instruction in natural history. I have never had any experience as a teacher, but the method of teaching natural history has too much influence on the future growth of that science to fail to interest any naturalist, even if he be unconnected with a school or college.

Without now inquiring whether the demand expresses what is best for the advancement of knowledge, it seems to me that the actual demand of teachers and learners in entomology in this country is for a handbook of some group of insects on some such plan as is followed in Gray's 'Manual of botany,' in which, by analysis and by the characterization of each category of groups, the *relative affinities* of the objects under treatment are throughout brought to

view. That Gray's 'Manual' is often used for the mere determination of names of plants does not interfere with this its higher and primary use. This distinction 'A teacher' seems to ignore. If he will call to mind that it is not from finding out mere names of objects, or giving them, but from weighing and discussing the nature, meaning, and causes of the relative affinities of organized beings, that the whole philosophy of natural history has arisen, he will perhaps agree that it is not best to teach pupils to think that they have gained the least knowlege of nature, when they merely know what their elders name a given object. The name may be called a necessary evil; and unless, with it, is more emphatically acquired a knowledge of the structural and biological relations of the object which it bears to other objects, it is worse than useless knowledge. This idea should underlie every manual for instruction.

SAMUEL H. SCUDDER.

Coloring geological maps.

Having occasion recently to have printed a miniature geological map of Indiana, I endeavored to use the colors recommended by the International congress of geologists. Supposing that my endeavor might be more or less suggestive to those interested in the subject, I sent specimens of the map to the members present at the Berlin meeting of the congress, and with them a letter in which I pointed out the difficulties I had encountered in using these colors. I am indebted to Dr. Persifor Frazer for calling attention to my oversight in using them. My apology is, that I selected the colors from the specimen sheet printed in Berlin, and sent out with the American committee's report of the work of the congress. This sheet is entitled the "*Gamme des couleurs (provisoire) pour la carte géologique internationale de l'Europe.*" Upon it the colors for the Devonian are for its three subdivisions, while no colors or modifications of colors are given for subdivisions of the subcarboniferous, and no reference is made to explanations elsewhere. On its face this sheet claims to be complete in itself.

Had I referred, as I see that I should have done, now that Dr. Frazer calls my attention to the matter, to the report of the international committee, and then again to the proceedings of the congress, to ascertain whether or not certain recommendations of the committee were adopted, I should have found that my difficulties had been anticipated, and should have saved myself the trouble of mentioning them. It seems to me, however, that the very fact that such a process is necessary — that one cannot safely use this color-scheme without explanations other than those to be found upon the sheet — is evidence that this system is not all that one might reasonably expect.

As to the purpose of the scheme, I supposed from the first that it was intended for geology the world over; but, after my maps were partly printed, a member of the American committee, to whom I mentioned my difficulty, suggested that these colors were intended only for European geology, and called my attention to the title of the specimen sheet given above.

Dr. Frazer seems to think it unreasonable to expect any system of colors to give entire satisfaction on so small a map. I have no fault to find with the international system on this score, especially as the geology of Indiana is very simple.

The difficulty in subdividing the carboniferous does not come from the scale of the map, but simply from the absence of any fixed method of indicating the subdivisions. To be sure, geologists are left to differentiate as they choose, provided they all use gray; but I may use one method, and another person may use a very different one, the result of which is the absence of uniformity; and uniformity, I take it, is the prime object of a color scheme. In such cases the subdivisions require explanations. My idea of a universal color-system is, that, once introduced, it would need no explanations.

The report of the committee upon the map of Europe suggests that in such a case as the one I refer to in the letter sent out, when the terrane is of a known system, but unknown subdivisions, an initial letter be used in connection with the mean shade of color.

If, instead of colors, we are to use letters, I submit whether we can fairly call such a method of representation a *color* scheme.

JOHN C. BRANNER.

Bloomington, Ind., Nov. 10.

Butter and fats.

Science (Sept. 10, p. 223) says: "Dr. Thomas Taylor's microscopic method for detecting the adulterations of butter with foreign fats seems destined to assume as many shapes as Proteus." Were this even so, it should not excite surprise, considering that about sixty different compositions have been secured under United States patents for butter substitutes, from which it will be seen that oleomargarine has itself become a veritable 'Proteus.' *Science* further says: "At first the globose forms obtained by the boiling and subsequent slow cooling of butter, and exhibiting the Saint Andrew's cross under polarized light, were brought prominently forward as distinguishing marks of pure butter." Answer: What I have stated is, that, when pure butter is boiled, cooled, and viewed as described, globose bodies (butter crystals) appear, exhibiting the Saint Andrew's cross, a fact not now disputed; that lard similarly treated yields a crystal, spinous, without cross; that beef-fat gives a branched and foliated crystal, without cross, — all of which Professor Weber admits, summing up the results of his first three experiments in the following words: "Thus far the results and statements of Dr. Taylor are fully corroborated."

If, however, *Science* intends the inference that I have represented that globose bodies with cross, discovered in any butter-like material when boiled, is a proof that said material is butter, I have only to say that no such idea has ever been entertained by me, or published over my signature. If the inference is intended that the discovery of the butter crystal and cross has some relation to my method of distinguishing oleomargarine from butter, nothing could be farther from the truth. My method of distinguishing oleomargarine from butter consists simply in demonstrating that certain forms of fatty crystals not known to pure butter are constantly found in oleomargarine; and in order to accomplish this, I examine the suspected material, as found in the market, unboiled. By this means I can generally detect at once the lard or other foreign fats, if the material is an oleomargarine. It is manifest that the Saint Andrew's cross found in pure butter would not help me to discover crystals of lard in oleomargarine.