cells often in "placards" were seen in numbers. He also reports cases where an increased proportion of eosinophiles was found, one being general carcinosis, in the exudate of which cancer cells were present; and two being of obscure origin, where there was an eosinophilia in the blood. In two instances the author was able to make a certain diagnosis of carcinoma by the discovery of tumor cells in the exudate. From his own work and the review of the literature he draws the following conclusions:

The majority of the lymphocytes occurring in pleural effusions are true lymphocytes, derived by active migration from the blood of lymph vessels. They are not degeneration products of endothelial cells, nor are they lymphoid cells derived from the fixed tissues.

A small part of the lymphocytes are derived by the dividing of polymorphonuclear leukocytes, the so-called pseudolymphocytes being thus formed. A predominance of lymphocytes in pleural effusions is characteristic of the mild inflammations of the pleura. This has nothing to do at all with the lack of fluid of the tissues, as Neuman considered, but is dependent upon a mild irritation which calls forth a lymphocytic exudate. Since such slight irritations of the pleura are generally due to tuberculosis, the lymphocytosis of the exudate forms a strong argument for the assumption of a tuberculous infection. The presence of numerous endothelial cells in the exudate indicates that affection of the pleura is not of an inflammatory nature, and numerous polymorphonuclear leukocytes establish the fact that there is an inflammation of the pleura due to a more or less violent infection. In primary tuberculous pleurisy polymorphonuclear leukocytes are found in numbers only in very early cases or in mixed infections (empyema).

Eosinophiles in the pleural exudate are probably not called forth by infection, but stand in association with dyspnœa, and the presence of endothelial cells in the exudate. There usually exists simultaneously an eosinophilia in the blood.

With the help of a study of the cells in the exudate a diagnosis of new growth of the pleura or peritoneum can sometimes be made with surety by finding some of the cellular elements derived from a malignant growth.

Observations upon Natural and Artificially Produced Leukotoxins.—CHRISTIAN (*Deut. Arch. f. klin. Med.*, 1904, Band lxxx., p. 333) gives the details of certain experiments with leukotoxins. The presence of the leukotoxins in the serum was determined by treating the blood of one animal with the serum of another animal, and observing the effect upon the movements of the leukocytes under the microscope. No differentiation was made between the different cell forms of the white blood corpuscles. As compared with natural hæmolysins, natural leukotoxins were exceedingly rare. The only serum that possessed natural leukotoxic properties was that of the chicken, which was active for the leukocyte of the dog. Artificial leukotoxins for the white blood corpuscle of the rat were produced in the serum of the guinea-pig by injections of rats' spleen.

Although the motion of the leukocytes was stopped, solution did not take place. Further experiments showed that leukotoxins could also be produced by the injections of various organs which had previously been washed free of blood. The author, therefore, concludes that

leukotoxic serum is not specific, inasmuch as it can be obtained artificially by injections of organs other than those which are concerned in the formation of blood cells. The leukotoxin, like the hæmolysins, is destroyed by heating at 55° C. for one-half hour.

Soluble Toxins of the Typhoid Bacillus.—Lagriffoul and Wahby (*Central. f. Bakt. u. Parasitkunde.*, Original, 1904, Bd. xxxv. p. 593) have succeeded in obtaining a substance in filtered cultures of the typhoid bacillus, which shows mild toxic properties for animals when injected intravenously or intraperitoneally. This toxic product varies in amount according to the conditions under which the organisms are grown. It is only present in any amount in young cultures, and if the growth is prolonged the toxin disappears. These facts are offered as an explanation for the failure of other observers to obtain a similar toxin in filtered cultures. The toxic substance is precipitated by alcohol and destroyed at temperatures of 52° to 58° C. The bodies of the typhoid bacilli from these culutres were killed by thymol and subsequently washed in salt solution. After suspension in salt solution these emulsions were injected into animals in doses corresponding to the amount of filtrate used. It was found that the bodies of the dead bacilli were less toxic than the filtured cultures. Further studies went to show that the toxicity of the filtrate was due to an elaboration of toxin by the living organism and did not result from the liberation of an intracellular toxin from the bodies of dead bacilli which might be present in the cultures. The authors conclude that living typhoid bacilli are capable of producing at least small quantities of a soluble toxin when grown in artificial culture media.

The Results of Obliteration of the Pyramids of the Kidneys in Rabbits.—Tollens (*Virch. Arch.*, 1904, Bd. clxxvii. p. 477) succeeded in closing the outlet from single medullary pyramids in the kidneys of rabbits and made observations on the changes which took place after intervals of four, eight and one-half, and twelve weeks. After four weeks the tubules of the medulla and cortex which had been drained by the occluded papilla showed a general dilatation, while a new formation of connective tissue could be observed in the cortex. After eight and one-half weeks the lesions had progressed in two directions. Some of the closed tubules had reopened and returned to their normal size. Elsewhere there had been marked increase in connective tissue, with compression of certain groups of tubules. Finally, a few canals, principally in the cortex, showed extreme distension. After twelve weeks the areas changed to small, contracted, well circumscribed scar-like masses, which had much the appearance of the contracted kidney. Microscopic examination showed that the areas were made up of dense connective tissue, with here and there a few remnants of tubular epithelium. These changes are analogous to the alterations produced in other organs after the closure of their excretory ducts.

The Pathological Effects of Periodic Losses of Blood.—The regular and periodic abstraction of blood from horses which have been used for the purpose of producing antitoxins leads to certain cases to serious derangement and death. A preliminary survey of these observations suggested to Theobald Smith (*Journal of Medical Research*, 1904, vol.