fox that "clin-n-g, clin-n-g-ed like a scared buzz-saw," and wise old Eparka, the sea-parrot, all under his keen eyes. He was there as the special correspondent of the great newspaper "Beneficent Science" which is published for the amusing, informing and guiding of all the men and women of the world. But the story moved no man nor woman; that is moved none to action. Or rather it did not move the needed many to compel the action that is necessary if the few Matkas and Kotiks that are left are not to be the last of their kind.

So now the story is reprinted in such form that it is to be offered to the children of the land to see if perhaps they may not feel more and do more than their fathers. It is a well-illustrated, simply told true tale, at once charming and pathetic, fascinating in its revelation of the wonderful ways of a child-bearing and child-teaching wild animal of the mist-wrapped islands of the north, appealing to every chord of sympathy and rousing to every instinct of antagonism for brutal cruelty. V. L. K.

Laboratory Manual of First Year Science for Secondary Schools. By Russell and Kelly. New York, Henry Holt & Co. 1909. Pp. 163.

This book gives the first printed account of the rather famous Springfield course in general science introduced five years ago by Dr. Thomas M. Balliet and Wm. Orr, then respectively superintendent and principal of high school, at Springfield, Mass.; now, respectively, dean of the school of pedagogy, New York University, and deputy commissioner of education of the state of Massachusetts. The authors have developed this course in great fidelity to the ideas and suggestions of their superior officers.

The purpose of the course is twofold: "(1) To give the pupil a broad general view of the whole field of science, (2) to explain to the pupil his every-day environment."

The work as it is conducted in Springfield is in a large measure informational, with abundant experimental illustration to make the knowledge *real.* The lecture by the teacher, and the investigation by the pupils of matters to be found outside of the school, are the most effective features of the course.

The course is required of all first-year high-school students (those who have visited the school know that it would be easier to require than to prevent their taking it).

The course is flexible and changes from year to year and is, after all, a "*method of instruction*" rather than a "*course of study.*" Such topics are treated as the following:

Reading of gas meters, water meters, electric meters, reading of water pressure and steam pressure gauges, water tests, charcoal filters, litmus tests, removal of stains, coal tar dyes, food tests, heating and ventilation, uses of the electric magnet, constellations, standard time, weather reports, candle power of light, cost of lights, germination of seeds, leaves, mould, building stones, ores.

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SPECIAL ARTICLES

PULSATIONS IN SCYPHOMEDUSÆ DEPRIVED OF THEIR MARGINAL ORGANS

While working at the Harpswell Laboratory, I found that the two Scyphozoa so common on the coast of Maine, *Aurelia flavidula* and *Cyanea arctica,* responded differently to operations on the marginal organs. The European species of these two genera have been studied by Eimer and Romanes, with respect to this point and these two men were unable to agree as to the behavior of the animals with excised marginal organs. Mayer has stated that *Aurelia* (he does not specify the species) is temporarily paralyzed when the marginal organs are excised and this agrees with my observations. Eimer, too, reached a similar conclusion, but Romanes's experiments led him to state that, while many specimens did regain their pulsations, although always irregular and obviously different from those of a normal specimen, yet the greater majority remained quiescent.

Romanes failed to be as explicit in his statements concerning the behavior of these

jelly-fishes as he has in his other writings, and it is not a matter of surprise that he should be quoted[1] as saying that the forms with which he worked became paralyzed, when the marginal organs were excised, when one reads[2] that he found "in all the species I have come across that excision of the margins of the umbrellas produces an effect analogous to that which is produced by excision of the margins of the Hydromedusæ" where such an operation results in the total paralysis of the bell. However, when one reads farther, he says, with much verbosity, that

> There is an important difference, however, between the two cases in that the paralyzing effect of the operation on the umbrellas (of the Scyphomedusans) is neither so certain nor so complete as it is on swimming bells (of hydromedusæ). That is to say, although in the majority of experiments such mutilation of umbrellas is followed by immediate paralysis, this is not invariably the case.

Romanes found that *Aurelia aurita* showed "instantaneous and complete paralysis of the gonocalyx" on excision of the marginal organs, while *Cyanea capillata* was less marked in this respect.[3] Eimer's observations were practically the reverse of this.

There can be no question that Romanes was entirely correct in his observations, for he repeated them during several summers, specifically examining the point in question in the light of Eimer's work. It is fair to assume, too, that Eimer made no mistake. Hence, it seems that *Aurelia aurita* reacted differently on Cromarty Firth, Scotland, from what it did in the North Sea with respect to the matter at issue. Romanes probably used a different species of *Cyanea* (*Cyanea capillata*) from Eimer's form (which was probably *Cyanea lamarckii*) and I have used a third species, *Cyanea arctica*, which seems to be recognized by systematists as a good species. My species of *Aurelia*, *Aurelia flavidula*, is recognized by some as distinct from *Aurelia aurita*, but both Louis and Alexander Agassiz did not so regard it.

From my observations, *Aurelia flavidula* very rarely is paralyzed completely and, indeed, I have but an impression that I have seen *Aurelia* absolutely quiescent after the marginal organs have been removed. Unfortunately, I did not examine the question critically until last year and my previous observations were not recorded. During the past year, however, I found no specimen which did not regain pulsation after a longer or shorter period after the marginal organs were removed. The case of *Cyanea* is directly the reverse, for this form becomes totally paralyzed when the organs are removed. Reference to the statements from Eimer and Romanes, given above will make it clear how these observations correspond to theirs. They agree closely with those of the former and are totally at variance with those of the latter.

The matter is of importance from the point of view of the physiologist who wishes to use some primitive form of contractile substance with which to experiment and these observations are especially directed to them. *Cyanea arctica* will remain quiescent after the marginal organs are removed and respond only to mechanical, chemical and other external stimuli supplied by the operator. In fact, *Cyanea* rivals the classic *Cassiopea* for experimental work. *Dactylometra* reacts like *Aurelia flavidula*.

MAX MORSE

NEW YORK,
March 8, 1910

[1] For instance, Parker in his *Popular Science Monthly* articles on the nervous system makes such a statement and while giving no references, yet he has written me that he was impressed that Romanes's observations led to such conclusions.

[2] "Jelly-fishes, Starfishes and Sea Urchins," Appleton.

[3] *Phil. Trans.*, Vol. 167.

THE SOCIETY OF AMERICAN BACTERIOLOGISTS

THE eleventh annual meeting of the Society of American Bacteriologists took place on December 28, 29 and 30, 1909, in the administration building of the Harvard Medical School, Boston, in conjunction with the annual meeting of the American Association for the Advancement of Science. It can be confidently asserted that the society has never held a more successful and profitable meet-