"BALTIMORE, January 26, 1900.

"DEAR DR. JACK:

"I was much interested in your paper on the Hygiene of the asthmatic, in which I found many good points. I have never had my attention called to any special relation between leukemia and asthma, and I don't know that the eosinophilia, which is so constant a feature, has any special suggestion in this respect.

Sincerely yours, WILLIAM OSLER."

I should infer from this note that my present classification will still more agreeably accord with Osler's views. Owing to the fact that the three varieties of asthma herein considered so frequently blend, or rapidly alternate, they can hardly be classed as separate pathological conditions, yet as it would be rather confusing to undertake to construct a combined pathology applicable to these manifestations, it is deemed best here to deal with them singly. The nomenclature of the group is taken from the blood dyscrasia most prominent in the production of the asthmatic dyspnea and accordingly are (1) a lymphocytosis; (2) an intestinal toxemic leucocytosis; (3) an anemia.

I. *Asthmatic Lymphocytosis.*—The pathology of this form of asthma lies chiefly in the blood, and in uncomplicated cases there usually is no other appreciable lesion. The asthmatic lymphocytosis is most frequently found in (*a*) children during lactation; (*b*) in asthmatic adults subsisting largely upon a lymphogenous diet.

(*a*) Children of an asthmatic tendency are very apt, especially during lactation, to suddenly develop a lymphocystosis that results in a serious, grave, and often fatal, dyspnea. The attacks usually come on suddenly in the latter part of the night without any prodromal symptoms or exciting causes, other than the lack of the chemical effect of sunlight on the blood. The child may be thrifty, well-nourished, fleshy and rapidly developing, but, as a rule, it is flabby muscled, more or less rhachitic and peevish.

This peevish, irritable, worrisome and changeable disposition, especially pronounced just preceding or during short intervals of attacks, is quite characteristic and offers an excellent clinical demonstration of the unstableness of the blood of the asthmatic. The kidney is the first organ to detect this lymphogenous change in the blood and when this change is gradual, and the kidney normal, it will filter off the excess of lymph almost as fast as it forms, which renders the attacks very mild. The mother will usually observe that the child wets an extraordinary large number of diapers a day or so before an

attack. The urine is of a light color, low specific gravity, odorless, neutral in reaction and contains but few solids or crystalline substances. This diuresis diminishes during an attack, to become quite scanty, high colored and highly acid with its cessation. If, with this diuresis a diarrhea mercifully sets in, the excess of lymph will often be drained off sufficiently to completely avert the attack.

The blood analyses are characteristically variable, but the majority will indicate a relative increase in the lymphocytes. Owing to the dilution of the blood by this excessive lymph formation, there is a reduction in the percentage of the hemoglobin, as denoted by the quite constantly lowered specific gravity of the blood. The eosinophiles are decidedly increased in numbers, but still no more so than one would expect in a child, from the malnutrition resulting from a disturbed or perverted metabolism sufficient to produce the lymphocytosis. The most probable cause of this temporary malnutrition and perverted metabolism during lactation is that, from some slight exciting cause, the digestive ferments do not properly act upon the ingested milk which permits the formation of a lymphogenous chyle that, when absorbed by the lacteals and carried to the blood, acts more as a lymphogogue than a true hematogenic substance. The two cardinal factors in the production of the asthmatic dyspnea when due to a lymphocytosis are (1) the hemoglobin cannot reach the oxygen in the lungs; (2) the oxygen cannot reach the lungs.

The hemoglobin is handicapped in reaching the oxygen in the lungs, first, by its being diluted with and thickly surrounded by lymphocytes; and, second by a thickened and air-tight condition of the partition between the oxygen and hemoglobin, due to an accumulation of mucus in the lung substance. The hemoglobin is also often in grave or fatal cases still further excluded from oxygen, by a collateral engorgement of the lung capillaries with lymph. The oxygen is debarred from reaching the lungs by their partially filling with mucus together with the trachea and larynx. In favorable cases, after an hour or so, the pathology changes and the lymph is gotten rid of, by some being metamorphosed into normal blood substance, and the rest by elimination.

A recent case that shows the serious aspect that this variety of asthma is apt to assume, and also serves to clench its pathology, was that of a breast-fed, well nourished, healthy parented, Polish asthmatic child of ten months. It was never entirely free from asthma, but occasionally the attacks would become alarming. In one of these severe paroxysms the respiratory apparatus was so completely filled