solids in *Rhizostoma cuvieri,* 4.20 to 5.80 per cent. in *Aurelia aurita* and 3.70 to 4.25 per cent. in *Chrysaora hyoscella*) and the observations of Moebius[5] (who reports 2.06 to 2.10 per cent. in *Aurelia aurita*), and the non-acceptance of my data. It is somewhat surprising that Bateman does not report independent data of his own, since he used a large *Cyanea* in his own studies.

Unfortunately, I can not designate the species for which I have personal data, since no zoologist was available at the time the organism was secured. A photograph of the organism as secured, and as later dried down on a sheet of paper 23 × 30 cm has, however, been published.[6] This medusa was not *Gonionemus* sp., as Bateman erroneously assumes. In no place have I made any statement as to the water content of *Gonionemus.* Perhaps I am in error in wording my statements so that they might be interpreted as applying to all medusae, but I have said "a medusa,"[2] "one species of jellyfish (*medusa*),"[6] "the organism may contain," etc., and have recognized that the physiological condition of the organism, *e.g.,* presence of egg masses, etc., may make for a higher solid content. However, I still believe, from my own observations, that some salt-water medusae have a water content exceeding 99 per cent. and hope that investigators having access to such material will reinvestigate this question, for it is those organisms with the low solid content which present the interesting physiological problems.

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THE PHYSIOLOGICAL BASIS OF THE TWISTING HABIT IN PLANT GROWTH

IN connection with the interesting paper of Dr. William Seifriz in a recent number of SCIENCE[1] on the spiral habit of growth, correlated with the twisting of the stem or trunk of many plants, considered as a result of physiological rather than environmental conditions, it was thought that it might be of interest to add a bit of evidence which has been obtained in this laboratory.

In the course of an experimental program on the genetic effect of x-rays, an investigation has been undertaken of the physiological abnormalities of seedlings of the citrus fruits grown from irradiated seed. It is hoped at a later time to publish the results in full, but two seedlings are of interest at the moment. From the time of sprouting, these young plants showed a decided tendency to spiral in a counter-clockwise direction. Both plants twisted so markedly that the trunk was bent from the vertical and the leaves, during early life, were crushed against the stem. After six months the habit was abandoned, and the later growth was normal. Both plants showed some evidence of tissue inversion and other characteristic x-ray injuries during early life.

The seeds used in the work were obtained from a citrus experiment station, and represented a normally quite stable seed bed stock. Before treatment, they were soaked in distilled water for fifteen minutes and left in a moisture-saturated atmosphere for twelve hours. They were then dried on filter paper and were given doses of 2,400 roentgens of radiation from a thick-walled tungsten-target Coolidge tube operated at 200 k.v.p. and 30 ma. current. The seeds were then planted in flats in a mixture of sand and peat moss and maintained in a greenhouse, protected from wind and from sharp temperature change. Since the source of light was the sun, since undue mechanical shock was avoided for the seedlings, and since but two of the entire group showed any tendency to twist, it seems logical to assume tentatively that in this case a typical spiral growth, resulting in extreme twisting of the stem in a developing tree, was the result of a physiological rather than an environmental condition —possibly x-ray induced abnormal mitoses.

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AN UNUSUAL CRETACEOUS CIRRIPED

THE decision of the International Commission on Nomenclature (Opinion 118) that *Scalpellum gabbi* Wade[1] is a *nomen nudum,* on account of the extremely cautious wording of Wade's account of it, seems to make some further action necessary to place this rather unusual barnacle on a satisfactory basis. Wade figured the carina and an upper lateral plate. These are not known to belong to one individual, and it is even possible that they do not belong to the same species; but it happens that the carina was selected by Charles Darwin as the essential plate in diagnoses of fossil species of Scalpellum, most of which are known by detached plates. Wade's figures of the carina are ample for the recognition of the species, which is quite peculiar among Cretaceous forms for the subcentral position of the umbo. Only four other Cretaceous species, all European, have this advanced form of carina. It may be doubted whether Scalpellum developed this type of carina so early, and it may turn out that these Cretaceous species belong to

[5] K. Moebius, *Ibid.,* 5: 586. 1882.
[6] R. A. Gortner, *Gamma Alpha Record,* 22: 42. 1932.
[1] SCIENCE, January 13, 1933.

[1] U. S. Geol. Surv. Professional Paper 137, p. 191, plate 62, figs. 3, 4, 6, 7.