

injections only every other day. In a great number of cases the improvement is shown after one or two injections, but it is necessary to continue these until a complete cure has been established, in order to avoid a recrudescence.

This treatment was applied by me with good results, at first in typhoid fever, then in numerous cases of septicemia due to streptococcus and staphylococcus. In a large number of cases one finds a rapid disappearance of the germs from the circulating blood. I have also obtained good results in severe erysipelas, in acute polyarticular rheumatism, and in nonrheumatismal arthritis when taken at the start. It appears, then, to be well established that the judicious intravenous administration of peptone can exercise a favorable action in certain infectious conditions and especially in the septicemias.

#### ASSUMED MODE OF ACTION

One can assume that the mode of action is the following: Peptone is an easily assimilable antigen. The pathogenic microbes, on the other hand, antigens, are difficult of assimilation. A single mechanism brings about the assimilation of both when they are given by a parenteral route. It is probable that the administration of peptone has the power of stimulating this mechanism and of thus augmenting the destruction of the microbes. As the proteosotherapy is essentially a nonspecific method, it can with advantage be given in association with more or less specific chemical substances when the latter alone are insufficient for bringing about the cure. For this reason I have used proteosotherapy in conjunction with hexamethylenamin in the treatment of typhoid fever, and with sodium salicylate in daily doses of 6 gm. in the treatment of septicemia caused by streptococci and staphylococci and in acute arthritides.

#### COMPARISON OF VACCINOTHERAPY AND PROTEOSOTHERAPY

The vaccinotherapy differs from the proteosotherapy in that it is specific. It attempts to provoke the formation of a specific antibody by the administration of a vaccinal antigen. It thus differs from proteosotherapy in its much greater accuracy. However, it would be an error to regard these two methods as being diametric opposites. One must not forget that the vaccine is an antigen like the peptone, and that in the reaction which it provides in the organism there exists a nonspecific element which is common to all antigens. The proof of this lies in the fact that different diseases, notably typhoid fever, can be cured by the administration of cultures of microbes different from the specific germ, such as *Bacillus colicommunis*, *Bacillus proteus*, etc. One advantage of proteosotherapy is that it permits of the experimental study of the nonspecific element of vaccinotherapy and, as the result of this, of a better understanding of the latter; and of better measures for its application. By way of illustration I will cite the following fact: Having determined that the proteosotherapy is much more effective when given by the vein instead of subcutaneously I concluded that this would also be true with vaccinotherapy. Starting from this fact, I have constantly administered vaccines by the vein, beginning with very small doses. My experience embraces numerous cases of septicemia due to the streptococcus, the staphylococcus, the pneumococcus and the meningococcus; certain

urinary infection due to *Bacillus coli*, and the staphylococcus, and finally the bacillary dysentery. In all these cases vaccinotherapy by the intravenous route gave results more certain and more rapid than those obtained by the subcutaneous route and permitted one to attain the desired results with doses of vaccine about a thousand times smaller than those which are necessary when given under the skin.

### DERANGED SEBACEOUS SECRETION AS AN ETIOLOGIC FACTOR IN DISEASES OF THE SKIN \*

H. R. VARNEY, M.D.

DETROIT

#### CLINICAL OBSERVATIONS

It is the duty of every one to keep physically well and to convey the appearance of physical well-being through a healthy skin. Others must observe us, and in all walks of life, among all classes of society, the healthy-looking person is the one most graciously received. The complex condition resulting in a healthy appearance of the skin is most difficult of adequate definition, yet every one has a rather clear objective knowledge of a perfect skin.

It is my intention to discuss in a most elementary manner a deviation of a well understood function of the skin which is an important etiologic factor in the case of many recognized skin conditions.

#### SEBACEOUS GLAND SECRETION

The daily physiologic sebaceous gland secretion amounts to about 1 or 2 gm.; it is quite constant in amount, somewhat less in children and much less in the cold season. The normal sebaceous secretion consists of a liquid and a solid part: the horny-changed membranes of the gland cells after the fat has left them.<sup>1</sup> Analyses have shown the presence of fats (olein, palmitin and stearin), and fatty acids (oleic, palmitic and stearic), inorganic salts, cholesterol, epithelial debris, and water. The cholesterol is thought to be a product of cellular degeneration, and its chemistry is that of the secondary alcohols.<sup>2</sup> It is most plentiful in the skins of ichthyosis and psoriasis, and in comedones.<sup>3</sup> The large polyhedral cells deeper in the glands have been found to contain many fat droplets, and through this cell degeneration, the sebaceous secretion is greatly assisted in its function, which explains why 2 gm. of sebaceous secretion can cover so extensive an area and afford protection.

Endeavoring to discover the true function of the sebaceous secretion, Dr. Max Joseph excised the coccygeal glands of several geese. They survived the operation and were apparently normal, but after entering the water and wetting their feathers, it was noted that the feathers held more water and took longer to dry than those of normal geese.

As is well known, diet greatly influences the sebaceous secretion. Montgomery says:

Modern man frequently suffers a penury of oxygen; because of this, he tends to select the easily split, easily fermentable

\* Read before the Section on Dermatology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Philippson: Monatsh. f. prakt. Dermat. **11**: 292-309, 1890.

2. Small, J. C.: J. Lab. & Clin. M. **1**: 809 (Aug. 16) 1916.

3. Linser, P.: Deutsch. Arch. f. klin. Med. **80**, Nos. 3-4, 1904.

carbohydrates and the easily absorbable fats, and these are the very foods that favor seborrhea.<sup>4</sup>

Kuznitzky says:

The sebaceous matter in increasing amounts, as we find it in seborrhea oleosa, is not, as was formerly assumed, the cause of the accompanying acne, but, on the contrary, in all likelihood, we have an ever easily recognized weakening of the defense against the organism.<sup>5</sup>

In every recognized skin disease there is always some derangement of the sebaceous function.

#### EFFECTS OF INSUFFICIENT OIL

The lack of oil is a far more common deviation than the excess. At the adolescent age, when all glandular activities are greatly increased, the activity of the sebaceous function predisposes to a few dermatoses, such as the seborrheas and some forms of acne. This stage of hypersecretion of oil is of short duration, is most amenable to treatment, and is not nearly so troublesome nor so common an etiologic factor as the insufficient amount of oil. It is this phase of the abnormality that I wish to discuss.

The skin that lacks oil is the skin that is sallow and nontransparent. It makes its possessor appear older than is really the case and does not present an appearance of a state of physiologic well-being. Oil intensifies colors and conveys the healthy look to the skin, and, as well, absorbs soil and prevents its entrance into the skin.

How much better would be the careful training of the daughter in her teens in order that she might convey a healthy, normal color to her cheek, than to see her apply artificial color in a vain attempt to produce a healthy appearing skin!

In the normal outer covering of the body, protected from all external irritants by proper cleanliness and sufficient sebaceous material, are embodied the essentials for a comfortable state of the skin. It is thus able to ward off many skin diseases.

No organ of the human body is more generally and constantly mistreated than are the skin and its appendages, and it is this daily improper care that is responsible for a large percentage of skin diseases.

Many of the adult white inhabitants of the north temperate zone, during the cold months of the year,

fail to produce sufficient oil properly to protect the skin and to keep it in a healthy condition. There is another large class of persons who have a sufficient allowance of oil, but who are daily removing this protection by too frequent bathing with soap and water, and having no thought for its replacement. American travelers demand hotel rooms with bath, and the excessive bathing in the cold months of the year is not at all necessary to the proper care of the skin. Yet less frequent bathing with soap stimulates oil production, through the dissolving action of the soap on the oil plug long after the soap has been washed away. This is demonstrated clinically following a shampoo, when the scalp and hair shaft become oilier forty-eight

hours afterward than they were before. In the Middle West, where lake water constitutes the water supply of the large cities, the water is made more irritating to the skin by the chemical agents used for disinfecting purposes, such as chlorin and lime.

Of the number of individuals who come to the dermatologist with skin affections, the majority definitely show a lack of oil, due, in most cases, to improper toilet, or to a temporary derangement from recent local or constitutional diseases.

How readily one forgets the function of oil in the human skin! When sufficient oil is present, the skin is flexible, whereas a penury of oil gives us a harsh, dry skin, the epithelium of which cracks, exposing sensory nerve endings, with resultant itching and burning. Through these fissures infection may enter, and a weeping, deplorable dermatitis may result. The pyogenic infections and their resulting dermatoses are the most frequent. The bath pruritis of the legs, which develops during the

first cold, windy days of fall in the frequent bathers, is the most common illustration.

A general lack of oil produces a constant wasting of bodily heat, resulting in the patient's feeling every sudden change of temperature, which the normal oil prevents. He requires more clothing, as well as bedding, sleeps in a curled or flexed position to keep warm, and thus does not receive the refreshment that should come from a relaxed, straight repose. We are familiar with the fact that without oil it would not be possible for the Eskimo to live in his country, where clothing, even the warmest of furs, would not keep him from freezing if he did not preserve or retain his

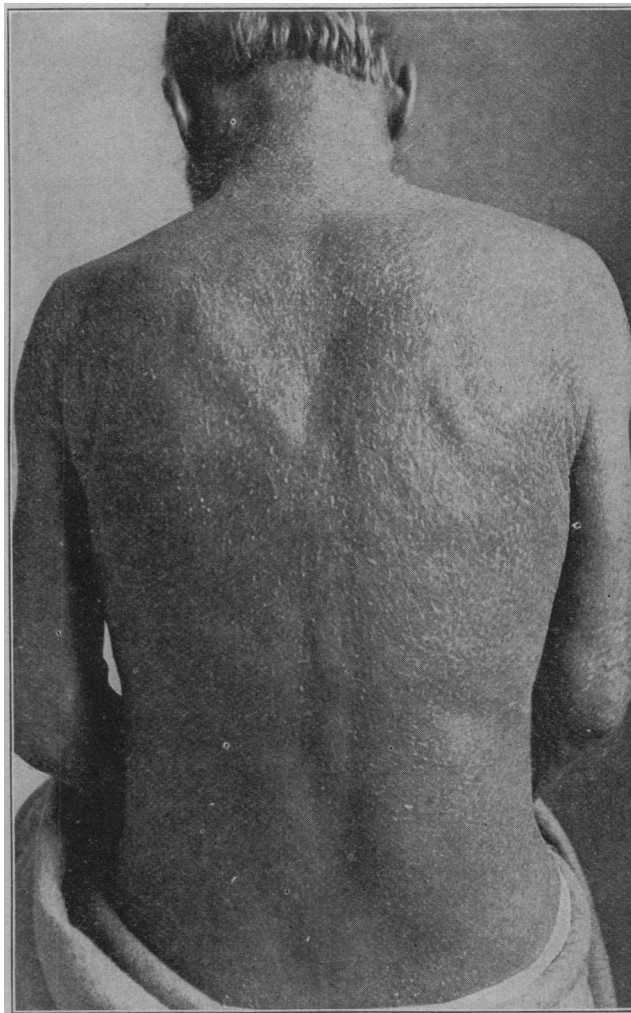


Fig. 1.—Condition resulting from a deranged sebaceous gland secretion, showing the roughened epithelial layers of the skin.

4. Montgomery, P. W.: *J. Cutan. Dis.* 34: 829 (Dec. 16) 1916.

5. Kuznitzky: *Arch. f. Dermat. u. Syph. Orig.* 114: 691-708, 1913.

body heat by applying nature's first covering for warmth, that of oil. To demonstrate further the retention of surface body heat, apply a bland oil and retire with the same coverings as usual. Within a very short time one will note an uncomfortable rapid heating of the body. This also illustrates that if an oil medication is to be applied to a large surface of the skin, it should be applied some time before the patient retires, for the retention of body heat from the oil base, and the discomfort following will often not only derange the comfort of the patient, but interfere with the effect of an appropriate medication. The accompanying temperature charts of a patient with dermatitis exfoliativa illustrate most interestingly the continuous subnormal temperature from loss of body heat, which in turn was caused by loss of oil. The temperature could be brought up to normal for about two hours following a hot bath and saturation with oil.

More food is required to keep up bodily heat because of surface waste, since the power of heat retention afforded by oil is lacking. This patient cannot wear wool or coarse fabrics, because of the uncomfortable condition resulting from the roughened, warped epithelial layers of the skin, for the filaments of the wool are constantly pulling on this outer layer of roughened cells.

The man who lacks oil is unable to shave comfortably, and he is led to believe that he has a tender skin and a very wiry beard. True, his skin is hard and rough, and he often cuts himself because of its lack of elasticity and smoothness, and his hair is wiry and hard to cut through lack of oil.

also hardened by water and alcoholic lotions. How promptly, if we practice replacing the oil after shaving, will we note the greater ease with which the hairs can be cut, the resultant longevity of the razor's edge and the greater comfort! And we may perhaps escape becoming a slave to the barber.

The dry skin that is constantly cracking admits any and all forms of infection that the human skin is capable of harboring, from the pyogenic organism to *Spirochaeta pallida*.

The normal amount of oil of the skin has many functions, some of which are well interpreted, others that are very indefinitely understood, or knowledge of them poorly applied, and still others, I believe, that are unrecognized.

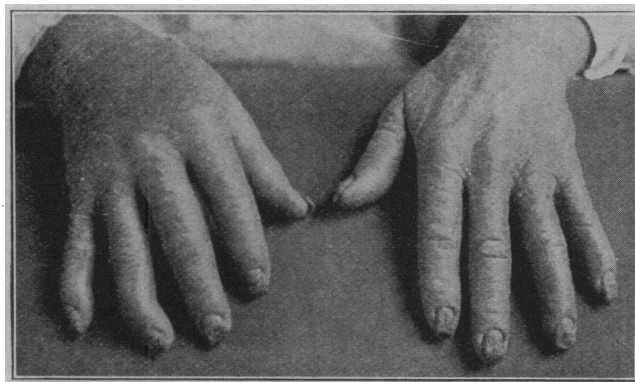


Fig. 2.—Cracked skin and rough, badly developed finger-nails consequent on a deranged sebaceous gland secretion.

#### ABSTRACT OF DISCUSSION

DR. RICHARD L. SUTTON, Kansas City, Mo.: I think Dr. Varney has covered rather a broad subject in a very good manner. Many of us do not appreciate and realize the discomfort which a dry, harsh skin may cause. During the past two or three years I have frequently prescribed for the relief of this condition a combination first suggested by a

dermatologist of Chicago. It consists of powdered tragacanth, 4 gm.; phenol, glycerin and oil of bergamot, of each, 5 minims; olive oil, 120 c.c. and distilled water, sufficient to make 480 c.c. Persons whose skins are dry and hard can use this mixture with excellent results. For a long time we prescribed it under the designation of "Pusey's mixture"; but the resultant amount of advertising was too great for a competitor so close a hand, and in my office we now invariably refer to it as "the dew of Sahara."

DR. HAROLD N. COLE, Cleveland: I want to bear witness to the value of this remedy. I have used it most successfully in many cases of pruritus.

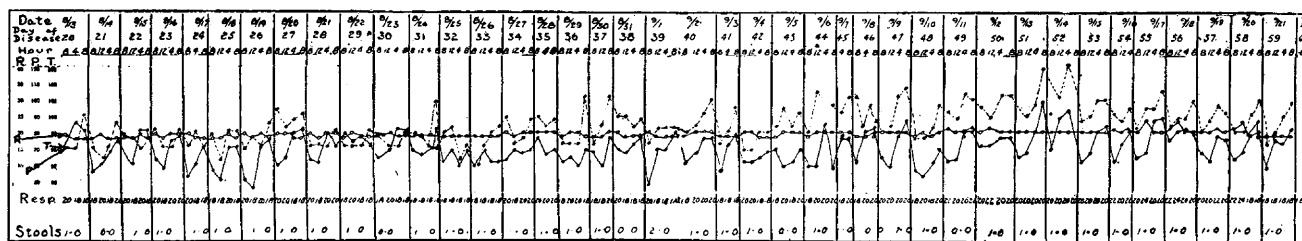


Fig. 3.—Persistent subnormal temperature from a loss of body heat, due to lack of oil, in a case of dermatitis exfoliativa.

The average man cares more for the leather in his shoes than the skin on his face. For when the leather of his shoe becomes dry and hard, he knows the life of the leather will be shortened by cracking, and he at once seeks what the leather most needs, oil; yet seldom or never replaces the oil in his own skin, even though it is most evident that it is needed. He is fond of alcoholic applications after shaving, which remove the little oil that remains, rather than of putting back into his skin the oil that he has taken out with soap and water. When he puts this oil back, his hair shaft will cut much more easily, and his skin will not so readily be cut in shaving, for the wiry beard is the hair that is not only devoid of most of its normal oil, but

DR. JOHN E. LANE, New Haven, Conn.: I am rather surprised at Dr. Varney's experience that washing the scalp increases the amount of oil secreted and that this is noticeable as early as forty-eight hours after the shampoo. My experience has been exactly the opposite and while I use other agents for combating seborrhea of the scalp, I have found frequent shampoos about the best single treatment for this condition. The dry skin of the face caused by too vigorous use of soap is a common condition in men, but I see it much less frequently in women. This is probably due to the fact that the latter use more cold cream and frequently use it as a substitute for soap and water.

DR. G. A. HARE, Fresno, Calif.: The temperature is increased or diminished by the use of oil, if I understood correctly. To put the question another way, does not oil

increase the retention of heat? I wish Dr. Varney would tell us of any observation he may have made on that. Also whether a dry skin, which is so annoying, is due to a retention of heat or to interference with the nerve mechanism. I wonder whether he has any evidence to guide us in the use of the shampoo in these cases, as to whether the soap and water have anything to do with the production of oil or whether the active massage is the factor of most importance.

DR. C. A. SIMPSON, Washington, D. C.: I should like to ask Dr. Varney if senile atrophy of the skin does not play a large part in hypo-activity of the sebaceous glands. Most of my patients, excluding those with xerodermatous lesions, who suffer from dry skin are over 35 years of age. They have a thin, atrophic skin, prominently visible blood vessels, and other signs of cutaneous atrophy, such atrophy being more conspicuous on the extensor than on the flexor surfaces. I agree with all that Dr. Varney says, but I believe that senile atrophy of the skin (not necessarily in a senile person) is very often the primary lesion. The lessened activity of the sebaceous glands and their final atrophy simply share in the general and primary cutaneous atrophic process seen in some patients at a relatively early age.

DR. HENRY R. VARNEY, Detroit: In classifying oil deviations, I have arranged them in two general classes—the excess and the insufficient. The excess is manifested at the age of hyperactivity of all glandular functions. The excessively oily skin is caused by the constant attempt of the patient to remove the oil by frequent use of soap, thereby stimulating and liquefying the oil plug.

The less frequent use of soap will clearly demonstrate this fact through prompt reduction of the amount of oil. We must entertain the varying effect which water has on the skin owing to the great difference in its softness in different sections. The water supply of the lake sections of the United States is treated chemically for disinfecting purposes, and these chemicals have a decidedly drying and roughening effect on the skin because of their direct action on the normal oil of the skin. The people who are taught to bathe daily and use soap freely can carry on such a toilet without discomfort during the summer months, but during the winter months many adults have insufficient oil and through frequent bathing render the skin rough and dry and more susceptible to itching dermatoses. I do not think that I can answer Dr. Hare's questions, but it is a fact that oil does assist in retaining and equalizing body heat. The senile atrophies are a different condition from the congenital ichthyoses. We have to rely on oil, not only for protection and cleansing purposes, but for comfort, and patients with beginning senile atrophies, with the pigmented patches and the roughening, which appears later, of the epithelial layer with ulcers, etc., could be given much comfort and protection from all outward irritation and perhaps carcinoma later by a proper amount of protective oil.

## AN OPERATION FOR "CLAW FOOT" \*

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The term "claw foot" is generally accepted to mean a foot with exaggerated arch, prominent metatarsals and hammer toe, with corns on the toes, and callosities on the sole of the foot over the distal end of the metatarsals.

The cause of this deformity may be either a limit to dorsal flexion, or an impairment of the intrinsic muscles of the foot from paralysis, or both.

In cases in which there is only a limit of dorsal flexion—"muscle bound feet"—especially in children, a marked change in the position of the tarsals, metatarsals and toes may be prevented from developing by a restoration of freedom in dorsal flexion. In cases in which a gross change has taken place in the position of the tarsals and metatarsals, with shortening of the plantar structures, exaggerated arch and hammer toe, a much more complicated problem is encountered. The shortening of the plantar structures accentuates the effect of the common extensors in deforming the toes, and the hyperextension of the toes accentuates the shortening of the plantar structures.

A study of many roentgenograms of such feet shows that this deformity takes place chiefly at the articulation between the astragalus and the scaphoid. The relation between the cuneiform and cuboid and the metatarsals is very slightly changed, if at all.

In these cases there may

appear to be, on account of the exaggerated arch, a displacement downward of the os calcis, but such is not the case. The upper half of Figure 1 is a roentgenogram of an approximately normal foot; the lower half of Figure 1, one of a markedly developed claw foot—it shows at what point the deformity takes place.

In these cases, therefore, there are two problems to be solved: first, the correction of the exaggerated arch, and second, the removal of the deforming power, on the toes, of the common extensors, at the same time making more direct and effective their function as

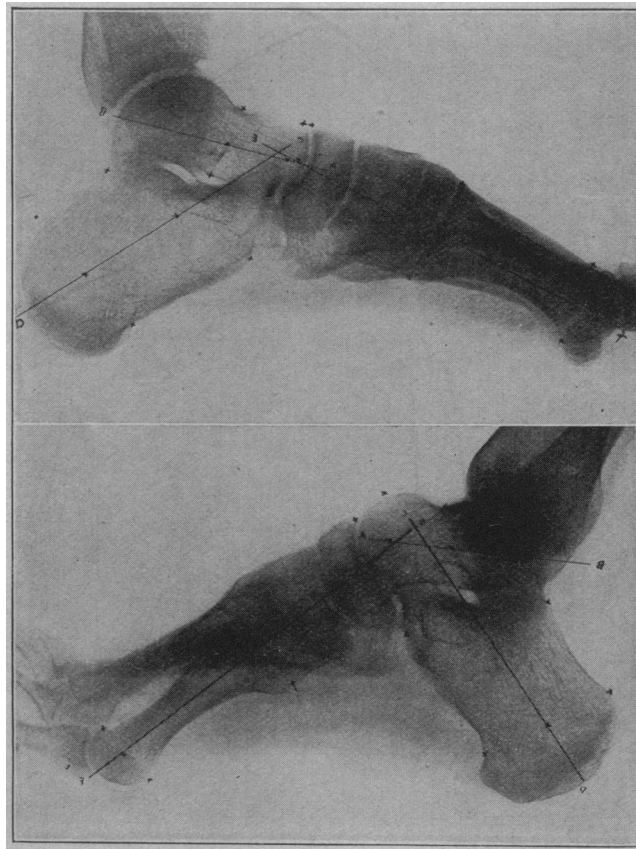


Fig. 1.—Comparison of normal foot (above) with claw foot (below), showing exaggerated arch of the claw foot and elevated toes: A-B, axis of astragalus; C-D, axis of os calcis; E-F, axis of navicular, internal cuneiform and first metatarsal. Compare angle made by D-C and E-F in upper figure with the angle made by A-B and C-D in the lower. The comparison shows that the deformity is caused by the dropping down of the front foot at the metatarsal joint.

\* From the service of the New York Orthopedic Hospital.

\* Read before the Section on Orthopedic Surgery at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.