thickness with a rolling pin. The thickness of the rolling guides depends upon the desired magnification; for example, if the specimen were sectioned at 8 μ and the desired magnification through a camera lucida system were 200×, the thickness of the clay slab representing each section would be $8 \times 200 = 1600$ μ, or 1.6 mm. Since clay slabs greater than 2 mm in thickness are more easily handled, it is better to double the thickness of the calculated slab and use alternate sections on the slide. When the clay slab has been rolled out, the top piece of waxed paper is stripped off, and the slab, still on the glass, is transferred to the camera lucida field.

The outline of the section image projected onto the clay through the camera lucida system is then traced with a scalpel or stout dissecting needle, with sufficient pressure to cut out the clay section from the slab. The clay section is then inverted on the glass plate, the second piece of waxed paper stripped off, and the clay that was not a part of the section removed. The clay section is carefully lifted from the glass and placed on the model. The next clay section is cut and placed on top of the first after the two interfaces have been wet with water. The remaining sections follow in like manner. After a number of sections have been pieced together, details are sculptured into the soft clay.

In the case of a round specimen in which the first section is too small to support the increasingly heavier sections placed upon it, construction must start somewhere in the middle, preferably with the largest single section, and be continued outward to the smallest. Care must be taken to build the second half in reverse so that the two halves can be joined. Compression of the lower sections by the weight of new sections can be prevented by allowing the lower sections partially to dry so that the harder clay will support additional weight. A partly completed model can be kept pliable for subsequent work if wrapped in damp toweling.

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Color in Trilobites

IN SCIENCE (**117**, 17 [1953]) appears M. W. Garretson's interesting note on "Color in Trilobites of Trenton Age." The author states "no mention of color in any trilobites has been found in the literature." Possibly this should read "Ordovician" rather than "any trilobites." In 1922 there appeared the following: "A Trilobite Retaining Color-Markings" (Raymond, P. E. *Am. J. Sci.*, **4**, 461). In this article Raymond described with a figure a pygidium of *Anomocare vittata*, which he collected from the Cambrian of Cherokee County, Alabama, in 1921, and which shows retention of color markings. I personally recall having seen this specimen while a student of Raymond's.

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β-Glucuronidase and Catalysis

IN a recent exchange of comments with Levvy (SCIENCE, **116**, 285 [1952]), Fishman reiterated his view that the enzyme β-glucuronidase catalyzes the biosynthesis of conjugated glucuronides. Certain aspects of this question merit further comment. The Fishman hypothesis is representative of a waning genre which perhaps culminated with Bergman's espousal of the peptidases as the agents directly responsible for protein synthesis. Before the role of adenosine triphosphate (ATP) in the transfer of energy was appreciated, it was not possible to discover the rather complex experimental conditions necessary to demonstrate biological syntheses with crude tissue preparations. On the other hand, much information was available on amidases, esterases, and glycosidases, and it was a fashionable presumption, still encountered occasionally in other instances than the case under discussion, that these hydrolytic enzymes, because of some vague, unknown, and rather mysterious special environmental situation within the cell, caused a synthesis of the compounds which in prosaic *in vitro* experiments were cleaved rather than created. This presumption had a special advantage for its advocates in that, by asserting the necessity for a duplication of an unknown condition existing intracellularly if synthesis was to be demonstrated, it became impossible to bring direct experiments to bear on the problem, and the presence of a hydrolytic enzyme in a tissue could be invoked to argue either for the synthesis or the hydrolysis of a given substrate, depending upon which side the investigator desired to lean toward. One can agree with Fishman that these questions, along with adherence to the atomic theory, are matters of personal opinion, but not that his hypothesis is innocuous, even if fallacious. As an example, anyone who utilizes changes in tissue glucuronidase activity under varying experimental conditions as an index of changes in the ability to conjugate steroids is wasting his time if the Fishman hypothesis is wrong.

In addition to the convincing objections advanced by Levvy, attention should be drawn to the necessity of differing routes of synthesis and hydrolysis if the cell is to exist in a dynamic state. At a given moment a single enzyme cannot be catalyzing a net reaction in opposite directions. Further, a hydrolytic process, even if thermodynamically reversible at reasonable concentrations, is at the mercy of changing levels of intracellular constituents. This is perhaps why cells have evolved mechanisms of synthesis linked to highly exergonic reactions, thus enabling the processes of metabolism to continue at low substrate levels. It should be remembered that all cells employ the uronic acids as structural components, and the formation of these more important glycosides, in addition to the rather special hormone conjugates with which Fishman has been concerned, must also be accounted for.

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