other is a lower reflex, consisting of a chain of local reflexes which are very resistant to anesthesia.

The complexity of their mutual relations furnishes suggestive problems for future investigations.

30 (122). **"The enzymes of inflammatory exudates. A study of the enzymes concerned in inflammation and their relation to various types of phagocytic cells": EUGENE L. OPIE.**

The leucocytes of an inflammatory exudate produced by injecting aleuronat into the pleural cavities of dogs digest protein both in an alkaline and in an acid medium (uncoagulable protein nitrogen being estimated by the Kjeldahl method). The following evidence shows that two enzymes are present:

(*a*) Cells, dried after treatment with absolute alcohol and ether and then reduced to a powder, digest actively in an alkaline medium (0.2 per cent. sodium carbonate), but have almost completely lost the power of digesting in an acid medium (0.2 per cent. acetic acid).

(*b*) By subjecting washed cells of a sterile inflammatory exudate to varying degrees of heat, their power to digest in an alkaline and in an acid medium is lost at a temperature above 70° C. At temperatures between 55° and 65° C. the power to digest in an alkaline medium is unimpaired but in an acid medium it is much diminished.

(*c*) With cells of exudate removed from the pleural cavity twenty-four hours after the injection of aleuronat, digestion is very active in an alkaline medium, but less active in an acid medium. At the end of from three to five days, power of digesting in an alkaline medium is diminished or unchanged, but the acid digesting power is increased.

At the end of twenty-four hours after injection of aleuronat polynuclear leucocytes with fine granulation are predominant and from 85 to 90 per cent of the cells are present. The cells, according to observations previously reported, contain a ferment with acts in an alkaline medium. At a later stage of inflammation when large mononuclear phagocytic cells are predominant, the power of digesting in an acid medium is increased and bears a relation to the proportion of mononuclear phagocytes. If washed red

blood corpuscles of the rabbit are injected into the pleural cavity of the dog, at the end of twenty-four hours an exudate is produced very rich in large mononuclear cells, and, in correspondence, the power of the cells to digest in an acid medium is greater than that of the twenty-four hour aleuronat exudate.

Lymphatic glands in the neighborhood of the inflammatory exudate, the substernal glands in the case of the pleura, contain at the end of three or more days in greater number larger mononuclear phagocytes similar to those found in the exudate at the same stage. Emulsions made from such glands digest in an acid medium and little if at all in an alkaline medium. The digestive power of these glands (measured in cubic centimeters of 1/10 *n* sulfuric acid) is constantly greater than that of glands such as the mesenteric some distance from the seat of inflammation.

	Exp. 1.	Exp. 2.	Exp. 3.	Exp. 4.
Substernal Glands	7.6 c.c.	11.45 c.c.	11.95 c.c.	12.2 c.c.
Mesenteric Glands	—	9.9 c.c.	8.75 c.c.	9.0 c.c.
Time after injection	1 day	3 days	4 days	5 days

The differences in degree of digestion are more significant when it is recalled that the activity of other proteolytic enzymes has been shown to vary in a proportion equal approximately to the square root of the quantity of the enzyme.

The phagocytic cells of an inflammatory exudate contain two enzymes. One of these ferments, characterized by its power to digest protein in an alkaline medium, is contained in the polynuclear leucocytes with fine granulation, and since it is derived from the bone marrow may be designated *myelo-protease*. The second ferment, characterized by its power to digest only in an acid medium, in this respect resembling the autolytic ferments of other organs, is contained in the large mononuclear cells of the exudate and is increased in lymphatic glands adjacent to the seat of inflammation; it may be designated *lympho-protease*.

31 (123). **"Experimental myocarditis. A study of the histological changes following intravenous injections of adrenalin":**[1] **RICHARD M. PEARCE.** (Presented by **EUGENE L. OPIE.**)

Intravenous injections of adrenalin in doses of one-tenth cubic centimeter, soon raised to five-tenths and given on alternate days,

[1] *Journal of Experimental Medicine*, 1906, viii, p. 400.