

liva constantly dribbles from it. Such patients, however, may live long and reach great age, if under such circumstances this can be looked upon as an advantage. They die usually of some intercurrent disease."

TREATMENT.—During the long period of time which has elapsed since leprosy began making history, almost innumerable products and methods of treatment have been used for its relief or cure. Perhaps the most popular and largely used drug is chaulmoogra oil. This was introduced by Le Page, of Calcutta, and is used both externally and internally. Its dose is from five to seventy-five drops, three times a day, in capsules, emulsion, or milk. When the stomach will not tolerate the drug (which unfortunately often happens), Vidal recommends its active principle, gynocardic acid, in the form of gynocardate of sodium or magnesium, in capsules containing from 0.2-0.32 (gr. iij.-v.), from ten to twenty capsules being taken daily. Externally, it may be combined with olive oil, in the proportion of one part to from five to fifteen. When administered hypodermatically, it has proved irritating. Under its prolonged application, it is affirmed that ulcers heal, and the general nutrition improves, the patients gaining in weight, the anesthesia and hyperæsthesia being corrected; the tubercles undergoing involution, and general marked improvement taking place.

In South America and China, Hoang-nan is largely used with success. It is given in pill form, in doses of three grains three times daily. Arsenious acid, creosote, carbolic acid, chlorate of potassium, formalin, thyroïd extract, salol, mercury, and sodium salicylate have all been largely used. Crocker has obtained good results by the intramuscular injection of perchloride of mercury, one-quarter of a grain twice weekly.

Dyer,¹³ of New Orleans, obtained marked improvement in four out of five cases by using hypodermatic injections of Calmette's antevenerne. From one to eleven cubic centimetres were first injected every other day; later, the injections were repeated daily, the sites being the gluteal and intrascapular regions. When the remedy was injected into nodules these disappeared. One of the patients was apparently cured. Serum-therapy has not been successful, nor has the injection of tuberculin produced any good effects.

Unna says that both the cutaneous and the nerve lesions are benefited by the use of reducing agents, such as chrysarobin, pyrogallol, resorcin, and ichthyol. He affirms that the action of these remedies is both local and constitutional, chiefly the former, and that under their influence marked improvement occurs. Electricity is advised for the relief of pain, anesthesia, and hyperæsthesia. Surgical measures are indicated in the treatment of tubercles, ulcers, bone necrosis, and gangrene. The condition of leprosy does not contraindicate any surgical operations which become necessary. Amputations, nerve-stretching, tracheotomy, and other operations are often demanded.

PROPHYLAXIS.—As leprosy is unquestionably contagious, the subject of the protection of the uninfected is important. In America attention was first directed to this by Dr. James C. White, of Boston. A number of years later he again called attention to and urged measures to check the evil. The importance of this subject was emphasized again, in 1894, by Dr. James Nevins Hyde, in his report "On the Distribution of Leprosy in North America," which was presented to the Congress of Physicians and Surgeons. Still more recently, Morrow¹⁴ has sounded a warning of the possible introduction of leprosy into the United States from her newly acquired leprosy colonies. Laws at present exist prohibiting the importation of known lepers. Experience teaches, however, that this disease, which may be for years slow and insidious in its development, readily evades ordinary inspection. That great care should be taken to guard against the admission of it is shown by the fact that practically all the cases in the United States, except those in Louisiana, have been imported. Many plans for isolating these patients have been suggested and tried in various places, even to com-

pulsory detention. The latter has been very successful in Bombay and other places. The adoption of such measures in this country is at present out of the question. Numbers of the milder anæsthetic patients, being but slightly infectious, cannot justly be confined for life; while others suffering from the tuberous variety, whose ulcers and mucous discharges are highly infective, certainly should be isolated. Important measures in the care of leprosy patients concern their hygienic surroundings. A wholesome diet, warm clothing, protection from sudden changes of temperature, open-air exercise, baths, daily inunctions, and massage are all advised. That hygiene plays an important rôle in the management of leprosy is well illustrated by the immediate cessation in the spread of the disease, and by the great improvement in the individual cases themselves, among the Norwegian lepers in Minnesota. *Oliver S. Ormsby.*

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¹³ Dyer: New Orleans Medical and Surgical Journal, October, 1897.
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LEPTANDRA.—*Culver's Root, Culver's Physic.* The rhizome and roots of *Leptandra virginica* (L.) Nutt. (fam. *Scrophulariaceæ*). (The name *Leptandra* will doubtless replace that of "Veronica" of the present U. S. P. definition.) *Leptandra* grows very abundantly in rich open woodlands and copses through the Eastern and Central United States. It is a perennial herb, with simple, perfectly straight, erect, slender stems, from two to six feet high, whorled lanceolate leaves, and terminal panicles of long, slender, acute, white or pinkish, densely flowered spikes. The drug is gray-brown or gray-black, from four to six inches long, much branched and crooked, the rhizomes slightly flattened, about one-fourth inch thick. The internodes are characteristically narrowed downward and readily disarticulate. The roots are rather few, coarse, and unbranched. The drug has little odor, but a bitter, resinous, and slightly acrid taste.

The demand for *Leptandra* is chiefly American. It has, however, been recognized in the Pharmacopœia since its first edition and has of late increased greatly in favor, both here and abroad.

Its important constituent is six per cent. of an irritant resin, of the same general character as those of mandrake and jalap. It contains a little saponin, tannin and gum, and the peculiar bitter crystalline glucoside *leptandrin*, which is soluble in both water and alcohol, and which must not be mistaken for the commercial article so-called.

Our knowledge of the action of *leptandra* is purely clinical. It is a stimulating laxative or an irritant cathartic, according to its condition and dose. In the recent state it is drastic and even emetic, and poisonous, becoming milder with drying and keeping. It stimulates the intestinal mucous secretion and the defecation of bile, and also the intestinal movements, and is an excellent laxative in doses of 1 gm., and a purgative in doses of 2 to 4 gm. The long list of therapeutic properties attributed to it by the eclectics are not to be denied, but are the result of improved elimination and nutrition. The official preparations are the fluid extract, dose 1 to 4 c.c. (fl. ʒ ʒ-ʒ) and the extract, dose 0.06 to 0.2 gm. (gr. 1-ii).

Each official vegetable cathartic pill contains 0.0015 gm. of this extract. Commercial "leptandrin" is the practical equivalent of this extract. *Henry H. Rausby.*

LESLIE WELL.—Ingham County, Michigan.
Post-Office.—Leslie.

ACCESS.—From Jackson, via the Jackson, Lansing and Saginaw Railroad to Leslie, fifteen miles north. This is a very good calcic water, with sufficient iron to give it tonic properties. Analysis by Prof. R. C. Kedzie:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium bicarbonate	5.27
Potassium bicarbonate	4.55
Calcium bicarbonate	30.62
Magnesium bicarbonate	10.53
Iron bicarbonate	2.27
Calcium sulphate	7.04
Alumina	2.08
Silica	.65
Total	63.01
Carbonic acid gas	13.05 cubic inches.

This water is very useful in anæmia and debilitated states of the system, especially in those affected with gastric and intestinal disorders. *James K. Crook.*

LEUCOCYTOSIS.—By leucocytosis is meant an increase of the number of leucocytes in the circulatory blood above that which is normal for the individual. This increase must affect chiefly the polynuclear leucocytes—or each variety in such a way that the relative proportions of the different leucocytes remain the same as in health.

NORMAL PERCENTAGE OF EACH VARIETY IN THE ADULT.	
(a) Small lymphocytes	20 to 50 per cent.
(b) Large lymphocytes	4 to 8 "
(c) Poly(morpho)nuclear neutrophiles	62 to 70 "
(d) Eosinophiles	4 to 4 "
(e) Mast cells	4 to 4 "

Myelocytes represent a pathological variety of leucocytes—hence an increase of leucocytes involving especially the myelocytes is not considered a leucocytosis, but represents a special blood disease which is considered under the heading *Leukæmia*.

Again, an increase of leucocytes involving especially the lymphocytes is not a leucocytosis—but is either a lymphocytosis or a lymphatic leukæmia.

Some authorities prefer the terms hyperleucocytosis and hypoleucocytosis to indicate an increase and decrease in the number of leucocytes, using the word leucocytosis to mean the normal number of leucocytes.

The normal number of leucocytes varies within quite a wide range in healthy adults (5,000 to 10,500). People in a poor condition of nutrition but with no special disease have a low leucocyte count, with a reduced percentage of polynuclear cells, while those in vigorous health have a high leucocyte count, even approaching a slight leucocytosis, with an increased percentage of polynuclear cells.

The estimation of the number of leucocytes is of great value in the diagnosis and prognosis of disease, and aids materially in operative decisions, when considered in connection with other diagnostic and prognostic data. Considered by itself, it is useless.

It is highly important to keep in mind the fact that a leucocytosis may be physiological.

VARIETIES OF PHYSIOLOGICAL LEUCOCYTOSIS.—(a) New-born, (b) digestion, (c) pregnancy, (d) post-partum, (e) after violent exercise, massage and cold baths, (f) moribund state.

In the *new-born* there is a leucocytosis, varying from 17,000 to 21,000, greatly increased by digestion. This gradually decreases as the child grows older, until about the sixth year, when it approaches the normal adult standard. It must be kept in mind that the leucocyte count of a child is greatly influenced by the backwardness or forwardness of its development.

Attention to *digestion leucocytosis* is often overlooked in the estimation of leucocytes and in the deductions drawn therefrom. After a meal rich in proteids the leucocyte count may increase in health about 33 per cent. A vigorous person whose fasting leucocyte count is 9,000 may have a count of 12,000 three to four hours after a meal. The best time for making a fasting leucocyte count is before breakfast, since during the day there is more or less digestion leucocytosis most of the time. In certain diseases other than those of the digestive tract, there may be quite a marked digestion leucocytosis. Cabot gives the following examples:

In a case of pneumonia the count before food was 10,400, after food 21,700; in neurasthenia, before food 7,500, after food 13,500.

Any disease of the gastro-intestinal tract, whether functional or organic, may prevent the appearance of the digestive leucocytosis. In chronic gastritis there may be an absence of digestion leucocytosis, or it may be slight and late in appearing. In dilatation of the stomach it may be absent. In the majority of cases of cancer of the stomach it does not occur.

Pregnancy.—Most primiparæ show a moderate degree of leucocytosis during the later months of pregnancy, averaging about 13,000. It is not so common in multiparæ. The fact that in this condition there is no digestion leucocytosis suggests that the whole process may be a digestive leucocytosis.

The fact that there is normally a moderate leucocytosis during the post-partum period is of value, because it might be taken as an evidence of sepsis.

Violent exercise, massage, and cold bathing, such as the typhoid bath, cause a moderate, temporary leucocytosis, comparable to the digestion leucocytosis.

Moribund, or terminal, leucocytosis, occurs during the terminal stages of different diseases, and in most cases is due to peripheral stasis. In some cases it is thought that the terminal infections may be responsible. The increase in white cells is moderate and is usually in the polymorphonuclear cells; the count seldom exceeds 20,000 or 30,000. Occasionally, as in the case of pernicious anemia reported by Cabot, the increase in the lymphocytes is so marked as to resemble lymphatic leukæmia.

PATHOLOGICAL LEUCOCYTOSIS.—Cabot makes the following classification: (1) Post-hemorrhagic; (2) inflammatory; (3) toxic; (4) malignant disease; (5) therapeutic and experimental.

Theory Explaining Pathological Leucocytosis.—Present evidence tends to show that this process is a general one, involving the entire circulatory system,—that a drop of blood from the finger or the ear may be taken as an index of the blood condition in the deeper vessels of the body.

Leucocytosis is symptomatic of an excessive output and rapid development of leucocytes by the bone marrow due to the influence of *chemotaxis*.

The chemotactic theory may be stated as follows: The presence in the blood of certain chemical substances, produced by infective agents, is capable of exerting both an attractive and a repellent influence upon the amoeboid leucocytes. If cells are attracted by such substances, the phenomenon is known as a positive chemotaxis; if they are repelled, it is called negative chemotaxis. This effect upon the cells of the blood may be produced by bacteria or their products,—necrotic tissue which has gained entrance to the circulation, and thermal and mechanical irritants. It would seem that different varieties of leucocytes—polynuclear neutrophiles, eosinophiles, lymphocytes—respond to different stimuli; in one instance we have an ordinary leucocytosis—as in pneumonia, in which the polymorphonuclear cells are chiefly increased; in another, as in trichiniasis, an eosinophilia; in a third, a lymphocytosis.

It seems reasonable to conclude that leucocytosis is a conservative process on the part of nature, and represents an attempt to destroy the infectious agent or its product by mechanical means, *i.e.*, phagocytosis; or by chemical means—the production of chemical substances (alexins) which act as bactericidal or antitoxic agents. Grabbit-

schewsky states that these processes are most active at the period of maximum leucocytosis.

Just previous to the development of leucocytosis, there is usually a stage in which the leucocyte count is low. This is called by Löwit the *leucopenic phase*. Goldscheider and Jacob have proved that this is dependent purely upon an altered distribution of the cells in favor of the deeper vessels.

Pathological leucocytoses differ from the physiological in being usually of larger extent and of greater duration, and in being almost always accompanied by a relative and absolute increase in the poly(morpho)nuclear leucocytes. There is also a change in the cell structure in certain cells. A small percentage of the poly(morpho)nuclear cells resemble myelocytes, having a nucleus which is on the border line between the two cells. One to three per cent. of the cells have become so altered that they cannot be distinguished from myelocytes.

Post-Hemorrhagic.—Following a large hemorrhage there is usually within an hour a considerable leucocytosis—from 16,000 to 18,000. In hemorrhage from the stomach this disappears again in a day or two, while in ordinary traumatic hemorrhage it persists longer.

Inflammatory and Infectious.—To the clinician the determination of leucocytosis in the numerous infectious and inflammatory conditions is of more practical value from the standpoint of diagnosis and prognosis, than the leucocytosis in all other conditions.

In the consideration of this variety of leucocytosis and in the deductions to be drawn from it, it is well to keep in mind the following facts.

There is no direct connection between leucocytosis and fever, since many febrile processes—typhoid fever, for instance—run their entire course, if uncomplicated, without leucocytosis, even showing a hypoleucocytosis.

Purulent and gangrenous processes usually cause a higher leucocytosis than serous processes (compare empyema and pleurisy), but the amount of leucocytosis depends on the severity of the infection and the resisting power of the patient. A leucocytosis which increases from hour to hour suggests an acute spreading inflammatory process, and its detection is of great value in cases of acute appendicitis in influencing the surgeon regarding his operation and prognosis. Wright and Joy (*Medical News*, April 5th, 1902) come to the following conclusions from a study of one-hundred and twenty-four cases of appendicitis in which they have blood records, and about as many in which they have no records.

1. The leucocyte count is a valuable aid to prognosis in appendicitis.
2. This is distinct from its diagnostic value.
3. A high stationary, or an increasing count, indicates a morbid condition of increasing severity which demands operation no matter what the clinical symptoms may be.
4. A low stationary or decreasing count indicates that the severity of the case is abating and that an operation may be safely postponed. Cases in which a falling count is accompanied by unmistakable signs of a generally bad condition form the rare exception to this general principle, and in them there is no chance of error.
5. No arbitrary set of prognostic values to be assigned to various degrees of leucocytosis can be constructed. The important point is to follow any scheme in which one learns to have confidence, provided the essential principle be preserved.
6. The count indicates when operation should be performed for the best interests of the patient.
7. Circumstances often render it desirable to postpone operation in appendicitis. Study of the blood renders it possible to determine whether this may be done with safety and often renders such postponement permissible.

When appendicitis is walled off and stationary, leucocytosis is less than in the advancing process and does not increase from hour to hour.

Leucocytosis is present in the following inflammatory diseases (Cabot):

Asiatic cholera, relapsing fever, typhus fever (according to the majority of observers), scarlet fever, diphtheria

and follicular tonsillitis, syphilis (secondary stage), erysipelas, bubonic plague, yellow fever (some cases), pneumonia, smallpox (suppurative stage), malignant endocarditis, puerperal septicæmia, and all pyæmic and septicæmic conditions, actinomycosis, trichinosis, glanders, acute multiple neuritis (febrile stage), acute articular rheumatism, septic meningitis and cerebrospinal meningitis, cholangitis, cholecystitis, empyema of gall bladder, acute pancreatitis, endometritis, cystitis (some cases), gonorrhœa; abscesses of all kinds and situations,—felon, carbuncle, furunculosis, tonsillar and retropharyngeal abscess, appendicitis, phlebitis (some cases), pyonephrosis, perinephritic abscess, pyelonephritis, osteomyelitis, empyema, psoas and hip abscesses when not simply tuberculous, abscess of lung, liver, spleen, ovary, and prostate, salpingitis and pelvic peritonitis, epididymitis, pericarditis, peritonitis, arthritis (serous or purulent non-tuberculous), conjunctivitis, gangrenous inflammations of the appendix, lung, bowel, mouth (noma), many inflammatory diseases of the skin, such as dermatitis, pemphigus, pellagra, herpes zoster, prurigo, some cases of universal eczema. A miscellaneous class producing leucocytosis (toxic under Cabot's classification) includes that of illuminating-gas poisoning, quinine poisoning, rickets, uric-acid diathesis, gout, acute yellow atrophy of the liver, advanced cirrhosis of the liver (some cases), especially with jaundice, acute gastro-intestinal disorders (ptomaines?), chronic nephritis, usually in uræmia cases, after injections of tuberculin and thyroid extract and of normal salt solution (intravenous), after ingestion of salicylates, potassium chlorate, or phenacetin, during or after prolonged chloroform narcosis, ether narcosis (according to some observers).

Malignant Disease.—The position of the tumor, its size, rapidity of growth, the number, size, and position of its metastases, and the resisting power of the patient—all have a marked effect upon the number of leucocytes in malignant disease.

There may be a leucopenia in cancer of the œsophagus, due to the starvation which a new growth in that location causes. If the cancer is small and without metastases—as in the early epithelioma of the lip—the leucocyte count is normal. Excessively high counts are never found. In rapidly growing and extensive neoplasms of the lung, liver, and kidneys counts of 50,000, 40,000, and 28,000 have been made. Sarcoma usually produces a more frequent and larger leucocytosis than carcinoma. When all cases are considered, absence of leucocytosis is perhaps more common in malignant disease than is its presence.

Therapeutic and Experimental.—Pohl found that most of the so-called tonics and stomachics produce a slight leucocytosis in animals. Winternitz injected a large variety of substances subcutaneously, and found that the degree of leucocytosis was parallel to the degree of local reaction excited.

Lymphocytosis is an absolute and relative increase in the circulating lymphocytes. The ordinary white count cannot of course determine this fact, but resort must be had to the differential count of stained films. A moderate white count might show a lymphocytosis. If lymphocytosis is associated with an increase in the total white count it cannot be distinguished from lymphatic leucæmia except by the history and physical signs. If we take the adult blood as our standard, lymphocytosis is normal for healthy infants. Certain of the diseases of infancy increase the lymphocytes remarkably—such as cholera infantum, rickets, various intestinal troubles, scurvy, hereditary syphilis, and especially pertussis, which disease, according to Meunier, may quadruple the lymphocytes. There is no rule governing the size of the lymphocyte; sometimes it is the larger, sometimes the smaller, and often no division can be made between the two.

In many debilitated conditions in the adult, the percentage of lymphocytes is increased—due simply to a diminution in the number of polynuclear neutrophils. This must not be called a lymphocytosis.

The diagnostic value of lymphocytosis is seen chiefly in the diagnosis of lymphatic leucæmia, when associated with the presence of glandular tumors. Whooping-cough must first be proved absent. If associated with eosinophilia it may suggest obscure syphilitic disease.

Eosinophilia is an absolute increase in the number of eosinophiles in the circulating blood. There is a variation of from 25 to 500 per cubic millimetre in the healthy adult blood. Physiologically, eosinophilia occurs in young infants, and in women during the menstrual period and after coitus.

Pathologically, it has been reported in a large number of diseases, but from the standpoint of practical diagnosis is of more value in trichiniasis than in any other disease. The following list of diseases in which eosinophilia is found with the greatest regularity is taken from Da Costa:—

Diseases of the Skin.

Dermatitis herpetiformis.
Eczema.
Leprosy.
Lupus.
Pellagra.
Pemphigus.
Prurigo.
Psoriasis.
Scleroderma.
Urticaria.

Parasitic Diseases.

Helminthiasis.
Ankylostomiasis.
Ascaris lumbricoides infection.
Oxyuris vermicularis infection.
Tænia mediocanellata infection.
Trichiniasis.

Diseases of Bones.

Hypertrophy.
Osteomalacia.
Malignant neoplasms.

Post-febrile Conditions.

Malarial fever.
Pneumonia.
Rheumatic fever.
Scarlet fever.
Septicæmia.
Bronchial asthma.
Spleno-medullary leucæmia.

James Rae Arneill.

LEUCOPENIA.—An absolute reduction in the number of leucocytes in the circulating blood below the lowest normal limit is termed leucopenia, or hypoleucocytosis. It is the opposite of leucocytosis or hyperleucocytosis. The lowest normal limit is usually given as 5,000 per cubic millimetre. It is rather seldom in any condition that the leucocytes fall very much below 3,000 per cubic millimetre. Koblanck reports a remarkable case of leucopenia in an epileptic man twenty-five years of age. In a careful examination of twenty stained cover-glass preparations, he found only *one* leucocyte. Cabot refers to an unusual case of lymphatic leucæmia, in which the white count fell from 40,000 to 419 per cubic millimetre in the course of three weeks as the result of the development of an acute septicæmia. There are two classes of leucopenia—(1) physiological, (2) pathological.

Physiological leucopenia may occur after prolonged cold baths, short hot baths, and stimulation of sensory nerves. A change in the distribution of the leucocytes in the vessels takes place as a result of vaso-motor influences. Malnutrition and starvation are prominent factors in causing a reduction in the number of leucocytes. The faster Lucchi showed a decrease in his leucocytes from 14,530 to 861 per cubic millimetre after a seven days' fast. This number increased to 1,530 on the eighth day, and remained at about this figure during the remaining twenty-two days of the fast. If disease is excluded, the number of leucocytes—especially the polymorphonuclear—may be taken as an index of the patient's nutrition. A low leucocyte count indicates poor nutrition.

Pathological Leucopenia.—It is rather difficult to separate leucopenia and a simple absence of leucocytosis. The fact that some of our most important diseases (when devoid of complications) show an absence of leucocytosis, is a remarkable aid in diagnosis. The following diseases are included in this list: typhoid fever; tuberculosis, including incipient phthisis; miliary tuberculosis, tuberculous peritonitis, tuberculous ostitis and periostitis, tuberculous pleurisy, tuberculous pericarditis.

If, during the course of these diseases, a leucocytosis develops, it points to the presence of a new factor; in typhoid fever, for instance, one of its numerous compli-

cations should be suspected and looked for, such as phlebitis, perforation, hemorrhage, peritonitis, abscess, bronchitis, etc.

Pulmonary tuberculosis inevitably becomes a mixed infection as the lesions increase, with a resulting leucocytosis.

Da Costa states that leucopenia, or, at least, an absence of leucocytosis, may occur during the course of the following additional infectious diseases: measles, influenza, malarial fevers, Malta fever, and leprosy. A combination of an intense infection and feeble resisting power may result in a very low white count, as in certain cases of pneumonia and appendicitis.

A well-marked leucopenia may be expected in about one-fourth of the cases of chlorosis, and in about three-fourths of the cases of pernicious anæmia. In some very severe cases of secondary anæmia and in splenomegaly it is found. Chronic gastro-enteritis in infancy reduces the white count below the normal. An intercurrent infection may produce a leucopenia—as in Cabot's case referred to above. Various investigators have produced a decrease in the number of leucocytes by the administration of various substances hypodermically. Bohland found that it followed the injection of ergot, sulphonal, tannic acid, camphoric acid, atropine, agaricin, and picrotoxin. Delezené injected various anticoagulant substances, peptone, diastase, and eel serum, with a resulting marked leucopenia.

The leucopenic phase which precedes the development of leucocytosis has been referred to above, in the article on leucocytosis.

In typhoid fever there is a gradual decrease in the number of leucocytes after the first week, the lowest counts being found during the fifth and sixth weeks. This rule, according to Winter, does not hold good in all cases, but it is so constant that if in a given case of non-ruptive fever the number of leucocytes is normal or subnormal, it would be a strong point in favor of the diagnosis of typhoid fever. There is a progressive diminution in the percentage of the polymorphonuclear cells which continues into the stage of early convalescence. The percentage of lymphocytes is increased throughout the fever, the increase being most marked in the stage of convalescence. The degree of the leucopenia corresponds in a general way to the severity of the disease (not taking into account the effect of complications). Counts as low as 2,000 and 3,000 are not very rare. In pernicious anæmia the white count runs parallel with the red count and the hæmoglobin per cent. In some cases it is very low, falling to 1,000 per cubic millimetre. As stated above, leucopenia is found in about three-fourths of the cases of pernicious anæmia, which is in marked contrast to the tendency toward leucocytosis in secondary anæmias.

Ehrlich believes that in these conditions there is a lessened proliferative function of the bone marrow, which results in a diminution in the output of leucocytes by this organ.

James Rae Arneill.

LEUCOPLAKIA. See *Tongue, Diseases of.*

LEUCORRHEA.—This term furnishes another illustration of the very common error, in medical terminology, of confusing a symptom with the condition of which it forms but a part or a phenomenon. Current use, especially after the lapse of a long period of time, so fixes such errors that it is almost a hopeless task to make the correction which is necessary or at least desirable.

The term which is in common use as the synonym of leucorrhœa is "whites," which is sufficiently expressive, for leucorrhœa etymologically means a white discharge or flow. But there may be white discharges from various parts of the body, especially from mucous membranes; moreover the color of the leucorrhœal discharge is not always white, hence the correctness of the term is not at once evident.

The white discharge or flow which is to be considered proceeds from the mucous membrane of the female geni-