At the April meeting of the Royal astronomical society, Mr. Tupman announced that Dr. Arthur Auwers of Berlin had communicated to the society a paper on the chain of meridian distances, measured around the earth, between 1831 and 1836, in H. M. S. Beagle. Capt. Fitzroy was in command of the Beagle at that time, when she set out from Bahia, and went round the world, returning to that point. In working out the results, his selection of the chronometers upon which he based his determinations was somewhat arbitrary; and he found that the successive differences of longitude round the world, when added together, differed from twenty-four hours by thirty-four seconds. Capt. Fitzroy did not attempt to improve upon this; and the work has been left in that state until now, when Dr. Auwers has taken it up, and discussed anew all the chronometer-work on board the Beagle, using as the primary meridians those which have been correctly determined since, and correcting in this manner all the longitudes which resulted from the discussion of Capt. Fitzroy. Dr. Auwers's paper will be published in the *Monthly notices* of the society; and, as Fitzroy's longitudes have been to a great extent relied upon by the Hydrographic office in the construction of maritime charts, many of which are in use at the present day, the work of Dr. Auwers will be of great value in giving more accurate determinations of the longitude of distant islands than were before available.

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When one passes through some sleepy New-England village, and has pointed out to him a building as the academy at which his grandfather or great-uncle once learned his Latin grammar, he wonders how his uncle, now selling stocks on Wall Street, or pleading before the full bench in Washington, or hoeing corn in Kansas, and this quiet building, should have come together, and why they parted, — an academy, a square building, with hip-roof, a belfry in the centre, and coated with paint of that sobered tone derived of a mortgage. There are no little uncles running about the building now; the chief life, or it might be said the soul, of the structure, existing in the records of the school (the newest quite yellow), the deed of the land, and an expired insurance-policy on the building, — a crumpled bundle of papers in the desk of the village doctor and only resident graduate, an enthusiast on the school, puffed with pride at his own success as a wiseacre.

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Such is the dead or dying academy, of which each town can produce its sample. A few, a half-dozen, still flourish, thanks to a rather more liberal endowment, or the fortunate circumstance of a long run of successful masters. Just at present there are some stirring the old bones to find those that may show sufficient signs of life to warrant an attempt at resuscitation, — a revival of interest possibly due as much as any thing to the restlessness of human nature, not contented with the high-school system developed as far as may be for the present.

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## *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.*

### The faults of south-western Virginia.

While engaged in making a series of cross-sections in the above region in 1880, I had very frequent opportunity to study the structure of the faults; and, as a result, I reached certain conclusions, which may be of interest.

A conspicuous feature, which is of general, if not universal, occurrence along the line of faults, wherever exposed, is an angular fold, as in fig. 1.

An excellent section, showing its manner of occurrence, is found at the mouth of Russel Creek, a tributary of Clinch River. It is given in fig. 2, where, at *a*, coal-measures occur nearly horizontal and undisturbed; at *b* the millstone grit is standing vertically, forming an obstruction to the creek, and giving rise to perhaps the loftiest and most picturesque fall in the region; *xy* is the fault-plane (seen in the vicinity), to the left of which the Knox limestone (*c*) shows a dip closely conforming to that of the fault-plane. Other examples might be given, but the above will sufficiently illustrate the general character.

At first I regarded them as a result of the faulting, produced by friction along the fault-plane; but further observation led me to the opinion that they preceded, and determined the location of, the faults. I was first led to this opinion by finding a fold, much like fig. 1, finely exposed in the line of a small fault at one end, where the displacement had diminished it little or nothing.

Other reasons for so thinking are, 1°, that, although of such general occurrence in connection with the faults as to suggest a very important relation between the two, they are not dependent on the faults, since

they occur abundantly out of the vicinity of faults; 2°, that the fault-plane, wherever exposed, shows such a dip (about 45°) as it would naturally have if determined by one of the angles of the fold; 3°, that the angles of the flexure form a line of least resistance, along which displacement would certainly occur, did any force tend to produce it; 4°, that numerous indications in this region point to great superficial tension.

FIG. 1.

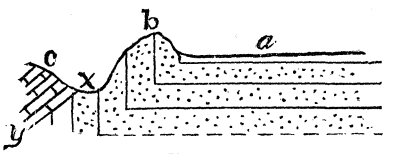


FIG. 2.

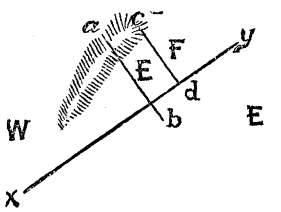


FIG. 3.

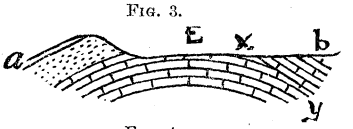


FIG. 4.

I think all of the above reasons will sufficiently explain themselves except the last, in illustration of which I give a very interesting section occurring in the region known as New Garden, in Russel county.

In the plan, fig. 3, *x y* is the line of Clinch-Mountain fault, from which a short fault, *c d*, goes off at right angles, on one side of which, *F*, the coal-measures are nearly horizontal and undisturbed. On the other side the strata are pressed into a fold, as shown in the section, fig. 4, where *x y* is the fault-plane; *E*, the subcarboniferous limestone; *b*, the Knox limestone; and *a*, the coal-measures forming the crest of a lofty mountain.

There are no signs of igneous action along any of the faults, unless the evidences of ancient thermal springs along the line of Walkers Mountain fault be so regarded. These indications are, 1°, the band of gypsum, which for many miles skirts the fault on its south-east or upthrow side, at a distance of about a half or three-fourths of a mile from the fault-line (it is the same as that mentioned by Mr. Bien in *Science*, April 18, but does not, as he seems to surmise, enter Burk's Garden, which is some distance away on the opposite side of the fault); 2°, the Saltville basin, the bottom of which is, by estimate, not less than two hundred feet below the bed of Holston River, the excavation of which in the limestone must be accounted for by other agencies than ordinary river-erosion; besides, its structure is such as to render it improbable that it ever formed a portion of a river-valley.

In conclusion, if there were, as assumed, an increase of tension by lateral pressure toward the surface, disturbances of strata would begin near the surface, resulting in sharp folds of the character described, which, in turn, would determine the locality of the faults, the tendency of which would be to extend progressively downward. G. H. SQUIER.

Trempealeau, Wis., May 10.

### Assumptions of museum-keepers.

In Mr. Goode's interesting summary of 'The exploring voyage of the Challenger,' I notice a paragraph that merits attention. Recalling the fact that the deep-sea fishes have been in Dr. Günther's hands 'now eight years,' and lamenting the delay in publishing the results, he very justly says, that "the preliminary descriptions published in 1878 are so meagre as to be nearly useless to any one except their author," and immediately adds, that "the type specimens themselves will, *of course*, be inaccessible for comparison until the final report is in type" (*Science*, iii. p. 580). Had it not been for private information with which I had been favored, I might have supposed that the concluding paragraph was an example of what has been called 'heterophemy,' and that my excellent friend had intended to say that the type specimens themselves will, *of course*, be accessible for comparison. It was, however, with the greatest astonishment that I learned, some months ago, that access had been denied to the collection in question by Dr. Günther, and that, for instance, an eminent and accomplished European ichthyologist, on a visit to England, had been refused the *right* of examination. I say advisably *right* rather than *privilege;* for I had always believed that the British museum was a *public* institution, supported by liberal grants from the nation, and created to facilitate and promote scientific investigation, and *not* intended for personal aggrandizement, or to uphold any officer in petty spite. On what possible ground can Dr. Günther withhold the opportunity for examination of any specimens in his keepership to any competent naturalist? It may be conceded, *causâ argumenti*, that he has a right to name any specimens, and, at any rate, the matter is of too small moment to question at present; but I do not know on what principle he can withhold a sight of any specimen for a day even. A naturalist has, doubtless, a right to keep his own collection, bought with his own money, secluded, and to deny the privilege of examining a specimen to any one, although I have more than once heard such a procedure designated by the forcible and expressive, even if inelegant, word, 'hoggish;' but such action is worse than illiberal, and becomes criminal, in the case of a public officer. It is criminal because it is a breach of trust; for the custodian is a keeper, employed and paid by the government to care for the collections amassed for the people. Denial of the opportunity to examine such collections, under proper restrictions, may also, as intimated by Mr. Goode, result in the direct retardation or suppression of scientific activity. If Mr. Goode and my private information are correct in fact, the policy of the British museum, as interpreted by at least one of its officers, is petty, selfish, hindering to science, and subversive of public trust, or the officer exercising such powers is criminal in monstrous usurpation of delegated authority. In any event, a protest is called for; and I, for one, do make protest against such and all similar restrictions. While constant clamor is made, in the nominal interest of 'science,' for appropriations to advance scientific investigation, we may at least demand that the trustees for handling such appropriations shall not become barnacles to prevent its healthy progress. THEO. GILL.

Washington, May 10.