mon.[1] Several years ago the study of cross sections was substituted. This later method seemed to give the student a new approach and a new idea of relations, which was beneficial not only in this course, but it also served as a review of the relations studied in the first course in anatomy.

Following the suggestion of Jackson,[2] fetuses were decalcified in 5 per cent. hydrochloric acid and then cut into rather thin sections of a centimeter or less in certain regions, with a long butcher knife. The hydrochloric acid was found to work satisfactorily for both the fetuses and for entire adult heads and then nitric acid of the same strength was tried. Nitric acid gave fully as satisfactory results, with even better differentiation of the tissues. In some cases there was a slight stickiness in the sections of both the heads and the fetuses decalcified with the nitric acid, which was not readily washed off. We found that we could use from 5 to 10 per cent. hydrochloric or nitric acid, changing the solution every week or ten days until a needle would easily penetrate the jaw bone, and then section with the knife.

Following the satisfactory results obtained with the adult heads and the fetal material, these methods were tried on other parts of adult cadavers. Material taken from a 2 per cent. phenol solution, used to store our cadavers, and put into nitric acid did not work satisfactorily. In many cases the tissues softened before the bone decalcified. Later on the material was put in a 10 per cent. solution of formalin for some weeks and then into a 10 per cent. solution of hydrochloric acid, following which excellent sections were obtained. They could be cut as thin as desired and the tissues were in excellent condition. From 5 to 10 per cent. solutions of hydrochloric acid seem to work equally well. The time varies, due to the character of the bone and the variation in the strength of the commercial acid used. The acid should be renewed every week or ten days for a period of from three to six weeks. The progress of the decalcification can be tested with a needle. When the needle passes into the jaw bone, temporal bone or other hard bone, the material should be removed, washed in water and cut.

This method of decalcification with hydrochloric acid has been found excellent for temporal bones, making the dissection of the human internal ear as easily done as that of the dogfish.

At first there was some trouble in holding the body of the fetus so as to get sections cut perpendicular to the axis of the body and parallel to each other. Recently we have been using a device similar to a carpenter's miter box. This is made very easily by nailing three boards together forming a trough just wide enough and deep enough to hold the fetus. A slit or guide is cut perpendicularly with a saw in the sides of the box toward one end and through this the long knife slides. The fetal cadaver is held securely by hand and advanced just the desired distance, the equivalent of the desired thickness of the sections. Lines may be marked on the cadaver for cutting as suggested by Ruth[3] after the decalcification and before the sections are cut.

Fetuses and adult entire heads may be decalcified in either weak hydrochloric or nitric acids, but adult material containing a larger proportion of soft parts is better decalcified in hydrochloric acid, with a previous soaking in strong formalin solution. Sections thus prepared are tough, not easily injured and may be cut as thin as desired. The edges are smooth, thus giving excellent differentiation of the various tissues. Sections fully as good as those from frozen material may thus be obtained when an expensive high speed band saw is not available. Decalcification of temporal bones or other head bones in hydrochloric acid makes the bone soft enough to permit its being cut away with a sharp scalpel.

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[1] R. E. Scammon, *Anat. Rec.*, 21: 19–24, 1921.

[2] C. M. Jackson, *Jour. Am. Med. Assoc.*, 39: 813–817, 1902.

[3] Elbert B. Ruth, *Anat., Rec.*, 58: 241–243, 1934.

BOOKS RECEIVED

BURRELL, ROBIN C. *Organic Chemistry.* Pp. xii + 331. 34 figures. McGraw-Hill. $2.75.

EAMES, ARTHUR J. *Morphology of Vascular Plants; Lower Groups.* Pp. xviii + 433. 215 figures. McGraw-Hill. $4.00.

FALK, I. S. *Security Against Sickness.* Pp. xii + 423. Doubleday-Doran. $4.00.

FERNBERGER, SAMUEL W. *Elementary General Psychology.* Pp. xi + 445. 120 figures. Crofts. $3.00.

FINCH, VERNOR C., and GLENN T. TREWARTHA. *Elements of Geography.* Pp. x + 782. 399 figures. McGraw-Hill. $4.00.

HEGNER, ROBERT W. *College Zoology.* Fourth edition. Pp. xvi + 742. 497 figures. Macmillan. $3.50.

HERING, MARTIN. *Die Blatt-Minen, Mittel- und Nord-Europas.* Lieferung 2. Pp. 111. 82 figures. 2 plates. Gustav Feller, Neubrandenburg.

HILL, J. BEN, LEE O. OVERHOLTS and HENRY W. POPP. *Botany: A Textbook for Colleges.* Pp. xiii + 672. 335 figures. McGraw-Hill. $4.00.

JUNG, HEINRICH W. E. *Einführung in die Theorie der quadratischen Zahlkörper.* Pp. viii + 148 + 16. Dr. Max Jänecke, Leipzig. 5.80 Rm.

Organon; International Review. I, 1936. Pp. 304. Mianowski Institute for the Promotion of Science and Letters, Warsaw.

WARDEN, CARL J. *The Emergence of Human Culture.* Pp. 189. Macmillan. $2.00.

WEBB, T. J. *Elementary Principles in Physical Chemistry.* Pp. x + 344. Appleton-Century. $4.00.

WELLHOUSE, WALTER H., and GEORGE O. HENDRICKSON. *College Biology.* Pp. viii + 381. 166 figures. Crofts. $3.00.

WHITE, C. LANGDON, and GEORGE T. RENNER. *Geography; An Introduction to Human Ecology.* Pp. x + 790. 329 figures. Appleton-Century. $4.00.