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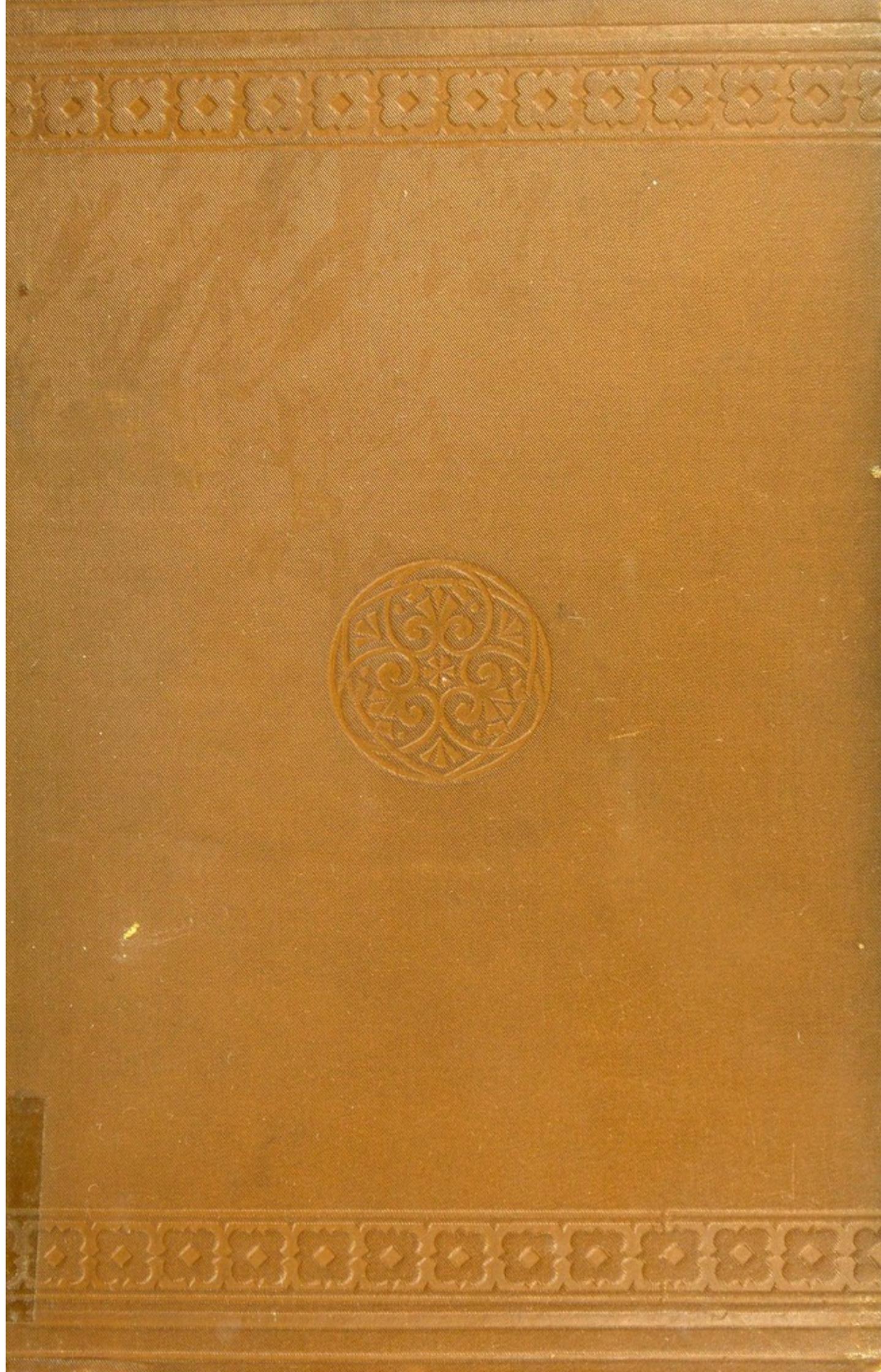
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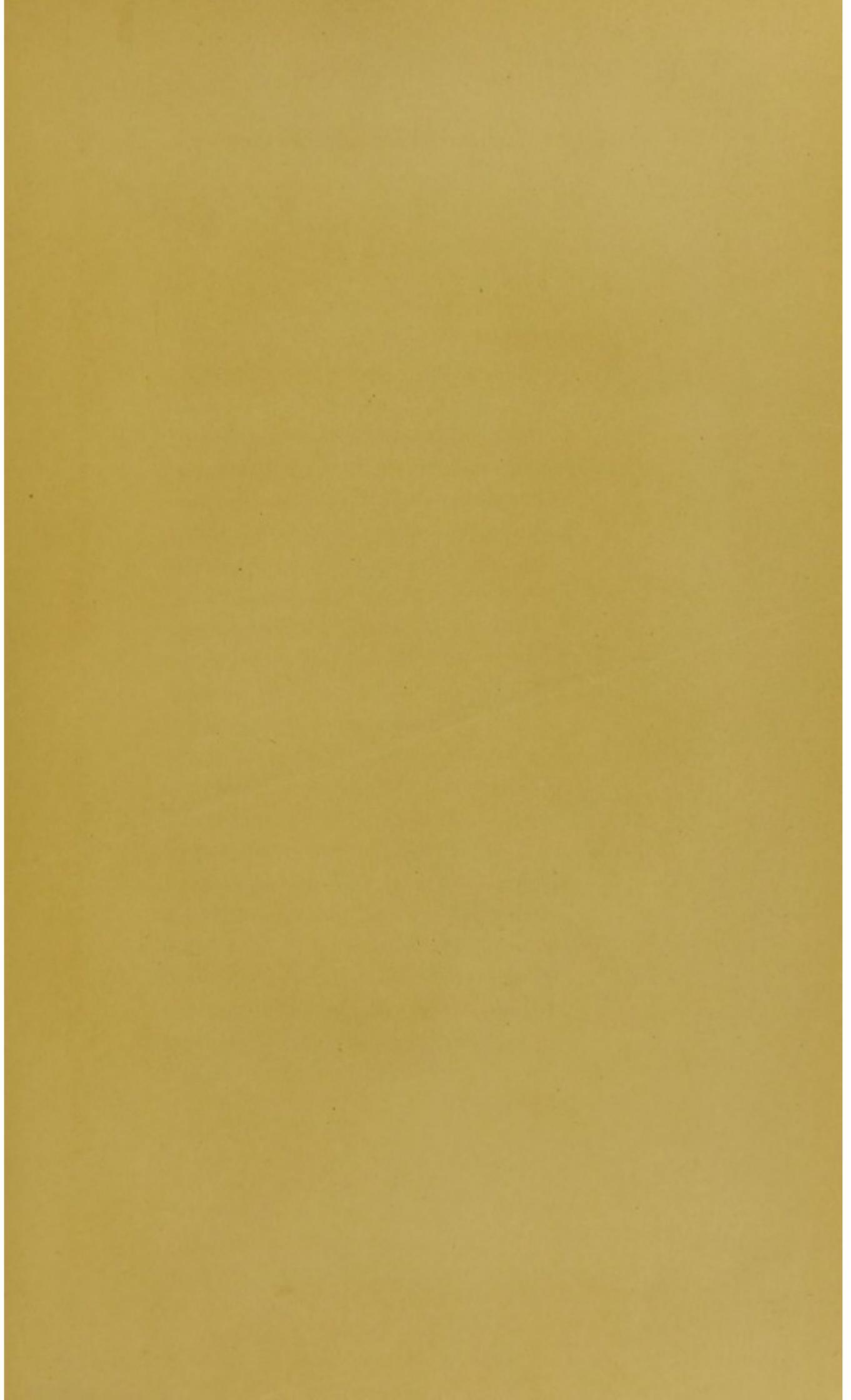
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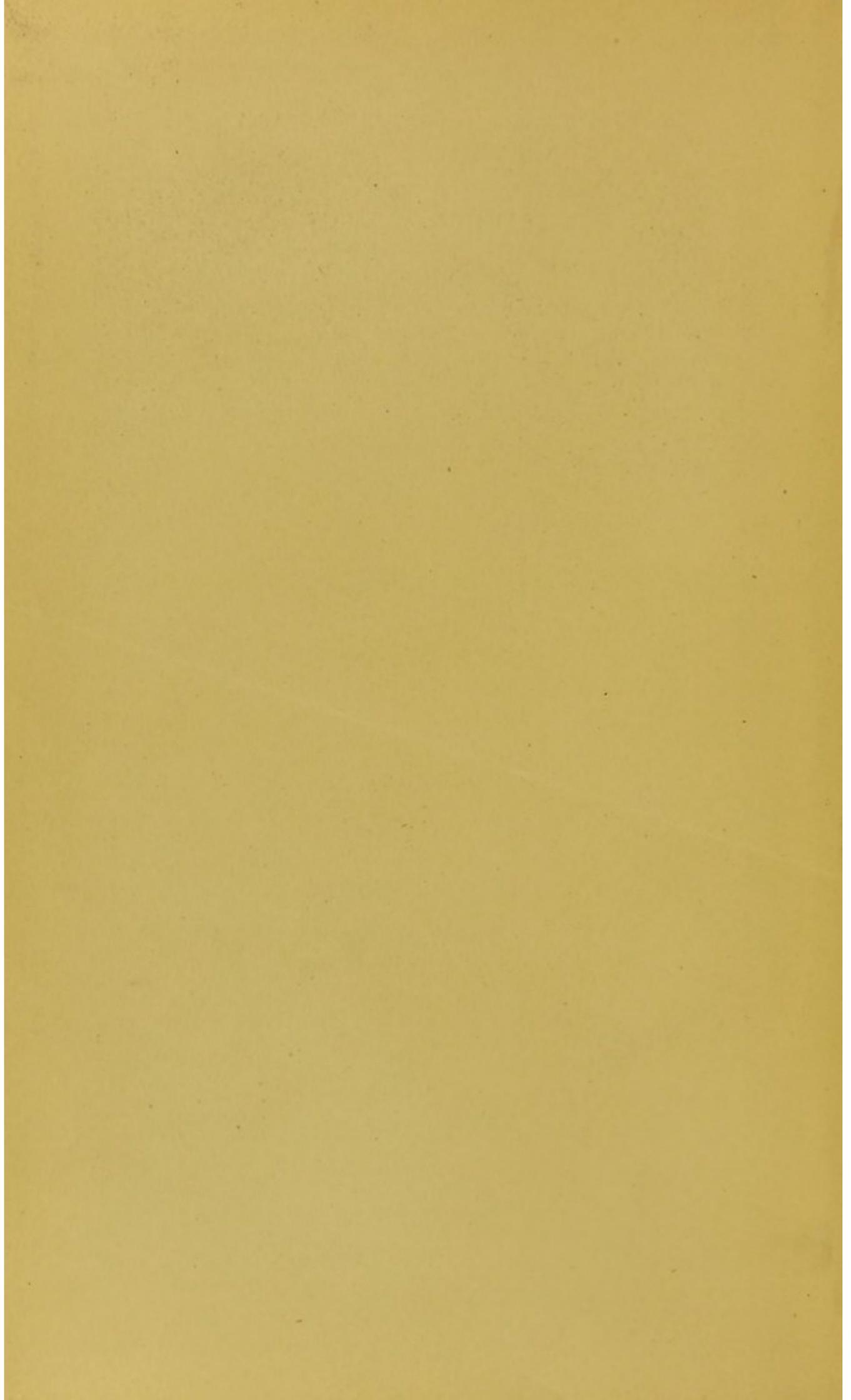
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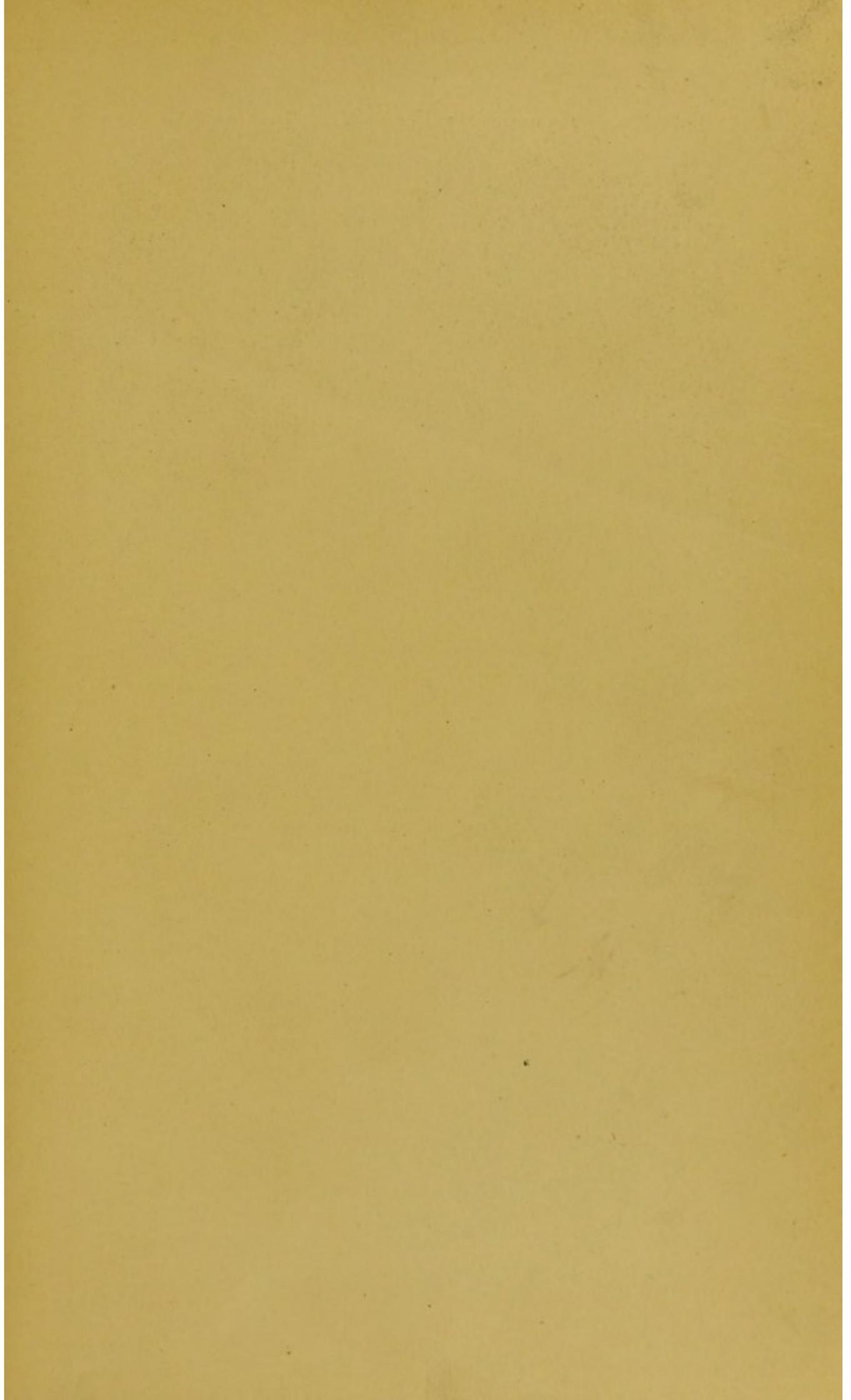
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ACNE

ITS

ETIOLOGY, PATHOLOGY, AND TREATMENT

A PRACTICAL TREATISE BASED ON THE STUDY OF
ONE THOUSAND FIVE HUNDRED CASES
OF SEBACEOUS DISEASE

LEEDS & WEST-RIDING
MEDICO-CHIRURGICAL SOCIETY

BY

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LONDON

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ACNE,

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ETIOLOGY, PATHOLOGY AND TREATMENT.

“I shall make no Apology for spending as much Time, or taking the same Pains to remove the Blemishes incident to the Face by some, as I have done to retrieve a former good Complexion lost by other Kinds of Illness. And therefore if I have given Instructions how to abate the fiery red Complexion of the Face, and to level those monstrous Blotches or Pustules, with other Breakings out, that so much disfigure it, and take off from its Comeliness and Beauty ; I cannot think the Task below the Dignity of a Physician.”

DANIEL TURNER, 1714.

PREFACE.

THE science and practice of medicine is built upon the study of single diseases and groups of diseases, and monographs may be called the foundation-stones upon which the structure is reared, or the quarries from which the material is drawn. In proportion as monographs contain facts and the results of experience, study, and research, so far will they serve this end; in proportion as they contain practical observations which will aid in understanding and curing disease, so far will they prove valuable to the profession at large. How far these ends have been attained in the following pages time will show, and indulgence is craved for the many imperfections and omissions which must necessarily exist herein in spite of the greatest care. The difficulty of gaining sufficient time for labors of this kind amid the pressing claims of a busy professional life, can be appreciated only by those who have attempted the same.

In studying the subjects here presented, during several years past, I have been led far beyond the limits originally planned for this book, which was intended to be only a practical work, as a companion to my treatise.

on Eczema. But as matter accumulated it was difficult to omit that which had proved of interest and assistance to me, and which, it was thought, might prove the same to others. Thus a considerable chapter on the Anatomy and Physiology of the Sebaceous Glands was prepared, and thus, also, the historic details in the second chapter grew to their present dimensions. The Pathological Anatomy of this class of affections proved also a most attractive study, and it was thought desirable to develop this subject fully and to illustrate it freely by original drawings, as but little had been previously presented in this direction.

In making the statistical and analytical study of the cases the work also increased in size, and it was difficult to exclude matter which had been most interesting and instructive, and which served to impress the points presented, even at the risk of burdening the pages with many figures.

Some of the reviewers of my work on Eczema expressed the opinion that the subject would have been made more clear and forcible if certain histories of cases had been introduced, illustrating the features of the disease. In the present work I have acted on this suggestion and have given briefly, in smaller type, a number of clinical histories which, I trust, will aid in understanding the subject. The text is so arranged that these need not necessarily be read, but are illustrative of the statements made.

The chapter on Therapeutics, with formulæ, was added both for ready reference and to save space in the body of the work, inasmuch as many of the formulæ are referred to a number of times. Experience has shown that although remedies should be combined to suit individual cases, much may be learned by those having little practical acquaintance with a subject, from the experience of others more familiar with it, as expressed in the prescriptions employed. While, therefore, the habit of copying and using formulæ without care and knowledge is to be deprecated, these may often serve a valuable end in suggesting combinations and modes of employing remedies which might not otherwise be appreciated. For convenience of consultation these are referred to by numbers in the body of the work.

The Bibliography has enlarged as references were made in the text, or articles were consulted, and it was afterward thought best to make this as complete as possible, in the hope that it might prove valuable to others. No attempt has been made to include the general text-books on Dermatology or Medicine, except as they were referred to in the pages of the work, but the list was made as perfect as possible in the matter of journal articles and essays relating to the subjects here presented.

While including in these pages more or less matter of purely scientific and literary interest, the aim has ever been kept uppermost to present a work which would be

of practical value in aiding in the cure of the conditions here considered. Much attention, therefore, has been given to minutiae and to details of diet and treatment, and to every element which would add to its practical value. While giving expression to the views of others, the aim has been to present those points most strongly which personal knowledge had shown valuable, and those methods of treatment which personal experience had shown to be most trustworthy.

My warmest thanks are due and are here given to my friends Dr. George T. Elliot and Dr. Edward Preble, without whose valuable aid this work would hardly have been as complete as it is. The original drawings are all by Dr. Elliot, who assisted in the pathological studies and also in the preparation of the Bibliography. Dr. Preble has furnished the statistical details from my notes of private cases, and also collected some of the data relating to the historical researches, and has aided in other portions of the work.

4 East 37th Street, New York,

July, 1885.

LEEDS & WEST-RIDING
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ACNE AND ITS TREATMENT.

CHAPTER I.

ANATOMY AND PHYSIOLOGY OF THE SEBACEOUS GLANDS.

SEBACEOUS glands are found on every portion of the skin, except upon the palms and soles, and on the backs of the last phalanges of the fingers and toes. The area of surface presented thus for secretion and excretion is, therefore, much larger than might be supposed, and the importance of the proper performance of the functions of these glands over the whole surface of the body is by no means inconsiderable, although as yet but little attention has been given to the subject.

We may form some estimate of the number of the sebaceous glands by comparing them with the sweat glands, and also by a computation based on the number of the hairs upon the body, with which, as we shall see, they are for the most part associated. The sudoriparous glands are estimated at nearly 2,400,000 (KRAUSE) with a total length of about two and a half miles. On the trunk, neck and limbs the proportion of the sebaceous to the sweat glands is as one of the former to six or eight of the latter; on the scalp, in the external ear, and on parts of the face the two kinds of glands are present in almost equal numbers; on the forehead, sides of the nose, and free borders of the lids the sebaceous glands preponderate (SAPPEY).

The number of hairs on the human body varies very much with the individual, but an average number for the head is between 100,000 and 200,000; the remainder of the surface of the body possesses about as many more. Now at least two sebaceous glands, on the average, empty into each hair follicle on the scalp, while as many as four or five may accompany the hairs of the beard, breast, and axillæ, and no less than seven or eight are found in connection with single hairs in some situations; in a few locations sebaceous glands exist without the presence of hairs. There cannot, therefore, be less than 600,000 of these minute structures on the healthy adult of average size, while in very hairy persons the number may reach a million. About two pounds are lost from the body daily by cutaneous transpiration, and, although it is impossible to determine with certainty what proportion of this is furnished by the sebaceous glands, there can be no doubt, from what we know of the activity of their secretion on the face, head, back, etc., that no inconsiderable portion of it is given off by the glands under consideration; it is highly probable that the total amount of solid matter separated by the sebaceous glands exceeds that furnished by the sudoriparous glands.

Very considerable differences exist as to the number, size, form, and distribution of the sebaceous glands on the various portions of the body. In some localities, as on the forehead and nose, they are closely set, and almost touch one another; in other places, as on the trunk and limbs, they are more scattered and less developed; as before stated, none have ever been discovered upon the palms, soles, or ends of the last phalanges.

In regard to the size and shape of the sebaceous glands, it is difficult to make any definite statement, the limits which have been observed vary so greatly. Measurements have been given at from $\frac{1}{600}$ to $\frac{1}{30}$ inch

it would be almost impossible to find two glands of the same size and shape. Even upon a single portion, as the forehead, the greatest diversity may be observed, as is exhibited in Figure 1, where all the drawings were made from glands found in a single small piece of integument.

The simplest forms of the sebaceous glands are found in the shape of a small pouch, but this is comparatively rare: as a rule, they are racemose or acinous glands, more or less compound in formation, that is with various lobules, all opening into a single excretory duct.

The sebaceous glands, which present almost every conceivable size and shape, may be all included under one of three general varieties (SAPPEY).

I. Those, extremely numerous, which empty their contents into the cavity of a hair follicle. II. Those, also very numerous, which open directly upon the surface of the skin, and with which are associated rudimentary hairs, the hair appearing rather as an appendage to the gland. III. Those, much less common, which open directly upon the surface of the skin, like the preceding, but which are not associated with any hair.

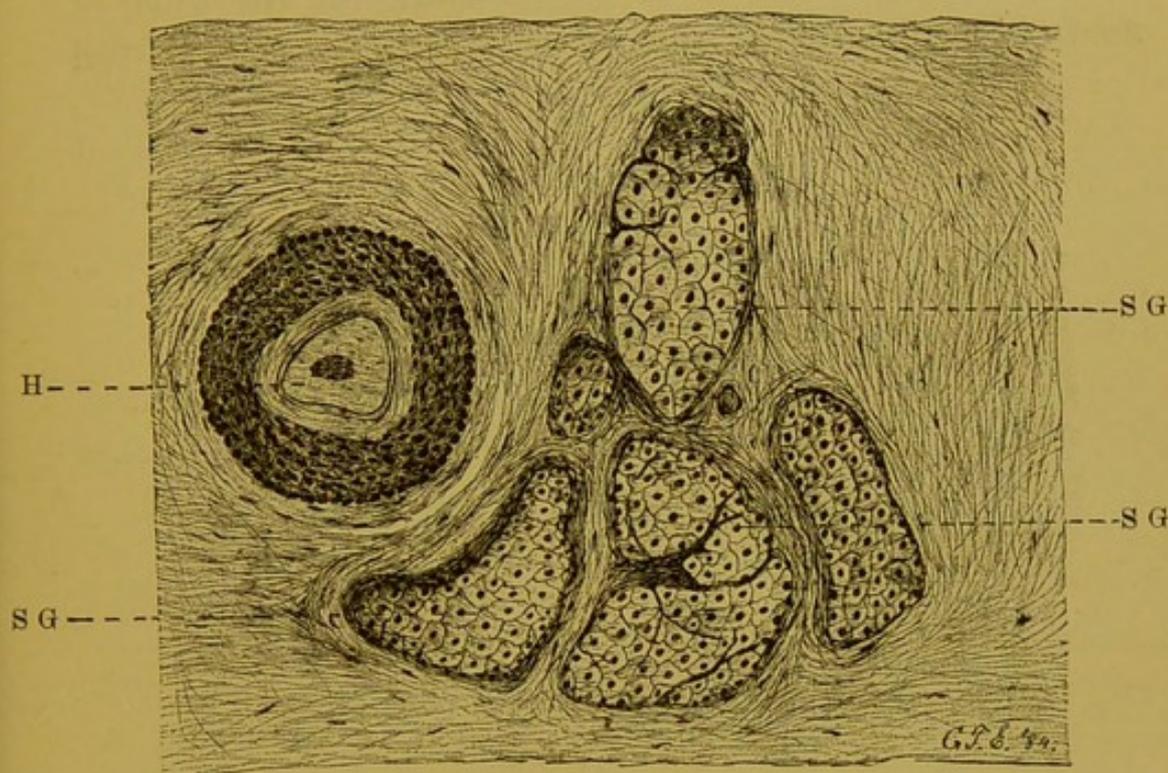
I.—SEBACEOUS GLANDS OPENING INTO THE CAVITY OF A HAIR FOLLICLE.

This class embraces nine-tenths of all the sebaceous glands, including all those connected with the fully developed hair follicles, as the glands found in the scalp, eyebrows, eyelashes, axillary and pubic regions, etc., as also those more rudimentary ones on other portions of the body, where the sebaceous gland appears as an annex to the hair follicle (Figure 3, and F, Figure 1).

Some of the hair follicles have but one sebaceous gland (Figure 2), some have quite a number; but gen-

erally there are two, situated on opposite sides, often of very unequal size; it is not unusual to observe on one

FIG. 2.

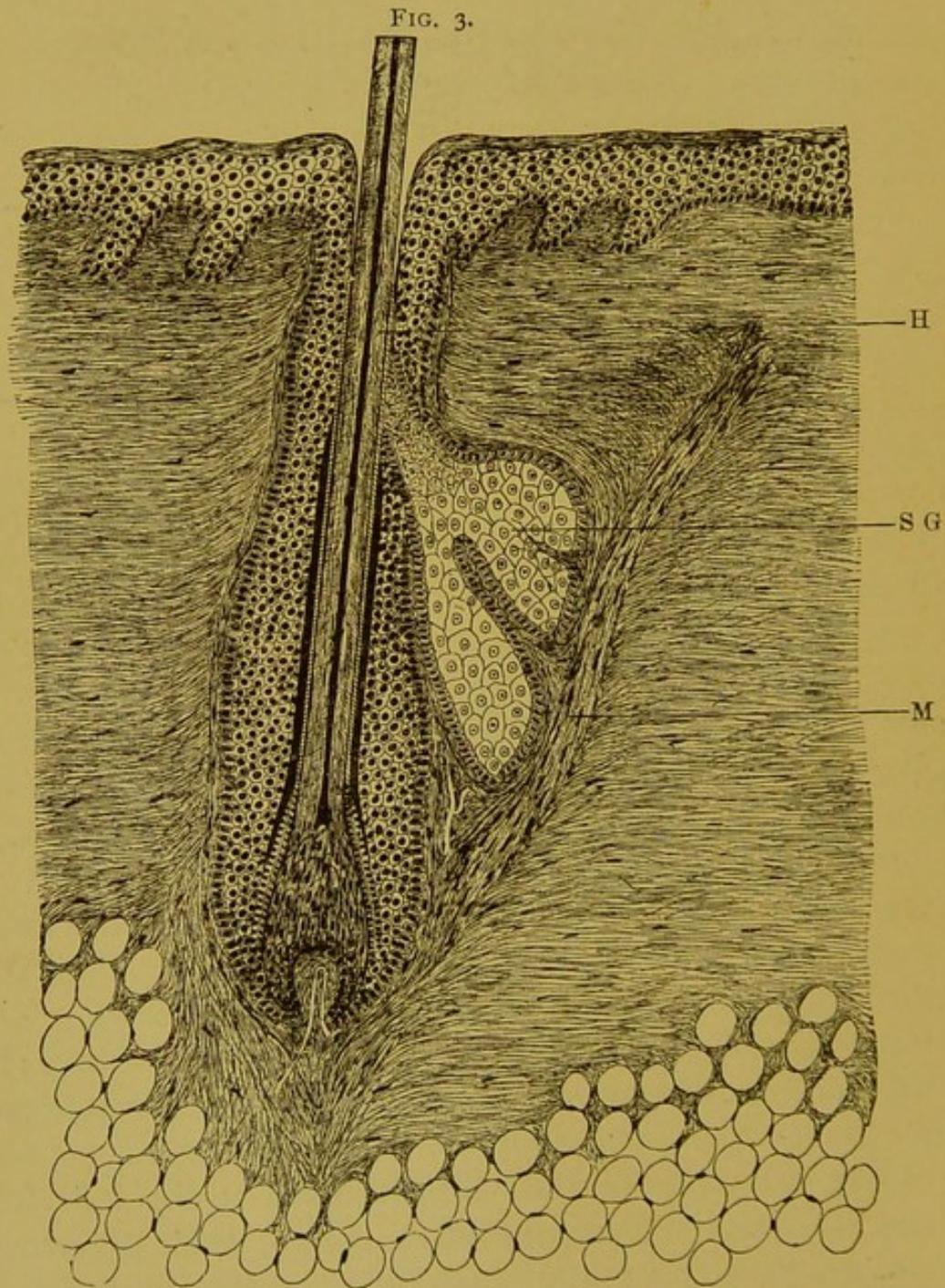


Section horizontally through a sebaceous gland, S.G., and adjoining hair, H.

side of a hair a very large and complicated sebaceous gland, and on the other side an extremely rudimentary one, which may remain unrecognized unless great care is exercised; the glands may be opposite each other, or may be situated at different heights. When follicles have several glands, we may find them either surrounding the hair at the same height, which is rather rare, or they are arranged irregularly; thus, two will be opposite each other, and a third more elevated, or sometimes there are four glands, two opposed above and two below.

The sebaceous glands are attached to the hair follicles by quite loose connective tissue; their excretory ducts are very short, and pass obliquely through the wall of the follicle and open into its cavity at a point which

varies according to the relative size of the hair gland and its follicle, the larger glands opening more superficially, and the smaller ones more deeply in the hair follicle. The common location of the opening of the duct of moderately developed sebaceous glands on hairs of full



Section through a hair follicle, H, and its sebaceous gland, S.G, showing the involuntary muscle, arrector pili, M, embracing the sebaceous gland.

or medium size, is at the junction of the upper with the middle third of the follicle, into which they open at an acute angle.

Beneath these glands are affixed the smooth muscles of the skin, running in an oblique direction from the base of the hair follicles toward the surface of the skin, where they are inserted into the uppermost layers of the corium (Figure 3). Many hairs have two muscles, which cross over the sebaceous gland, quite surrounding it, and in some instances they divide, so as to give the appearance of even more muscles. These muscles, follicles, and glands are so arranged that the muscles cannot contract without compressing the glands and facilitating the exit of sebum.

The shape of the glands opening into the cavities of the hair follicles differs infinitely, but the forms may be included under three principal types : 1. The most simple are formed of a single utricle or cavity, of various degrees of evolution, from a simple, straight projection, to one which is more or less pear-shaped ; 2. This single sac may be divided more or less completely into one or more cavities, still opening into one duct, and thus a *lobule* is formed ; and 3. When the gland reaches its most perfect development we have it divided up into a number of *lobes*, each emptying by its duct into a common canal, and the lobes are in turn lobulated, forming a perfect racemose gland (E, F, Figure 1).

The sebaceous glands of this first class have for their function the lubrication of the hairs, and, according as their secretion and excretion are effected properly or wrongly, the hair will have its normal lustre, or will be dripping with oil, or will be clogged with greasy scales, or will be dry, harsh, and lustreless. These changes are also observed more readily in animals, where the character of the hairy coat is a pretty certain indication of the animal's health.

II.—SEBACEOUS GLANDS OPENING DIRECTLY ON THE SURFACE OF THE SKIN AND GIVING PASSAGE TO RUDIMENTARY HAIRS.

The glands of this second class are found mainly on the forehead, cheeks, sides of the nose, neck, within the ears, and on the areola of the breast; they are likewise found, although more scattered, on the trunk, limbs, and genitals. Although the glands of this class are less widely distributed than the preceding, they are in general of a much greater size, the very largest sebaceous glands belonging to this variety. They are also more complicated, but few being found composed of a single utricle; most of them are formed of one or several lobules, the largest have several lobes. The duct of these glands is usually large and its external opening may be slightly dilated (C, D, Figure 1).

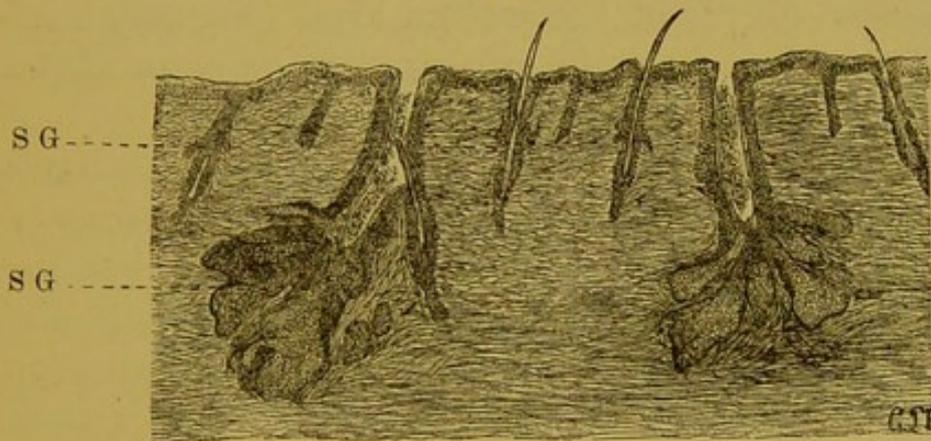
The relations of the hair follicles to the glands of the second class differ according to the size and shape of the two; most commonly the hair appears quite as an appendage to the sebaceous gland, passing through its duct without any separate follicle except at its deepest portion. Certain glands have several hair follicles attached to them, and sometimes very many hairs are found mingled with the sebaceous plug expressed from larger glands. I myself have counted a dozen from a single gland. HENLE does not consider that the large follicles filled with fat, seen especially upon the sides of the nose, are normal sebaceous gland-openings, but regards them rather as hair follicles abnormally dilated and filled with epidermis, and believes that the hair follicle which appears as an appendage to the gland, has been forced into the cavity of the duct by the gradual dilatation of this latter, compressing the adjacent tissues and thus causing their absorption (B, C, Figure 1).

It will be seen that there is no absolute and well-de-

finer line of demarcation between these two varieties of sebaceous glands, but that a gland of the first class may be transformed into one of the second by a dilatation of the outer portion of the hair follicle : thus, while the distinction between the glands of the first and second class is well founded, its importance should not be overestimated, as it is often difficult to determine with certainty to which variety any particular gland should be classed.

In certain localities, as on the nose (Figure 4), there appears to be a superficial row of sebaceous glands, which

FIG. 4.



Section of skin from the nose, exhibiting large and small sebaceous glands, S.G, with small hairs attached.

are small, and mainly associated with fine hairs, while there is also another larger set which extend much deeper, indeed, to almost the entire depth of the skin. These latter give origin to the large comedo plugs which may often be forced from the nose.

The glands of the second class have for their object the furnishing of a lubricating and protective secretion to the outer layers of the skin, the epidermis; the necessity of this is apparent when we consider that they are found on a portion of the body, namely, the face, which is exposed much to the contact of foreign ob-

jects and to local irritation, while the natural protection enjoyed by the lower animals, the hair, is absent to a large degree. In regard to the purpose of the rudimentary hair follicle in connection with these glands, we may believe that it serves to conduct the secretion externally, or that its presence and growth serve in a measure to prevent the blocking up or obliteration of the canal. It may be that the lanugo, or fine hair, merely indicates the mode of formation of the glands, all of them developing alike from the wall of a hair follicle, the hair element remaining undeveloped in locations where it is not required (SAPPEY).

Sebaceous glands of the second class generally have no muscles attached to the rudimentary hairs, or at the utmost but rudimentary muscular development.

This absence of muscles in connection with sebaceous glands of the second class explains, in a measure, why acne affects the face principally. It was seen that the muscles attached to the larger hairs of the scalp and hairy portions of the body acted by their compression of the glands to facilitate the expulsion of the sebum. Upon the smooth face, however, the glands are large and the rudimentary hairs are very small, and consequently this muscular element is almost, if not entirely, wanting; there is, therefore, greater tendency for the walls of the glands on the non-hairy portions of the face to lose their tone, to become filled to distention with imperfectly formed sebum, and, as they have no contractile elements themselves, these occluding plugs must remain in until removed by art.

III.—GLANDS OPENING ON THE SKIN AND HAVING NO HAIR ATTACHED.

This third order of sebaceous glands exist only on very limited portions of the body, especially on the organs of

generation and the nipple: in this latter situation they almost touch one another, and their function is to protect it by their secretion from the irritant action of the saliva of the nursing child. They are of little or no interest in connection with the present work, and are mentioned only for completeness.

The minute anatomy of the sebaceous glands is as follows: Generally considered, a sebaceous gland consists of an outer inclosing wall and of an inner cell mass. Minutely examined, however, it is found to be composed externally of a connective-tissue envelope, which acts as a support (MOREL) to the basement, or *membrana propria*, of the gland. On the inner surface of this is a single layer of cells of cylindrical epithelium, and the cavity of the gland is filled with cells, the secreting cells, differing in form and origin from the preceding. The external connective-tissue envelope is continued over the glands from the external sheath of the hair follicle. In those unattached to hairs, this layer is derived from the corium. It is of great interest, inasmuch as it contains the blood-vessels, lymphatics and nerves supplied to the glands. The basement membrane is amorphous and very thin, and more or less intimately connected with the preceding layer. Upon its inner surface is situated the single layer of cylindrical epithelium, which, surrounding the gland, is a continuation of the cylindrical cells of the *rete Malpighii*. The ruff and spiny cells of the *rete* do not take part in the formation of the gland tissue, but stop abruptly at the neck of the gland.

The cells proper, or secreting cells of the gland, are large oval, or polyhedral, with large nuclei, and contain more or less fatty matter, oil globules. The origin of these is usually said to be the layer of cylindrical cells already described. Yet at no time during extra- or intra-

uterine life has it been possible to demonstrate any intermediate form between the two, and the more recent investigations are in favor of ascribing these cells to the lower layers of the stratum corneum, Langerhans' stratum, and the stratum lucidum, which are continued from the surface of the skin into the glands (LOEWE). The nearer the centre of the gland the greater the quantity of fat in the cells, while in the cavity of the glands, touching the secreting cells, we find others already detached, containing more fat, and others again completely filled with oily contents, and yet others from which the oily matter has escaped, leaving only the collapsed and shrunken membrane of the cell; all these represent the stages in the normal production of the secretion of the glands which occurs by means of a fatty degeneration of the cells composing its internal layer. Free fat and fat crystals are also found.

When diluted alkalies are added to these cells found in the cavity of the sebaceous glands, they swell up after a while into beautiful round or oval bodies, within which the oil is separated into single globules of different sizes and irregular shape, by the penetration of the alkali. At the same time the sebum becomes white by the appearance of the many minute fat globules, while larger oil drops are also formed, probably by the dissolving of many separate cells (KÖLLIKER).

The sebaceous glands are much less vascular than the sweat glands. The blood-vessels are supplied from those of the corium; passing between the connective-tissue fibres of the external envelope they break up into capillaries, and furnish the necessary nutriment.

According to NEUMANN, the sebaceous glands possess their own lymphatics; this appears also very probable, from the fact that those parts of the skin which have a large number of sebaceous glands give rise to the

most abundant net-work of lymphatics, as the external ear, the alæ of the nose, etc., and SAPPEY thinks it pretty certain that one place of origin of the lymphatic vessels is in the sebaceous glands.

Nerves have been traced among the epithelial cells lining the sebaceous glands, by some observers, although many writers doubt their existence there.

It is important to bear in mind that the sebaceous glands are but outgrowths of the hair follicles, and that the latter are an involution, as it were, of the different layers which compose the skin, so that the lining of the sebaceous glands corresponds to the epithelial layer of the skin. The secretory office is performed by the large polyhedral cells of the glands, and, as the epithelial cells of the skin lose their nuclei and undergo a horny alteration to enable them to fulfil their function of protecting the surface, and as they are, further, subject to constant shedding and reproduction, each in turn becoming an effete substance to be removed, so the cells lining the sebaceous glands, undergo also a special change, a fatty alteration, and their office becomes purely a mechanical one, namely, the supplying of a lubricator to the skin; to maintain health, therefore, they should be the subjects of constant removal and reproduction. The importance of this anatomical fact will be more evident when we come to speak of the treatment of acne, especially of the hygienic care of the general surface of the body and local stimulation of the affected parts.

The relations of the epidermis to the linings of the sebaceous glands may be studied in a cadaver undergoing putrefaction (SAPPEY). On detaching the epidermis covering the sides of the nose, the external ear, the forehead, etc., both the internal epithelial coating and the sebaceous material contained in the cavity of the gland may be drawn out; but this coat is not always complete,

for when the ramifications of the gland are numerous or somewhat extended, or are contracted at their opening into the central canal, it tears at many points, and only the part corresponding to the excretory duct is drawn out, together with some of its principal branches.

The sebaceous glands make their appearance from the beginning of the fourth to the middle of the fifth month of intra-uterine life (GEGENBAUER). Those which open directly upon the skin are formed from the rete Malpighii in a manner analogous to the development of the hairs. The rete extends inwardly a solid prolongation, penetrating the cutis propria. The central cells of this then undergo fatty degeneration, and the lumen is thus formed, which, however, is always filled with cells in various stages of fatty degeneration. The further development of the gland is found to lie in a proliferation of the cell mass, forming solid buds, the central cells of which then break down into fatty matter; the gland thus becomes racemose. On the other hand, the glands attached to the hairs are ingrowths of the external root-sheath, appearing soon after the prolongation inward of the rete for the formation of the hair follicle. They are first round, then pyriform, and their further development is entirely similar to the description given above (KÖLLIKER).

The sebaceous secretion (sebum cutaneum—*Haut-talg*, *Hautschmiere*), when freshly secreted is a white or yellowish, oily, semi-fluid mass, which hardens more or less on reaching the surface of the skin, where its temperature is lowered, and evaporation can take place from the cell debris which accompanies it from the gland. After death it also hardens, and the follicles contain semi-solid masses much resembling those which can be squeezed from dilated follicles, as comedones. FUNKE states that the chemical composition of the sebum in different parts of

the body appears to be different in regard to the quantitative proportion of its constituents ; but he gives no proof to support this assertion.

No satisfactory analysis of the sebaceous secretion has been obtained as yet, owing to the extreme difficulty of securing sufficient of the fluid in a normal state for analysis, apart from the sweat. The oily secretion sometimes seen on the nose and elsewhere in *seborrhœa oleosa*, probably represents most nearly the condition in which the fluid is excreted by the glands in health. Several approximate analyses have been published, but they are based upon the secretion as it has been procured in conditions of disease. The analyses usually given have been those obtained from a study of the altered secretion found in the interior of sebaceous cysts, from those made on the *vernix caseosa* of infants, and on the *smegma præputii*. That which seems the most reasonable is one furnished by LUTZ, who analyzed the secretions obtained in a case of general hypertrophy of the sebaceous system (FLINT). The fluid which he extracted from the dilated glands was milky white, and when cold was of about the consistency of wax. The mean of eight analyses of this fluid was as follows :

COMPOSITION OF SEBACEOUS MATTER.

| | |
|--|-------|
| Water..... | 357 |
| Oleine..... | 270 |
| Margarine..... | 135 |
| Butyric acid and butyrate of soda..... | 3 |
| Caseine..... | 129 |
| Albumen..... | 2 |
| Gelatine..... | 87 |
| Phosphate of soda and traces of phosphate of lime..... | 7 |
| Chloride of sodium..... | 5 |
| Sulphate of soda..... | 5 |
| | <hr/> |
| | 1,000 |

If the secretion as it oozes from the surface, as on an oily nose, be placed under the microscope, there will be seen a number of strongly refracting fatty globules, with a few epithelial cells. The masses expressed from enlarged glands on the face do not represent the normal secretion, which is liquid enough to flow upon the skin, and which should not be retained. In health there is no proper cavity of the gland filled with secretion, but only the cells forming the gland undergoing the fatty transformation in various degrees, until in the centre, where they should almost touch, a moderate amount of oily substance appears, which soon finds its way to the surface. But this material suffices well enough for the study, and represents in the main the secretion of the glands, in a more solid state. When the secretion has been thus retained for some time in the glands, crystals of cholesterolin are formed, which is not a normal constituent of the freshly secreted sebum.

The sebaceous glands, however, are not the only ones which transmit fatty matter to the skin. Since the time of Meissner it has been ably contested that the sweat glands shared this function with them, and the results of the most recent investigations would seem to establish without doubt, the fact, that though the sebaceous glands are the special producers of oily matter, yet the sweat glands play also an important part in its production (v. ZIEMSEN).

There are two other secretions which are usually classed with the sebaceous secretion, namely, the cerumen of the ear passages, and the Meibomian fluid. These are both oily in nature, but their peculiar characteristics distinguish them from the sebaceous fluid, and they serve certain purposes in connection with the ears and eyes quite different from that performed by the sebum. The anatomy of these glands also distinguishes them decidedly

from the sebaceous glands, while clinically they have little to do with the class of affections now under consideration.

In regard to the mode of expulsion of the sebum. While the movements of the skin, and especially the contraction of the muscles attached to the hairs, favor the excretion from the sebaceous glands, these influences are not the only ones nor the most powerful when the glands are in a normal state. The true cause, which operates continuously, is undoubtedly the continued production of cells from the walls of the follicles, which in turn crowd out those which have already undergone fatty degeneration, the cavity of the gland being kept continually full to overflowing. It must be remembered that in the normal state the orifices, and also the cavities, as above stated, are exceedingly minute, and contain but an inappreciable amount of sebum, which is in an oily state. When this cellular secretion proceeds regularly and normally each particle undergoes proper and complete transformation from an epithelial to a fatty cell, and finally to rupture of the cell-wall, and there is no resistance to its excretion upon the surface; when, however, pathological elements enter, the failure of complete transformation of the endogenous cells results in the diseases which will be considered more in full later on.

The function of the sebaceous secretion is to protect the integument and to render it and the hairs more soft and pliable; it also, probably, aids in preventing too rapid evaporation from and drying of the surface of the body. During intra-uterine life the sebaceous secretion seems to be very active, and serves to protect the skin from excessive maceration. The protecting coating of vernix caseosa allows the skin to perform its functions in utero, and at birth, when this coating is removed, the surface is found in a condition perfectly adapted to extra-uterine existence.

Upon the scalp the sebaceous secretion contributes greatly to the beauty and lustre of the hair; when the sebum fails the hairs become dry and brittle, easily splitting at the ends, and in time fall. The sebaceous secretion is essential to the perfect integrity of the skin, and its adaptability to the ends which it serves: the failure of this secretion or its unhealthy production is the cause of many abnormal states or conditions of disease, which we will now proceed to consider.

CHAPTER II.

GENERAL CONSIDERATIONS.—NOSOLOGY.—VARIETIES OF SEBACEOUS DISEASES.—DEFINITION OF ACNE.

ACNE is one of those diseases which, while not causing physical suffering, as a rule, can yet occasion an amount of real distress and annoyance which may often be much more unbearable than even a considerable amount of pain ; and, although it may never endanger life, it often can and does render existence so miserable that some individuals badly afflicted with it have even wished to die. And yet the disease has received comparatively little attention at the hands of either writers or practitioners, although, as will appear, it is one of the most frequent of all cutaneous maladies.

The reasons for the neglect of the disease appear to be twofold : First, the impression is almost universal that the eruptions classed as acne are not properly diseases, but only deformities, necessarily occurring at certain periods of life ; some writers have treated of these affections under the designation of “deformities,” and CELSUS remarks that it is hardly worth considering the cure of vari, or acne, but, for the sake of the Roman ladies who were very solicitous in regard to their beauty, he condescends to mention a few applications which may be of service. A second reason for the neglect of acne is found in the belief, which is also quite common, that it is useless to treat the eruption—that it is incurable. This latter view often arises from a lack of sufficient attention being paid to the causes of the complaint on the part of

the physician, and from an incomplete and frequently irregular carrying out of the treatment on the part of the patient. The measures recommended have often been too largely empirical, and the results obtained correspondingly unsuccessful.

In the present work the study of sebaceous diseases will be made mainly from patients belonging to the higher classes, as seen in private practice, whose intelligence can aid both in the matter of etiology and treatment. Very little can be learned of acne therapeutically from the poorer and more ignorant subjects met with in public institutions ; in them the hygienic surroundings and dietetic conditions are in most cases very bad, and treatment is too often carelessly and incompletely carried out.

It will be observed that the terms acne and sebaceous diseases have been used more or less synonymously, and it is thus that they will be considered in the present study, for reasons which will appear later.

No little confusion has existed in dermatological literature in regard to the varieties of acne which should be recognized, and the names which should be applied to them, and also as to what conditions of disease should be included under this title. More than twenty species or forms are enumerated by certain writers, and several hundred distinct names may be found in literature to designate the six affections or conditions here classed as varieties of acne.

Older writers, following the earlier definitions of disease, have mainly described as acne only the more commonly recognized condition seen on the faces of younger persons, inflammatory in character ; the functional disorders of the sebaceous glands seemed to have escaped their attention, or to have been described under different names, which are now applied to diseases of quite another character.

The mode of treatment of the subject from earlier times to the present is, in some measure, exhibited in the following synopsis, presenting in brief the views of those writers who have introduced new features, or modified those previously presented.

Synopsis of the Classification of Sebaceous Diseases by Writers on General Medicine and Dermatology.

Celsus, 1st Cent. A.D. LIB. VI. DE VITIIS SINGULARUM CORPORIS PARTIUM. *Cap. II.* De porrigine. *Cap. V.* De varis (et lenticulis et ephelide). LIB. VII. DE CHIRURGIA. *Cap. VI.* De meliceride et atheromate et steatomate.

Aretæus, 100. LIB. IV. *Cap. XII.* De arthritide et ischiadice (id est articulorum et coxendicis dolore). Tofi, podagra, chiragra, asthma, vari seu ionthi (cognate phenomena).

Galenus, 150. DE COMP. MED. SECUN. LOCA. LIB. I. *De furfuribus.* LIB. V. *De varis* (vari callosi).

Aetius, 500-600. LIB. II. SERMO II. DE CEREBRI, CAPITIS ET NERVORUM AFFECTIBUS. *Cap. LXV.* De furfuribus sive porrigine. SERMO IV. DE FACIEI, ORIS ET TONSILLARUM AFFECTIBUS. *Cap. XIII.* De varis faciei qui tum Ionthi, tum Acne Graecis vocantur. LIB. IV. SERMO III. DE TUMORIBUS LAXIS, ETC. *Cap. VII.* De pultacei ac mellei humoris tumoribus. *Cap. VIII.* De steatomatibus.

Avicenna, 1037. LIB. IV. CANONIS DE ÆGRITUDINIBUS PARTICULARIBUS, etc., etc. FEN. VII. DE DECORATIONE. *Tract. I.* De dispositione capillorum; in ipso sunt furfures. *Cap. XXIV.* De furfuribus (alhebric). *Tract. II.* De dispositione cutis ex parte coloris. *Cap. VII.* De alguassem (stigmatis). *Cap. VIII.* De albedsamen et rubedinis superflue. *Tract. III.* De eis quæ accidunt in cute, non in colore ejus. *Cap. I.* De sahafati (achor). a) Alstrengi (favus epiderm.). b) Balkie (psudracia). c) Albothim (terminthus). *Cap. V.* De bothor lacteis.

Albucasis, 1110. TRACT. I. DE ÆGRITUDINIBUS CUTIS CAPITIS, etc. *Cap. XV.* De fufure. TRACT. VI. ÆGRITUDO FACIEI. *Cap. III.* De alsahafa rubea. *Cap. VIII.* De (citritinate et) rubedine faciei. TRACT. XXIX. DE GENERIBUS APOSTEMATIBUS. *Cap. XXII.* De apostematibus duro quod dicitur Alfalcha latine Lupia (alsahamia, asalia, accida).

Johannes Actuarius, 13th Cent. LIB. VI. DE FACIEI VITIIS. De varis (et ficibus et furunculis.)

Lanfrancus, 1295. TRACT. III. *Cap. I.* (Alopecia et) tinea. *Cap. III.* Saphati. *Cap. IV.* Gutta-rosacea.

Theodoricus, 1298. LIB. III. *Cap. XXVI.* De testudine. *Cap. XXXI.* De napta. *Cap. XLVIII.* De pustulis faciei. *Cap. LI.* De gutta rosacea.

Bertruccio, 1347. LIB. VIII. DE DECORATIONE. *Cap. II.* De furfuribus capitis. *Cap. IV.* De saphati et alguesetz et gutta rosacea.

Guy de Chauliac, 1363. TRACT. VI. DE DECORATIONE. Gutta rosacea (albedsamen, butizaga, assafati).

Giov. di Vigo, 1525. LIB. I. DE APOSTEMATIBUS, ETC. *Cap. X.* De ardore in-

cendis ac rubedine qui solent oriri in extrem. nasi. LIB. IV. DE ULCERIBUS IN PARTICULARI. *Cap. XVII.* De pustulis faciei q. vulgo coxi sive torli nuncupantur. *Cap. XIX.* De gutta rosatia.

Paracelsus, 1573. DE COMMUNIBUS APOSTEMATIBUS. Gutta rosacea, varus, sephyrus (pl. sephyri), cossus (pl. cossi), syrones, saphati (furfures), testudo, nata (napta, nacta), etc., etc.

Amb. Paré, 1582. LIB. XXX. DE SIMPLICIUM MEDICAMENTORUM FACULTATIBUS. *Cap. XLV.* De gutta rosacea (sine tumore, cum tumore, cum pustulis et crustis, etc.). LIB. VI. DE TUMORIBUS CONTRA NATURAM. *Cap. XIX.* De atheromate, steatomate et meliceride.

Mercurialis, 1601. LIB. I. DE MORBIS CUTANEIS CAPITIS. *Cap. VIII.* De porriginē. *Cap. XI.* De psydraciis, helcydriis, sycosi, et exanthematis.

Riolanus, 1610. I. DE MORBIS CUTANEIS. Porrigo. II. DE DEFORMITATIBUS. *Cap. V.* De varis seu ionthois. *Cap. VI.* De facie flammea ficis conspurcata quibus infecti vulgo ficosi (à Gallis copperose) nuncupatur. *Cap. VIII.* De gutta rosacea quibusdam vitiligo rubra. CHIRURGICA, SECT. I. Lupia, etc.

Felix Platerus, 1625. TOMUS III. DE VITIIS. LIB. I. CORPORIS VITIA. *Cap. II.* *Discolorationes.* Gutta rosacea. *Cap. III.* *Extuberantia.* Steatoma; Atheroma; Meliceris; Testudo vel talpa; Vari seu ionthi.

Sennertus, 1641. LIB. V., PARS I. DE EXTERNIS AFFECTIBUS. *Cap. XXIII.* De varis. *Cap. XXXI.* De gutta rosacea. *Cap. XXXV.* De meliceride, atheromate et steatomate. *Cap. XXXVI.* De testudine, talpa seu topinaria et natta (nata, napta).

Fernelius, 1656. LIB. V. DE PARTIUM MORBIS ET SYMPTOMATIS PATHOLOGICÆ. *Cap. VII.* *Faciei orisque vitia et horum causa.* Ardentes pustulæ; Rubor faciei; Gutta rosacea; Varus. LIB. VII. DE EXTERNIS CORPORIS AFFECTIBUS. *Cap. VI.* *Maculæ.* Varus.

Blasius, 1665. PARS VI. DE MEMBRANIS, ETC. SECT. I. DE CUTE. *Cap. XXXVII.* De varis. *Cap. XXXVIII.* De gutta rosacea. *Cap. XXXIX.* De furfuratione. *Cap. XLVII.* De atheromate, steatomate et meliceride.

Johannes Dolæus, 1689. LIB. I. DE MORBIS CAPITIS EXTERNIS. *Cap. II.* *De pilorum affectibus.* Porrigo, etc. *Cap. XX.* *De faciei morbis.* 1. Gutta rosacea vel Rubedo faciei (ein roth finnicht und kupffern Angesicht). a) Facies rubra. b) Rubedo faciei pustulosa vel vesicosa. c) Rubedo faciei ulcerosa. 3. Vari seu Ionthi (Venus Blümlein.).

Turner, 1714. DISEASES INCIDENT TO THE SKIN OF THE FACE. The Red Face (gutta rosea or rubedo maculosa); Pimples (vari, ionthos).

Nenter, 1721. LIBER VII. DE MORBIS INFANTUM. De crinonibus.

Sauvages, 1763. CLASSIS I. AFFECTUS SUPERFICIARIII SEU VITIA. *Ordo I.* *Maculæ.* IV. Gutta rosacea. *Ordo II.* *Efflorescentiæ.* IX. Psydracia (Psyd. Acne). *Ordo V.* *Cystides.* XXXVII. Lupia. L. Meliceris (mellifavium); L. Steatoma (lipoma, loupe grasseuse); L. Spina bifida. CLASSIS IX. FLUXUS. *Ord. III.* *Serifluxus.* XX. Ephidrosis. E. mellea vel oleaginosa. CLASSIS X. CACHEXIÆ. *Ord. IV.* *Tubera.* XXII. Malis a crinonibus.

Linnæus, 1763. CLASS XI. VITIA. *Ord. I.* *Scabies.* Varus; Bacchia. *Ord. V.* *Tumores protuberantes;* Atheroma; Natta.

Lorry, 1777. PARS II. DE MORBIS IN IPSA CUTE NASCENTIBUS. SECT. I. DE

MORBIS IN UNIVERSA CUTE NASCENTIBUS. *Cap. II. De vitiis in ipsa cute nascentibus quæ formam cutis deturpant.* Art. IV. De varis, etc. *Cap. III. De varia venenorum in cutem solam actione.* Art. III. De animalibus quæ in cutem insiliunt, etc. *Paragr. II.* De crinonibus et comedonibus. SECT. II. DE MORBIS PARTIBUS QUIBUSDAM CUTIS PROPRIÆ. *Cap. I. De pilorum et cutis capillatæ affectibus.* Art. V. De tumoribus cysticis in cute capillatâ nascentibus. *Cap. II. De affectibus propriis cutis faciei.* Art. II. De morbis cuti vultûs et faciei propriis. *Paragr. I.* De gutta rosea. *Paragr. II.* De rubore et tumoribus in cute narium.

Plenck, 1783. CLASSIS I. MACULÆ. *Maculæ rubræ.* Gutta rosacea : 1) simplex, 2) œnopotarum seu Bacchia, 3) hydropotarum, 4) febrilis, 5) pernionalis, 6) herpetica, 7) syphilitica, 8) lactentium, 9) variolosa. *Maculæ incerti coloris.* Cutis unctuosâ. CLASSIS V. PAPULÆ. Vari seu ionthi; Grutum sive milium. CLASSIS VII. SQUAMMÆ. Porrigo (furfuracea, farinosa seu spuria). CLASSIS XII. INSECTA CUTANEA. Crinones (infantum, adultorum).

Cullen, 1800. CLASSIS I. PYREXIÆ. *Ord. II. Phlegmasiæ. Phlogosis phlegmonæ.* Varus; Bacchia; Gutta rosea; Gutta rosacea; CLASS IV. LOCALES. *Ord. VI. Tumores.* Lupia.

Willan-Bateman, 1813. CLASS VII. TUBERCULÆ. Molluscum (contagiosum); Acne (simplex, punctata, indurata, rosacea); Sycosis (menti, capillitii).

Mason Good, 1817. CLASS III. HÆMATICA. ORD. II. PHLOGOTICA. *Genus IV.* Ionthos (whelk). *Spec. 1.* Ion. varus (simplex, punctatus). *Spec. 2.* Ion. corymbifer. CLASS VI. ECCRITICA. ORD. I. MESOTICA. *Genus II.* Emphyma (tumores). *Spec. 2.* Encystis. Steatoma; Atheroma; Meliceris; Ganglion; Testudo. ORD. III. ACROTICA. *Genus III.* Exormia (papular skin). *Spec. 4.* Exor. milium. *Genus IV.* Lepidosis (scaly skin). *Spec. 1.* Pityriasis capitis (dandruff).

Alibert, 1818. LES TEIGNES. *Esp. III.* Teigne furfuracée. *Esp. IV.* Teigne amiantacée. LES DARTRES. *Esp. III.* Dartre crustacée a) flavescence, b) stalactiforme. *Esp. V.* Dartre pustuleuse a) mentagre, b) couperose, c) miliare, d) disseminée.

Bielt-Cazenave, 1828. ORD. IV. PUSTULES. Acné (couperose, gutta rosea). Acne simplex, indurata, rosacea. ORD. XIV. MALADIES DES FOLLICULES SÉBACÉES.

Struve, 1829. SECT. I. CLASS II. APOCENOSES. *Gen. V. Paraleipsis* (Krankheit der Hauteinölung). *Sp. I.* Aleipsis aucta (vermehrte Hauteinölung); *Sp. II.* Aleipsis diminuta (verminderte Hauteinölung). SECT. II. CLASS IV. EPIDERMOSSES, TRICHOSSES, ONYCHOSSES ET IONTHI. *Gen. IV. Ionthi (Finnenknoten).* *Sp. I.* Ionthus comedo (die Mitesser). *Var. I.* Comedo crino (die eigentlichen Mitesser). *Var. II.* Comedo milium (die Hautgrütze). *Sp. II.* Ionthus acme (die Hautfinne). *Var. I.* Acme simplex (die einfachen Hautfinnen). *Var. II.* Acme indurata (die verhärteten Hautfinnen), etc., etc. CLASS V. PARACHROMATA. *Gen. IV. Gutta rosea (die Gesichtsröthe).* *Sp. I.* G. ros. leprosa (die aussätzige Gesichtsröthe). *Sub-var.* glabra, condylomatosa, vasculosa, varosa, lichenosa. *Sp. II.* G. ros. insons (die unschuldige Gesichtsröthe). *Sub-var.* glabra, vasculosa, varosa, verrucosa. CLASS XIV. DERMOPHYMATA. *Gen. IX. Dermocystosis (Hautbülge).* *Sp. II.* D. meliceris (die Honig-Balggeschwulst). *Sp. III.* D. atheroma (die Brei-Balggesch.). *Sp. IV.* D. steatoma (die Speck-Balggesch.). *Sp. V.* D. mollusca (die Mollusken-Balgg.).

Alibert, 1834. GR. III. DERMATOSSES TEIGNEUSES. *Gen. II. Porrigine.* P. furfuracée; P. amiantacée. GR. IV. DERMATOSSES DARTREUSES. *Gen. II. Varus.* V.

comedo ou sébacée ; V. miliaire ; V. orgéolé ; V. disséminée ; V. goutte-rose ; V. mentagre. *Gen. III. Mélitagre.* M. aigue ou flavescence ; M. chronique.

Gibert, 1834. ACNE. Acne disseminata (simplex, indurata, punctata, sebacea). Acne rosacea (couperose); (simplex, pustulosa, ulcerosa, varicosa).

Rayer, 1835. INFLAMMATIONS PUSTULEUSES. Acne ; Couperose. MALADIES SPECIALES DES FOLLICULES SÉBACÉES. Flux sébacée ; Tannes ; Elevures folliculeuses ; Tumeurs folliculeuses ; Calculs des follicules.

Plumbe, 1837. ACNE, OR INFLAMMATION OF THE CUTANEOUS FOLLICLES. Acne simplex ; Acne punctata ; Acne indurata (rosacea, cuperosa).

Behrend, 1839. CL. VII. DERMATOSES FOLLICULEUSES ET FURUNCULOSES. I. Acne (simplex, indurata, punctata, miliaris). II. Fluxus sebaceus.

Fuchs, 1840. ERSTE CLASS. DERMATONOSEN. ORD. II. HÆMATONOSEN DER HAUT. FAM. V. ECZEMATOSEN. *Sipp. 4. Monocarpæ. Gatt. 14. Psydracia.* Art. 4. Psydracia-tinea (furfuracea, amiantacea). *Gatt. 16.* Acne. A. vulgaris (simplex, indurata) ; A. rosacea. *Sipp. 5. Seborrhœen. Gatt. 17.* Comedo. *Gatt. 18.* Seborrhagia (adultorum, neonatorum).

Riecke, 1841. ORD. V. PUSTULÆ. 4. Acne. 1) Disseminata (simplex, punctata, sebacea, indurata) ; 2) Rosacea.

Isensee, 1843. FAM. VI. SCROFULOSA ET IMPETIGINOSA. *Ord. 7. Glandulosebacea.* Seborrhœa ; Acne ; Sycosis, etc.

Rosenbaum, 1844. G. KRANKHEITEN DER HAUTANHÄNGE I. Krankheiten der Glandulæ Sebaceæ. CLASS. I. FUNCTIONSTÖRUNGEN. *Ord. I. Normale Secretion mit gehemmter Excretion.* Miliun ; Einfacher Tuberkel. *Ord. II. Vermehrte Secretion mit vermehrter Excretion.* a) *Ohne Umänderung des Secretes.* Ohrenschmalz ; Augenbutter ; Furfuratio (Gneis) ; Pityriasis ; Smegma præputii. b) *Mit Umänderung des Secretes.* Cutis unctuosa (fettige Schweisse). *Ord. III. Vermehrte Secretion mit gehinderter Excretion.* a) *Ohne Umänderung des Secretes.* Catarrhus glandularum sebacearum? b) *Mit Umänderung des Secretes.* 1. *Mit verändertem Verhältniss der normalen Bestandtheile.* a) Comedones ; b) (Herpes) ; c) Acne. *Ord. IV. Verminderte Secretion.* Trockene Haut. CLASS II. FUNCTIONSTÖRUNGEN MIT DAUERNDEN STRUCTURVERÄNDERUNGEN. *Gatt. II. Hypertrophia.* Molluscum ; Balggeschwülste.

Hebra, 1845. III. CLASSIS. ANOMALIÆ SECRETIONUM ET ORGANORUM SECERNENTIUM—ABSONDERUNGSKRANKUNGEN. II. ANOMALIÆ IN SECRETIONE SMEGMATIS CUTANEI. A. *quoad quantitatem:* a. *Adaucta smegmatis secretio.* a) *Non inhibita excretionem.* 1. Seborrhœa, der Gneis (congestiva, non congestiva). Varietates, Seborrhœa capillitii, faciei (ichthyosis faciei Bateman). b) *Inhibita excretionem ex impermeabilitate ductuum excernentium.* 2. Comedo seu acne punctata ; 3. Miliun seu grutum ; 4. Strophulus albidus et candidus ; 5. Lichen sparsus, albus ; 6. Tumor folliculi sebacei ; 7. Molluscum contagiosum. b. *Imminuta smegmatis secretio.* 1. Asperitudo epidermidis ; 2. Pityriasis localis. B. *quoad qualitatem:* 1. Tum ex odore sebi cutanei inamoeno sic dicto hircino ; 2. Tum ex consistentia duriori percipiendæ s. d. Cryptolithæ. IV. CLASSIS. EXSUDATA—EXSUDATE. B. EXSUDATA CHRONICA. a) *Fibro-albuminosa.* 4. Acne disseminata, die Finnen. Variet., pustulosa, indurata. VI. CLASSIS. HYPERTROPHIÆ—MASSENZUNAHMEN. D. HYPERTROPHIA FOLLICULORUM. a) *Hyp. foll. sebaceorum, una cum anomaliis secretionis incedens, superius jam tractata.* VII. CLASSIS. ATROPHIÆ—MASSENVERMINDERUNGEN. D. ATROPHIA FOLLICULORUM. a) *Atrophia folliculorum sebaceorum.* VIII. CLASSIS.

NEOPLASMATA—NEUBILDUNGEN. B. FIBRARUM TELÆ CONJUNCTIVÆ. 2. Acne rosacea. E. TELANGIECTASIA—GEFÄSSNEUBILDUNG. b) *Telangiectasia acquisita*. 3. Stadium primum acnes rosaceæ.

Gustav Simon, 1851. II. KRANKHAFTER VERÄNDERUNGEN DER HAUTDRÜSEN, HAARBÄLGE, HAARE UND NÄGEL. 2) VERÄND. DER TALGDRÜSEN UND HAARBÄLGE. a) *Zu reichliche Absonderung von Hauttalg.* Stearrhœa; Fluxus sebaceus. b) *Zu sparsame Absonderung von Hauttalg.* c) *Mitesser.* Comedo. d) *Durch Erweiterung der normalen Hautbälge gebildete grössere Cysten.* Balggeschwülsten. e) *Concretionen in der Hautbalgen* f) *Die Finnen.* Acne (simplex, punctata, indurata, and rosacea).

Chaussit, 1853. Group II. LÉSIONS DE SÉCRÉTION. Gen. I. *De la matière folliculeuse.* Acne: 1) simplex, 2) indurata, 3) rosacea, 4) sebacea (fluente, sèche, partielle, du cuir chevelu), 5) molluscum.

Devergie, 1854. Group III. AFFECTIONS PUSTULEUSES. Acne. *Sans hypertrophie des follicules.* Acne simplex ou rosacea; A. indurata; A. miliaris; A. punctata; A. sebacea. *Avec hypertrophie des follicules.* Acne sebacea hypertrophique; A. tuberculoïde. Couperose.

Bazin, 1862. De l'Acné. I. CLASSE (caractérisée par une lésion des glandes sébacées). *Ord. I. Lésion de la glande et de ses conduits.* Acné congestive (rosea); A. inflammatoire (miliaire, indurée, simple); A. hypertrophique (varioliforme); A. atrophique (lupus acnéique). *Ord. II. Lésion de la sécrétion glandulaire.* Acné par rétention (A. ponctuée due à la distension des conduits); Acné par évacuation (A. sébacée); A. fluente; A. concrète (ponctuée, crouteuse, soyeuse, cornée). II. CLASSE (caractérisée par une lésion des glandes annexes). *Ord. I. Lésion de la glande annexe et de ses conduits.* Acné pilaris ombiliquée; Acné éléphantiasique. *Ord. II. Lésion de la sécrétion glandulaire.* Acné sébacée des régions velues caractérisée par des enduits jaunâtres sur les régions velues.

Veiel, 1862. AFFECTIONEN DER CUTIS. Affect. der Talgdrüsen in Form von a) *Bläschen,* Acne punctata, comedo; b) *Knoten,* A. tuberculosa; c) *Knoten mit Capillarhypertrophie,* A. rosacea; d) *Freie Ausschwitzung,* Seborrhoe; e) *Ausschwitzung in die Haare,* Plica sebacea.

E. Wilson, 1867. I. ECZEMATOUS AFFECTIONS. Gutta rosacea. XX. AFFECTIONS OF THE SEBIPAROUS SYSTEM. 1. *Dis. of Structure.* Hypertrophy of epidermis; Hypertrophy of epithelium (Xanthelasma); Cancerous hypertrophy. 2. *Dis. of Function.* a) *Abnormal Secretion.* Stearrhœa; Allosteatodes; Asteatodes. b) *Retention of Secretion.* Comedones; Tumores sebipari (mollusc.); Tumores encystici (wen); Tubercula sebacea (miliun). c) *Retention with Inflammation.* Acne (punctata, coniformis, pustulosa, tuberculata, indurata).

Hardy, 1868. MALADIES CUTANÉES ACCIDENTELLES. Acné. I. *Dues à une hypersécrétion.* 1. A. ponctuée; 2. A. varioliforme; 3. A. sébacée fluente; 4. A. sébacée concrète; 5. A. sébacée cornée. II. *Dues à une inflammation.* 1. A. simple; 2. A. indurée; 3. A. rosacée; 4. A. hypertrophique.

Balmanno Squire, 1869. I. VARIETIES OF SEBACEOUS DISEASE CAUSED BY INFLAMMATION OF THE SEBACEOUS FOLLICLES. Acne simplex; A. indurata; A. rosacea; A. hypertrophica. II. VARIETIES CAUSED BY AN EXCESS OF THE SEBACEOUS SECRETION. Acne punctata; A. albida; A. oleosa; A. cerea; A. cornea; A. molluscum.

Gamberini, 1871. DERMATOSI PUSTOLOSE. 1. Acne (semplice, indurata, sebacea, pilare). 2. Copparosa.

Misset, 1872. I. ERYTHÈME. Couperose. II. INFLAMMATION. I. *Glandes des régions glabres.* Acne pustuleuse a) Aiguë (à petites pustules, à grosses pustules); b) Chronique (indurata). 2. *Glandes des régions velues.* Acne pilaris; Sycosis simple. 3. *Acné artificielle.* 4. *Acné syphilitique.* 5. *Affections à siège douteux.* Ecthyma; Furoncle; Impetigo. III. LESIONS DE SÉCRÉTION. I. *Rétention de la matière sébacée.* a) *Simple.* Acne punctata. b) *Avec kyste.* Acne miliaris; Loupes. 2. *Exhalation de matière sébacée.* a) *Sécrétion fluente.* Acné sébacée fluente; Plique. b) *Sécrétion concrète.* Acné sébacée crouteuse; Acné cornée; Acné soyeuse; Cornes. IV. LÉSIONS DE NUTRITION. I. *Avec retentissement sur les tissus.* Acné hypertrophique; Hypertr. glandulaire; Acné atrophique; Lupus acnéique; Acné sébacée partielle; Lupus érythémateux. 2. *Sans retentissement sur les tissus.* Acné varioliforme; Vitiligoidea.

Tilbury Fox, 1873. DISEASES OF THE SEBIPAROUS OR SEBACEOUS GLANDS. I. FUNCTIONAL. Seborrhœa; Asteatodes; Allosteatodes. II. STRUCTURAL. a) *Diseases of the lining membrane of the sebaceous glands.* Pityriasis; Xanthelasma. b) *Retention of Secretion.* Comedo; Sebaceous cysts; Molluscum contagiosum. c) *Congestive and inflammatory diseases.* Acne simplex, indurata, atrophica, hypertrophica, rosacea.

Hebra, 1874. III. CLASSE. ERKRANKUNGEN DER ALLGEMEINEN DECKE IN FOLGE VON ANOMALIEN IHRES DRÜSENAPPARATES. I. DURCH FUNCTIONELLE ANOMALIEN DER DRÜSIGEN ORGANE DER HAUT BEDINGTE VERÄNDERUNGEN. 3. *Durch Anomalien der Talgdrüsen bedingte Hautkrankheiten.* A. *Durch vermehrte Absonderung.* a) *Bei ungehinderter Excretion.* Seborrhœa (oleosa, sicca, universalis, localis). b) *Bei gehinderter Excretion.* Comedo; Miliium. B. *Durch verminderte Sebumabsonderung.* Pityriasis simplex. IV. CLASSE. DURCH EXSUDATION BEDINGTE HAUTKRANKHEITEN. B. *Exsudative Dermatosen mit chronischem Verlaufe.* III. *Gruppe.* *Finnenausschläge.* *Dermatoses Acneformes.* 1. Acne vulgaris seu disseminata, Gesichtsfinne (punctata, pustulosa, hordeolaris, indurata, varioliformis [frontalis], cachecticorum, artificialis); 2. Sycosis (acne mentagra; 3. Acne rosacea).

Bulkley, 1876. CL. II. MORBI GLANDULARUM CUTIS. A. DISEASES OF THE SEBACEOUS GLANDS. I. *Due to faulty secretion or excretion of sebaceous matter.* 1. Acne sebacea (oleosa, cerea, cornea, exsiccata); 2. Acne punctata (nigra [comedo], albida [miliium]); 3. Acne molluscum. II. *Due to inflammation of sebaceous glands and surrounding tissue.* 4. Acne simplex; 5. Acne indurata; 6. Acne rosacea.

Guibout, 1876. I. ACNÉ BOUTONNEUSE. I. Tache congestive (acné rosacée); 2. Tubercules (acne indurata); 3. Pustules (acné miliare, pustuleuse, indurata, pilaris, varioliforme, rosacée). II. ACNÉ SÉCRÉTANTE. Acné sébacée fluente; A. sébacée concrète; A. punctata; A. sébacée cornée (ichthyosis sebacea).

Piffard, 1876. REFLEX AFFECTIONS. I. Acne (sebacea, punctata, miliaris, simplex, indurata); 2. Rosacea (simple or congestive, varicose, hypertrophic).

Auspitz, 1881. I. CLASSE. DERMATITIDES SIMPLICES. *Fam. III. Folliculäre Hautkatarrhe.* 2. *Auch um die Follikel-ausführungsgänge und die Follikel selbst.* I. Acne. II. CLASSE. ANGIONEUROTISCHE DERMATOSEN. *Fam. III. Essentielle Angioneurosen.* 3. *Mit Gefässerweiterung und Neubildung von Gefässen.* Erythema angiectaticum (Acne rosacea). VII. CLASSE. EPIDERMIDLOSEN. REIHE. IV. STEATOSEN. *Fam. I. Hypersteatosen.* Seborrhœa oleosa; S. crustosa. *Fam. II. Parasteatosen.* Grutum; Miliium; Atheroma; Amyloidmiliium; Hyaloidmiliium. *Fam. III. Asteatosen.* Xerodermia (congenita, acquisita).

Profeta, 1881. VIII. FORME COMPOSTE. Acne. 1. Semplice o volgare (pustolosa, punteggiata, indurata, pilare). 2. Rosacea (copperosa, elefantiaca). X. LESIONI SECRETORIE. 1. Seborrea fluente; 2. S. secca (cornea); 3. Asteatosi. FORME CHE NON TROVAN POSTO NELLE CLASSI PRECEDENTI. Comedone; Milio; Mollusco.

Hillairet, 1881. DIVISION IV. DERMATOSES ADÉNOIDES, MALADIES DES POILS ET DES ONGLES. a) *Maladies des glandes sébacées.* Ord. I. Inflammation. Ord. II. Altérations de sécrétion, rétention par sécrétion, etc. Ord. III. Hypertrophies. Ord. IV. Dégénérescences.

Duhring, 1882. CLASS I. ANOMALIE SECRETIONIS—DISORDERS OF SECRETION. 1. *Sebaceous glands.* Seborrhœa (oleosa, sicca); Comedo; Miliium; Sebaceous-cyst. CLASS III. EXUDATIONES—INFLAMMATIONS. 1. Acne a) papulosa (punctata); b) pustulosa (indurata, atrophica, hypertrophica, cornea, cachectic acne); c) artificialis. 2. Acne rosacea (rhinophyma). CLASS VII. NEOPLASMATA—NEW-GROWTHS. Rosacea.

Liveing, 1882. CLASS I. INFLAMMATIONS. SUB-CLASS II. NON-INFECTIOUS INFLAMMATIONS. *Group 7. Acne or pimply group.* Acne (vulgaris, indurata, varioliformis, artificialis); Sycosis; Acne rosacea (non-hypertrophic, hypertrophic). CLASS II. DISEASES OF THE SKIN GLANDS. I. *Disorders of the sebaceous glands.* Comedo; Miliium; Stearrhœa (seborrhœa sicca, ichthyosis sebacea, steatorrhœa oleosa); Molluscum contagiosum.

Schwimmer, 1883. II. OBERFLÄCHLICHE ENTZÜNDUNGSPROCESSE, ZUM THEIL TROPHONEUROTISCHER NATUR. D. *Pustelbildende Ernährungsstörungen.* Acne vulgaris; A. toxica seu medicam.; A. rosea; Sycosis idiopathica. IV. OERTLICHE TROPHOPATHIEN. I. HYPERTROPHIEN. C. *Des Drüsenapparates:* a) *der Talgdrüsen.* Miliium (comedo); Atheroma; Molluscum; Hyperplasia simpl. V. ALLGEMEINE TROPHOPATHIEN. I. DER GEWEBSPARTIEN. A. *Des Cutisgewebes.* 4. Acne cacheticorum. 2. DER DRÜSENPARTIEN. B. *Der Talgdrüsen.* 1. Seborrhœa; 2. Asteatosis.

Hyde, 1883. CLASS II. DISEASES OF THE SEBACEOUS GLANDS AND PERIGLANDULAR TISSUES. 1. *Anomalies of Secretion.* Seborrhœa (sicca [squamosa], oleosa); Comedo; Sebaceous cysts (miliium, wen); Asteatosis. 2. *Exudative.* Acne (artificialis, atrophica et hypertrophica, cacheticorum, indurata, papulosa, punctata, pustulosa, varioliformis, vulgaris); Acne rosacea.

Bronson, 1884. CLASS I. TELANGIOSES. B. ATTENDED WITH TROPHIC CHANGES. *Fam. III. Inflammatory Angioses.* d. *Characterized by angieotasis and special localization;* Gutta rosacea. a) *Simple form*—Erythema rosaceum. b) *Pustular form*—Acne rosacea. c) *Hypertrophic form*—Gutta rosacea hypertrophica. CLASS III. CRYPTOSES. DISEASES AFFECTING THE CUTANEOUS FOLLICLES. A.—FUNCTIONAL. *First Order. Steatoses.* *Fam. I. Hypersteatoses.* Seborrhœa (oleosa, crustosa). *Fam. II. Asteatoses.* Xeroderma (congenita, acquisita). B.—ORGANIC. *Fam. I. Crypto-stenoses.* Comedo; Miliium; Atheroma cutis; Acrochordon; Amyloid miliium (molluscum contagiosum) (?); Colloid miliium. *Fam. II. Inflammatory Cryptoses.* 1. Acne (papulosa, pustulosa, indurata, atrophica).

Robinson, 1884. CLASS I. ANOMALIE SECRETIONIS ET EXCRETIONIS. SEBACEOUS GLANDS. 1. *Abnormal Secretion.* Seborrhœa (oleosa, sicca): Asteatosis cutis. 2. *Abnormal Excretion.* Comedo; Miliium; Sebaceous-cyst. CLASS III. EXUDATIONES. NON-CONTAGIOUS. 5. *Pustular.* Acne (simplex, indurata, rosacea).

Hans von Hebra, 1884. I. CLASSE. EINFACH ENTZÜNDLICHE DERMATOSEN.

A. OBERFLÄCHLICHE HAUTENTZÜNDUNGEN. *Fam. II. Folliculäre Hautkatarrhe.*
 2. *Entzündung der Follikel selbst.* Acne vulgaris; Acne varioliformis. II. CLASSE.
 ANGIONEUROTISCHE DERMATOSEN. *Fam. III. Essentielle Angioneurosen.* 2. *Mit*
Gefässerweiterung und Gefässneubildung. Acne rosacea. VII. CLASSE. WACHS-
 THUMSANOMALIEN DER OBERHAUT UND IHRE ANHANGSGEBILDE. A. ANOMALIEN
 DER HORN UND SECRETBILDUNG. *Reihe IV. Steatosen.* *Fam. I. Hypersteatosen.*
 Seborrhœa (oleosa, crustosa). *Fam. II. Parasteatosen.* a) Miliium; b) Verruca fol-
 licularis; c) Acrochordon; d) Atheroma cutis. *Fam. III. Asteatosen.* Xerodermia.

In presenting this, far from perfect, synopsis of the portions of classifications relating to sebaceous diseases, the various epochs of medicine have in turn been made to contribute several leading writers. Thus, first the Græco-Roman authors are represented by Celsus, Aretæus, Galen, and Aetius. Next follow Avicenna and Albucasis, prominent among the Arabian authors. After them come the Italian writers on surgery, often ecclesiasts, who adhere to the Arabian models. Di Vigo is introduced as the great antagonist of Arabian influence, and Paracelsus, as the opponent of Galen's views; Paré being added for his repute as the founder of modern surgery.

Mercurialis stands as the first independent writer on cutaneous diseases; but he pays but little attention to the affections under consideration. There follow then a number of writers in the seventeenth century, whose works cover the entire ground of medicine and surgery; Sennertus, Fernelius, and others. After them come three of the earliest writers on the skin: Turner, Lorry, and Plenck, who do much to develop the subject. Several great nosologists, Sauvages, Cullen, Good, are mentioned as contributing, and Willan and Bateman represent the beginning of modern dermatology. Closely following the latter come Alibert, Biett, and Struve, who bring the subject largely up to modern times. *

In looking over this list, we find that many of the names now in use are of very ancient date, while a large number of the older ones are altogether obsolete, or

applied to quite different affections. The earlier writers almost invariably used the terms *varus* and *ionthos*, and although the name *acne* is found as early as the sixth century, in AETIUS, it appears to have been almost lost until revived by WILLAN and BATEMAN early in the present century.

In regard to the definition and meaning of these terms there has been more or less discussion, and some difference of opinion. *Ionthos* (*Greek, ἰονθος*) signifies, primarily, the root of the hair, and later was applied to the lanugo, or fine, downy hair, and thus came to be employed to designate the acne lesions which were most prone to develop at the time when the hairs develop, or at puberty. "*Ionthi, flores cum papulis circa faciem vigoris signum*" (J. POLLUX).

Varus (*Latin, varus, stretched outward or uneven*) has quite another signification, and refers to the deformity produced by the projecting lesions of *acne simplex* and *indurata*, "*quia varum corpus facit et inequale*" (CELSUS). It is an error to suppose *varus* to be a corruption from the Latin *varius*, as some have suggested: this latter word is used in quite another sense, whereas the term *varus* is employed in connection with other diseases and deformities.

The word *acne* is of somewhat more doubtful meaning, as no exact derivation can be found for it in the Greek or Latin, although AETIUS states that it was commonly employed by the Greek writers. It is most probable that it was devised as a synonym of *ionthos*, to signify the same idea, and that it is a corruption of *acme*, from the Greek *ἀκμή*, signifying the bloom of life, or period of full development. "*Ionthos primum pilorum exortus seu lanugo dicitur, et ἰονθους, id est, varos Græci ἀκμας vocarunt, quoniam circa ætatis florem erumpere solent; quamquam loco Aetii citato ἀκνας legunt nonnulli*"

(GORRÆUS). The correct spelling of the word is, therefore, probably *acme*, and the error is said to have crept into Aetius by the carelessness of an early copyist; some few authors have used this spelling, as seen in the classification of STRUVE, above quoted. Another derivation has been suggested, namely, from the Greek privative α and $\kappa\upsilon\alpha\omega$, to scratch (GORRÆUS), because of the general absence of itching, requiring scratching: this, however, has no support other than in fancy.

One or two other terms in common use may be briefly alluded to. The word *seborrhœa* is derived from the Latin *sebum*, tallow, or grease, and the Greek $\rho\epsilon\epsilon\iota\nu$, to flow, indicating an abnormal flow of sebaceous matter. On account of the impropriety of using a word thus partaking of two languages, many writers have employed the name *stearrhœa*, from the Greek $\sigma\tau\epsilon\alpha\rho$, tallow, and $\rho\epsilon\epsilon\iota\nu$, to flow; this latter word is thus etymologically more correct.

A very large number of other names and designations have been applied to the diseases of the sebaceous glands here classed as acne, by the preceding and other writers, many of them with good purpose, others for no reason that can be discovered. Those which have been gathered from literature are here presented, arranged as far as possible upon a grouping which expresses in part the purposes of their use:

Names applied to Sebaceous Diseases in the Literature of Dermatology, with Equivalents and Synonyms.

I. NON-INFLAMMATORY DISEASES OF THE SEBACEOUS GLANDS.

Acne sebacea—*Fr.* Acné sébacée; Acné sécrétante; Maladie folliculeuse—*Ital.* Malattie follicolare. *Ger.* Krankheit der Hauteinölung. Paraleipsis.

A. PRODUCT INCREASED. Fluxus sebaceus—*Fr.* Flux sébacée; *Ital.* Flusso sebaceo; *Eng.* Sebaceous flux. Cutis unctuosa. Aleipsis aucta. *Fr.* Enduit gras de la peau. *Ital.* Stato grasso della pelle. Hypersteatosis.

Seborrhœa—*Ital.* Seborrea ; *Span.* Seborrea ; *Ger.* Seborrhoe. Stearrhœa, Steatorrhœa—*Fr.* Stearrhée ; *Ital.* Stearrea, Steatorrea. Seborrhagia—*Ital.* Seborragia. *Ger.* Der Gneis ; Schmeerfluss (Hautschmeerfluss) ; Schmalzfluss. Allosteatodes.

Varieties : 1. *Locality.*—Seborrhœa (Stearrhœa, etc.) generalis, universalis ; S. localis ; S. capitis (capillitii), faciei, nasi, palpebrarum, corporis (trunci) ; S. genitalis, preputialis, clitoridis (smegmatorrhœa) ; Acné sébacée des régions velues.

2. *Age.*—Seborrhœa (Stearrhœa, etc.) neonatorum, adultorum ; *Ger.* Der Gneis der Neugeborenen, der Erwachsenen ; *Ital.* Seborrea degli adulti.

3. *Degree or lesion.*—Seborrhœa simplex, congestiva. *Fr.* Inflammation des glandules sébacées ; *Eng.* Inflamed (congested) seborrhœa.

4. *Etiology.*—Seborrhœa syphilitica.

I. **Secretion Fluid.**—Acne sebacea oleosa—*Fr.* Acné sébacée fluente. Seborrhœa (Stearrhœa, etc.) oleosa, adiposa, fluida. Ephidrosis oleaginosa. Sudor pinguis, oleosus. *Fr.* Enduit huileux de la peau. *Ger.* Der fettige, ölige Schmeerfluss ; Fettige Schweisse. *Ital.* Seborrea fluente. (*Of scalp*) Plica sebacea—*Fr.* Plique sébacée. *Ital.* Idrotrissia.

II. **Secretion Inspissated.**—Acne sebacea cerea, sicca ; *Fr.* Acné sébacée sèche, concrète, crouteuse. Seborrhœa sicca, squamosa, lamellosa, furfuracea, crustosa, amiantacea. Herpes crustaceus. Scutulatio v. Incrustatio sebacea. *Fr.* Enduit cerumineux de la peau ; Dartre crustacée, crouteuse ; Croute dartreuse ; *Ger.* Der trockene, schuppige Schmeerfluss.

Variety : *Locality.*

A. Acne sebacea capitis. Porrigo, Pityriasis, Furfur, Furfuratio capitis (capillitii)—*Fr.* Farine des cheveux ; *Ger.* Kopfgrind ; Kopfschabe ; Haarschuppen.

Helcidrya, Farrea, Furfurisca—*Arab.* Alsahafati, Alhedrie ; *Ger.* Schuppengrind, Kleienausschlag ; *Eng.* Dandruff (Dandruff).

Pityriasis (Porrigo, Furfuratio, Tinea, Psydracia-tinea) furfurans, furfuracea, farinosa, amiantacea, asbestina, porriginosa—*Fr.* Teigne (Porrigne) furfuracée, farineuse, porrigineuse, amiantacée ; Teigne de fon. Tinea crustacea, ameda ; *Fr.* Teigne rugeuse ; Rache farineuse ; *Ger.* Kleienartiger, asbestartiger Schuppengrind ; *Eng.* Furfuraceous scall.

Sub-var. : *Age.*—Pityriasis, etc., senilis, infantilis ; *Ger.* Kleienausschlag der Kinder, der Greise.

B. Acne sebacea faciei.

Melitagra—*Fr.* Mélitagre. Ephidrosis mellea. Effloratio mellita. Psydracia mellifera. *Ger.* Die Honigflechte.

Sub-var. : 1. *Degree or lesion.*—a) Seborrhœa (Stearrhœa) flavescens. Melitagra flavescens. Melitagra acuta. *Fr.* Dartre crustacée flavescence ; *Ger.* Gelbe Honigflechte. b) Seborrhœa nigricans (nigrescens). Melitagra nigricans. M. chronica. *Fr.* Melastearrhée ; Séborrhée noire ; *Ger.* Schwarzliche Honigflechte. c) Stearrhœa cœrulea.

2. *Locality.*—Seborrhœa nigricans palpebrarum. Melasma palpebrarum. Blepharomelæna. Herpes crustaceus du bout du nez.

III. **Secretion Horny and Adherent.**—Acne sebacea cornea—*Fr.* Acné sébacée cornée. Acne cornea—*Fr.* Acné cornée ; Acné sébacée partielle ; Acné penicilliforme, soyeuse. Ichthyosis sebacea—*Fr.* Ichthyose sébacée ;

Ital. Ittiosi sebacea. Ichthyosis spuria—*Fr.* Fausse ichthyose ; *Ital.* Ittiosi spuria. Ichthyosis spinosa. Cutis testacea. *Fr.* Dartre crustacée stalactiforme. Sauriderma. Sauriosis sebacea.

Variety: *Age*.—Ichthyosis sebacea (*vel* cutis testacea) neonatorum (congenita), adultorum.

B. PRODUCT DIMINISHED. Acne sebacea exsiccata. Asteatosis ; Asteatodes—*Ger.* Asteatose ; *Ital.* Asteatosi ; *Span.* Esteatosis. Aleipsis diminuta. Pityriasis simplex, alba. Xerosis ; Xeroderma (Xerodermia)—*Fr.* Xerodermie. Asperitas (Asperitudo) cutis (epidermidis)—*Ger.* Trockene Haut ; Pergamenthaut ; *Eng.* Dry skin ; Parchment-skin.

Varieties : Pityriasis (seborrhœa) tabescentium, scrophulosorum, tuberculosorum—*Ital.* Pitiriasi dei tabescenti. Psoriasis lotricum. Xerodermia congenita, acquisita. *Fr.* Xerotrixie ; *Eng.* Dry hair. *Ital.* Pitiriasi semplice locale.

C. PRODUCT RETAINED. Parasteatoses. Crypto-stenoses.

I. With Gland Distention.—Acne punctata ; Ionthus comedo.

A. DUCT OPEN. Acne punctata nigra ; Comedo ; Acne punctata—*Fr.* Acné ponctuée ; *Ital.* Acne puntata, punteggiata. Acne follicularis ; Acne comedo. Varus comedo, punctatus, sebaceus, vermiformis. Morbus pilaris Horstii. Malis a crinonibus. Comedo crino. *Ger.* Die Mitesser ; Talgdrüsenfinne.

Names given to the lesions : Comedones—*Fr.* Comédons ; *Ger.* Comedonen ; *Ital.* Comedoni. *Eng.* Comedoes. Crinones (Cridones). Syrones—*Fr.* Cirons. Setæ. Dracunculi (nostrates). *Fr.* Tannes. *Span.* Espinillas. *Ital.* Setole. Punctæ mucosæ. *Ger.* Haarwürmer ; Hautwürmer ; Hautmaden. *Eng.* Grubs ; Maggots ; Maggot pimples ; Skin-worms^s ; Face-worms ; Flesh-worms ; Black-heads ; Black Jack.

Varieties : a) Due to *age* : Crinones (comedones), infantum, adultorum.

b) Due to *causation*. *Ger.* Theercomedonen.

c) Due to *arrangement*. Verruca follicularis. *Ger.* Sebumwarzen ; Comedonenscheibe.

B. DUCT CLOSED. Acne punctata albida. Acne albida, milium, miliaris, strophulosa ; Varus miliaris—*Fr.* Varus miliaire. Strophulus albidus—*Ital.* Strofolo bianco. Comedo milium. Molluscum granulosum—*Fr.* Molluscum granuleux ; *Ital.* Mollusco granuloso. Exormia milium.

Milium—*Ital.* Milio. Grutum. *Ger.* Der Gries ; Hautgries ; Hautgrütze ; *Eng.* Millet.

Varieties due to *contents* : a) *Ger.* Colloidmilium ; b) *Ger.* Hyaloidmilium ; Hyalom ; c) Calculi cutanei ; *Fr.* Calculs des follicules.

Names given to the lesions : Tubercula sebacea—*Fr.* Tubercules sébacées ; *Ital.* Tubercoli sebacei. Tubercula miliaria. Pustulæ albæ, lacteæ. Bothores leves. Folliculi inflammati. *Fr.* Elevures folliculeuses ; Granulations perlées. *Eng.* Pearly tubercles. *Ger.* Milien.

II. With Cyst Formation.—Acne molluscum. Molluscum sebaceum.

A. CYST-WALL CLOSED. Tumor cysticus, encystis, follicularis, sebaceus, sebiparus—*Fr.* Tumeur enkystée, folliculaire ; *Ital.* Tumori cistici ; Tumori follicolari sebacei ; *Eng.* Sebaceous, follicular, encysted tumor.

Cystisse bacea—*Fr.* Kyste sébacée ; *Ital.* Cisti sebacea ; *Eng.* Sebaceous cyst. Emphyma encystis. *Ger.* Balggeschwulst ; Grützbeutelgeschwulst. Encystis. Lupia—*Fr.* Loupe. *Arab.* Alfalcha. *Eng.* Wen. Steatoma—*Fr.* Steatome ; *Ger.* Steatom ; Cholesteatom. Sevatio. *Arab.* Alsahamia. Molluscum stearicum—*Fr.* Molluscum stearique ; *Ital.* Mollusco stearico. Lupia steatoma—*Fr.* Loupe graisseuse. Dermocystosis steatoma. Tumor lardeus.

Meliceris ; Meliceria ; Melifavium. Molluscum meliceride—*Ital.* Mollusco meliceride. Dermocystosis meliceris. Lupia meliceris. *Arab.* Asalia.

Atheroma—*Fr.* Atherome ; *Ger.* Atherom. Molluscum. Pultatio. Ophthalmiasis. *Arab.* Accida. Molluscum atheromatosum—*Fr.* Molluscum atheromateux ; *Ital.* Mollusco ateromatoso. Dermocystosis atheroma.

B. CYST-WALL OPEN. Cornua cutanea sebacea. Testudo. Talpa. Topinaria. Natta (Napta, Nacta).

II. INFLAMMATORY DISEASES OF THE SEBACEOUS GLANDS.

Acne (Acme, Acna)—*Fr.* Acné. Ionthos (Ionthus, Jonthos, Yanthos) ; *Ital.* Jontos. Varus. *Ger.* Die Finne ; Hautfinne ; Die Finnenausschläge. Herpes pustulosus. *Fr.* Dartre pustuleuse ; Acné boutonneuse. Folliculitis sebacea.

A. GLANDULAR INFLAMMATION PREDOMINATING.

Acne disseminata, juvenilis, vulgaris. Ionthos varus ; Ionthus acme ; Psydracia-acne.

Names given to the Lesions : Vari. Ionthi (Jonthi). Sephyri (Saphirs). Sahafati (Saphati). Bothores. Cossi (Coxi). Torli. Achores. Fici. Terminthi. *Fr.* Bourgeons ; Boutons ; Boutons de sagesse. *Ger.* Pfucken ; Hitzblattern ; Liebesblümchen ; Venusblümlein ; Venusblätterchen ; Schönheitsblätterchen. *Holl.* Puisten. *Ital.* Bottoncini ; Bitorzoletti. *Span.* Barros. *Arab.* Balkie ; Albothim. *Eng.* Whelks (Welks) ; Pimples ; Stone-pocks.

I. Lesions Superficial or Discrete.—Acne simplex—*Fr.* Acné simple ; *Ital.* Acne semplice. Acne vulgaris—*Ital.* Acne volgare. Acne disseminata—*Fr.* Acné disséminée. Varus disseminatus. *Ger.* Eigentliche, gewöhnliche, zerstreute Finne.

A, ACCORDING TO THE STAGE OR DEGREE OF INFLAMMATION.

I. PAPULAR LESIONS. Acne papulata, papulosa—*Fr.* Acné papuleuse. Acne coniformis ; Acne miliaris ; Acne hordeolaris.

II. PUSTULAR LESIONS. Acne pustulosa—*Fr.* Acné pustuleuse (aigue) ; Acné suppurée ; *Ital.* Acne pustoloso. Herpes pustulosus disseminatus. *Fr.* Dartre pustuleuse disséminée.

1. *With small pustules.* Varus pustulosus acuminatus ; *Fr.* Acné (Dartre) pustuleuse miliaire ; Acné pustuleuse aigue à petites pustules.

2. *With larger pustules.* Varus pustulosus globosus ; *Fr.* Acné pustuleuse aigue à grosses pustules.

B, ACCORDING TO LOCALITY. Acne dorsalis ; Acne frontalis ; Acne pilaris. *Fr.* Acné pilarée—*Ital.* Acne pilare. *Fr.* Acné de cuir chevelu.

C, ACCORDING TO KNOWN OR SUPPOSED ETIOLOGY.

I. ETIOLOGY KNOWN AND DEFINITE. Acne artificialis ; A. medicamentosa ; A. toxica ; *Fr.* Acné pathogénétique ; Acné de cause externe.

1. *From local toxic causes.*

Acne picealis ; Acne e pice, ex usu picis ; Acne picea. *Fr.* Acné cadique. *Ger.* Theer-acne. *Eng.* Tar-acne.

2. *From internal toxic causes.*—Acne ab ingestis.

a.) Acne ex iodo, ex usu jodi ; Acne iodata.—*Fr.* Acné iodique (éruption papuleuse, pustuleuse iodique). *Ger.* Jodacne. *Eng.* Iodic-acne.

b.) Acne e bromo, ex usu bromi ; Acne bromata ; Acne coagminata. *Fr.* Acné bromique. *Ger.* Bromacne (Bromexanthem, Bromauschlag). *Eng.* Bromic-acne.

II. ETIOLOGY SUPPOSED OR PRESUMPTIVE. 1. *Fr.* Acné diathésique.

a) Acné arthritique. b) Acné scrofuleuse (strumeuse). c) Acné scorbutique. d) Acne cachecticorum ; *Fr.* Acné de cachectiques.

2. *Fr.* Acné réfléchiée.III. Lesions Deep-seated or Confluent.—Acne indurata—*Fr.* Acné indurée ;

Ital. Acne indurata. Acne tuberata, tuberculata, tuberculosa—*Fr.*

Acné tuberculeuse. Acne inveterata ; *Fr.* Acné inveterée. *Fr.* Acné pustuleuse chronique. *Ger.* Die verhärtete Finne. *Eng.* Stone-pock.

Acne atrophica ; Acne varioliformis. *Eng.* Lupoid acne.

B. VASCULAR ELEMENT PREDOMINATING.

Rosacea. Bacchia. Phœnigmus. *Fr.* Couperose. *Ital.* Copparosa. *Ger.* Kupfer ; Kupferose. Gutta rosea ; Gutta rosacea—*Fr.* Goutte-rose ; *Ital.* Gotta-rosea ; *Eng.* Rosy-drop.

Acne rosea, rosacea—*Fr.* Acné rosée ; *Ital.* Acne rosacea. Acne cuperosa—*Fr.* Acné couperose ; *Ital.* Acne copparosa. Bacchia rosacea. Varus gutta rosea—*Fr.* Varus goutte-rose, couperose. Ionthos corymbifer. *Ger.* Kupferaussatz ; Kupferblätter ; Kupferhandel ; Die Rothfinne ; *Eng.* Rose-acne.

Names given to the lesions : 1. *Erythematous.* Exerythron ; Stigma ; Stigma. Rubor. Rubedo. *Fr.* Taches de feu ; Taches congestives, couperosiques, hepaticques ; Rougeur.

2. *Papular and pustular.* Pustulæ ardentes. *Ger.* Rothfinnen ; Rubinen. *Eng.* Rosy whelks ; Red pimples ; Bubucles.

3. *Tubercular.* Tubercula sarcotica. Fici.

Varieties : A. ACCORDING TO THE DEGREE OR LESION.

1. *Erythematous.* Rosacea simplex, congestiva ; Gutta rosea (rosacea) erythematosa, vasculosa, glabra, leprosa, insons ; Rubedo cum maculis ; Rubedo simplex, maculosa, superflua ; Erythema angiectaticum. Roseola acnosa ; Vitiligo rubra. *Fr.* Acné congestive, erythema-teuse. *Ger.* Die einfache Kupferfinne ; Acne rosacea ersten Grades. *Eng.* Acne rosacea of the first degree. *Arab.* Albedsamen.

2. *Papular.* Gutta rosea papulosa, varosa.

3. *Pustular.* Rubedo pustulosa, vesicosa. Gutta rosea pustulosa, herpetica. Herpes pustulosus gutta-rosea. *Fr.* Couperose pustuleuse, dartreuse. *Ger.* Die pustulöse Kupferfinne ; Acne rosacea zweiten Grades. *Eng.* Acne rosacea of the second degree. *Arab.* Alsafati ; Alguassen.

4. *Squamous.* Gutta rosea squamosa, lichenosa. *Fr.* Couperose squameuse.

5. *Varicose.* Gutta rosacea varicosa, punctata. *Fr.* Couperose variqueuse. *Ger.* Die varicöse Kupferfinne.

6. *Tubercular and hypertrophic.* Acne (rosacea) hypertrophica—*Fr.* Acné hypertrophique; Couperose tuberculeuse, hypertrophique; Acné éléphantiasique—*Ital.* Acne elefantiaica. *Ger.* Acne rosacea dritten Grades. *Eng.* Acne rosacea of the third degree. Gutta rosea condylo-matosa, tuberculosa, verrucosa, rabiosa. *Morphœa.* *Arab.* Albutizagua.
7. *Ulcerous.* Rubedo ulcerosa. *Ger.* Die ulcerirende Kupferfinne.
- B. ACCORDING TO LOCALITY.** *a) Face.* Facies rubra, flammea. Facies flammea fici conspurcata. Rubor, Rubedo faciei. Phyma faciei. *Ger.* Kupfrige Gesicht (Angesicht); Roth-gesicht. *Ital.* Volto bitorzoloto. *Eng.* Carbuncled face; Fiery face; Brandy (Wine) face.
- b) Nose.* Rubor cum tumoribus in cute narium. Phyma nasi. Rhinophyma. *Ital.* Mollusco del naso; Excrescenze carnose del naso; *Span.* Nariz atomatada. *Ger.* Rothnase; Saufnase; Pfund nase. *Eng.* Copper-nose; Red-nose; Brandy (Wine) nose; Bottle-nose.
- C. ACCORDING TO ETIOLOGY.** *a) Diathetic.* *Fr.* Couperose arthritique. *b) Reflex.* Gutta rosea (rosacea) stomachica, hepatica, lactentium. *c) Dietetic.* Gutta rosea œnopotarum—*Fr.* Couperose alcoolique. Gutta rosea hydropotarum. *d) Inherited.* Gutta-rosea hereditaria. *e) Climatic.* Gutta-rosea pernionalis. *f) Symptomatic.* Gutta rosea variolosa, febrilis, syphilitica. *g) Sexual.* Gutta rosea coelibatus.

Although this list may appear confusing, a little thought can readily analyze its elements, and it will be seen that the diseased conditions relating to the sebaceous glands can easily be grouped under a very few classes, and are really represented by a comparatively few names of diseases.

Thus, we find, that affections of the sebaceous glands may be classed under two main heads; first, those which are due to a faulty secretion or excretion of sebaceous matter; and, second, those which exhibit inflammation of the sebaceous glands with the surrounding tissue. The varieties which are used clinically are seen in the following table:

THE VARIETIES OF ACNE.

| | | | | | |
|--|-------------------|--|--------------|------------------|---|
| 1. Due to faulty secretion or excretion of sebaceous matter. | 1. Acne sebacea | $\left\{ \begin{array}{l} \text{oleosa,} \\ \text{cerea,} \\ \text{cornea,} \\ \text{exsiccata.} \end{array} \right\}$ | (seborrhœa.) | | |
| | | | | 2. Acne punctata | $\left\{ \begin{array}{l} \text{nigra (comedo).} \\ \text{albida (miliun).} \end{array} \right\}$ |
| | | | | | |
| 2. Due to congestion and inflammation of sebaceous glands with the surrounding tissue. | 1. Acne simplex. | | | | |
| | 2. Acne indurata. | | | | |
| | 3. Acne rosacea. | | | | |

Many writers of the past and more recent time refuse to class functional lesions of the sebaceous glands with those of inflammatory character, and treat of acne sebacea under the name seborrhœa, and others even withhold acne rosacea from the inflammatory group; thus, WILSON places the latter among his eczematous diseases, with the designation of gutta rosea, while others separate the congestive variety from ordinary acne, and treat of it with the name of rosacea alone. The French school mainly have contended for the unity of diseases of the sebaceous glands, and most of their best writers consider all these diseases together.

In classifying diseases the aim is to so group those which have features in common, that the idea may be readily grasped, and the separate elements remembered. The subject of the classification of diseases of the skin is one which has been a matter of much difference of opinion among dermatologists, and up to the present time no system has been arrived at which can be considered at all perfect. But many writers agree in classing glandular diseases together, and this natural association of these disease states has much in its favor, while the clinical connection between the functional and inflammatory forms of sebaceous disease is often most striking; they are so constantly seen associated together or following one another, and are so intimately connected etiologically and therapeutically, that it would appear very proper to treat of them thus, under one head. The generic term acne will, therefore, be applied to them all.

It will be understood, however, that the name acne has a well defined and certain application, and is by no means loosely employed. Thus, certain writers have made use of the term acne syphilitica, to designate a pustular or tubercular eruption of syphilis on the face, or back, or even elsewhere; others, under the name acne mentagra,

treat of true, non-parasitic sycosis, a disease primarily related to the hair follicles and not to the sebaceous glands; some writers mention ecthyma, impetigo, furuncle, and hordeolum, in this connection; lupus erythematosus was once considered as a new formation in connection with the sebaceous glands, and was described by HEBRA as *seborrhœa congestiva*. These are all excluded, as should be all other affections which could not be classed as functional or inflammatory diseases of the sebaceous glands.

It will be seen, however, that acne embraces a number of conditions of disease originating in the sebaceous glands, which exhibit a great variety of forms, so that no single definition can perfectly cover all the features presented. As previously indicated there are two groups of these affections, one characterized by functional disturbance of the action of the glands, and the other exhibiting inflammatory features; the lesions belonging to these two classes present themselves variously intermingled, and any single case may present many of the forms of disease here indicated, in succession or at any one time. Thus, acne sebacea, in its oily and dry forms, is a common accompaniment of the inflammatory varieties, and acne punctata is also almost invariably present in acne simplex and indurata. Acne sebacea of the scalp, causing dandruff and loss of hair, is also very frequently seen in connection with other forms of sebaceous disorder, or precedes or follows them, and may recur again and again without the return of the inflammatory forms of the disease.

Acne may be defined as a functional or inflammatory disease of the sebaceous glands, exhibiting excessive and abnormal, or deficient secretion of sebum; or, the inflammatory elements of congestion, papules, pustules, or tubercles, located in and about the sebaceous glands; or, any or all of these features combined.

As will be seen later, the appearances of the eruption under consideration vary greatly in different individuals, both as to the extent and the severity of their manifestations. The disease may be confined to a moderate sebaceous acne, exhibiting only an abnormal greasiness of the skin, or a little fatty scaling ; or, it may present an amount of oiliness or sebaceous accumulation which can occasion the greatest annoyance ; there may be but a few scattered or occasional papules or pustules of acne simplex, or the disease develops the reddened and inflamed condition of acne rosacea, or the surface may be covered with the large and deep nodules of acne indurata, which may give rise to considerable pain and cause the greatest mental distress. Between these extremes all degrees of eruption are presented, and a case which has been mild at one time may, on occasion, develop in an aggravated form later, or, one which has been severe at first may yield in part, and then persist in a moderate degree for a great length of time.

CHAPTER III.

FREQUENCY OF ACNE.—STATISTICS OF 1,500 CASES OF DISEASES OF THE SEBACEOUS GLANDS.

IN all published statistics of cases of diseases of the skin, eczema stands first in regard to frequency of occurrence, generally furnishing somewhere about one-third of all the cases. Acne is always recorded in very much less relative frequency, indeed among the poorer classes in public practice the ratio often falls very low, even to three or four per cent. of all cases presented for treatment.

But statistics fail to exhibit in any measure the real frequency of acne, for reasons which have been already hinted at in the preceding chapter. The eruptions here studied are so commonly regarded as a necessary accompaniment of adolescence, and are so often looked upon as a deformity rather than a disease, that but a small proportion of those who have acne apply for treatment, especially among the poorer classes. The lesions also often appear and disappear under various dietetic and other conditions, and so frequently persist but a short time, that medical relief is sought in really but a very small proportion of all the cases which occur. To this may be added, as a reason, the popular distrust of the efficacy of treatment in this complaint, which is, unfortunately, too often founded upon unsuccessful attempts at medication with advertised nostrums, or home remedies.

The affections here classed as acne are probably the most frequent of all diseases of the skin, few persons

passing through life without at one time or another suffering more or less from acne in some form, while many persons will be thus troubled repeatedly with every little deviation from health, or indiscretion in diet; this can hardly be said of eczema, notwithstanding its very frequent occurrence during the early years of life, before acne begins to manifest itself.

In regard to the relative frequency with which acne presents itself for treatment, statistics will vary according to the source from which they are drawn. Thus, out of 10,000 cases among the better classes in London, in the practice of MR. WILSON, sebaceous diseases numbered 1278, or 12.78 per cent., while among 10,000 dispensary patients in Glasgow, as reported by McCALL ANDERSON, there were but 349 with sebaceous diseases, or 3.49 per cent. Among 1,000 patients in Anderson's private practice these disorders were recorded 82 times, forming 8.2 per cent. Out of 74,455 cases of general skin diseases collected by the members of the American Dermatological Society in six years, there were 8,088 patients with sebaceous diseases, or almost 11 per cent.; among these were included those seen both in private and public practice, the latter, however, preponderating very considerably.

My own statistics, representing patients seen in private and public practice, the latter mainly at the New York Skin and Cancer Hospital, the New York Hospital, and Demilt Dispensary, embrace 1,618 cases of diseases of the sebaceous glands observed in a total of 12,837 miscellaneous skin cases; this gives a proportion of 12½ per cent. Of these, 879 cases were in private practice, occurring among 4,141 cases of various skin affections, and 739 were observed in public practice, among a total of 8,696. The ratio of cases of sebaceous disease to other skin affections was 22.22 per cent. in private practice, and 8.5 per cent. among those treated in public institutions.

As before stated, the cases here analyzed comprise all of those involving the sebaceous glands, which are classed under the generic term, acne. In the following table are presented the ages of the patients at the time of observation, as far as it was possible to obtain them with accuracy from the records kept during the past fifteen years. It is to be remembered that these records were not made for the purpose of such an analysis as the present, but in the routine of practice to assist in the treatment of the cases. In this table it will be noticed that diseases of the sebaceous glands are met with at all ages, but that the relative frequency in which they are observed varies very greatly at different periods of life. In subsequent tables will be presented the ages of the cases presenting the various inflammatory forms of sebaceous disease, more commonly recognized as acne.

TABLE I.

AGES OF 1,500 PATIENTS WITH DISEASES OF THE SEBACEOUS GLANDS.

| AGE. | PRIVATE PRACTICE. | | | PUBLIC PRACTICE. | | | GRAND TOTALS. |
|--------------------------|-------------------|----------|--------|------------------|----------|--------|---------------|
| | Males. | Females. | Total. | Males. | Females. | Total. | |
| Under 10 years of age... | 1 | 1 | 2 | 2 | 5 | 7 | 9 |
| 10 to 15 years of age... | 2 | 20 | 22 | 5 | 34 | 39 | 61 |
| 15 " 20 " " ... | 49 | 134 | 183 | 81 | 126 | 207 | 390 |
| 20 " 25 " " ... | 54 | 168 | 222 | 68 | 90 | 158 | 380 |
| 25 " 30 " " ... | 42 | 113 | 155 | 30 | 38 | 68 | 223 |
| 30 " 35 " " ... | 22 | 74 | 96 | 13 | 29 | 42 | 138 |
| 35 " 40 " " ... | 24 | 52 | 76 | 11 | 27 | 38 | 114 |
| 40 " 45 " " ... | 23 | 32 | 55 | 14 | 16 | 30 | 85 |
| 45 " 50 " " ... | 12 | 17 | 29 | 6 | 7 | 13 | 42 |
| 50 " 55 " " ... | 13 | 11 | 24 | 1 | 5 | 6 | 30 |
| 55 " 60 " " ... | 5 | 0 | 5 | 1 | 3 | 4 | 9 |
| Over 60 " " ... | 8 | 2 | 10 | 2 | 7 | 9 | 19 |
| | 255 | 624 | 879 | 234 | 387 | 621 | 1,500 |

It will be seen from this table (I.) that the sexes are very unevenly divided, there being 489 males to 1,011 females, the number of the latter being more than double that of the former; 67.4 per cent. females to 32.6 per cent. males. Among the cases in private practice males formed but 29 per cent. of the entire number. This

very great difference is in part accounted for by the less attention given to the eruption by males, but is also undoubtedly in large part owing to causes of the disease which exist in females to a greater degree than in males, as will be noted elsewhere. Acne in all its forms may therefore be regarded as undoubtedly more common in females than in males.

It will be further noted, that very few instances of sebaceous disease were recorded in subjects under ten years of age—but 9 in all; these all but one belonged to the class of functional disorders of the sebaceous glands. Many of the cases after forty years are also found to be of the order of sebaceous acne, often of the hard, horny type, tending to develop into epithelioma, as will be noticed later. The great bulk of all sebaceous diseases are found between the ages of fifteen and forty; indeed, between fifteen and *thirty* there occurred no less than 993 cases, or almost two-thirds of the entire number. The larger proportion of these cases will be observed to be of the variety here described as acne simplex, the ordinary acne, often called acne vulgaris or acne disseminata, embracing the varieties of papular and pustular eruptions of early life. The ages of the cases with this eruption are shown in the following table:

TABLE II.
AGES OF 726 PATIENTS WITH ACNE SIMPLEX.

| AGE. | PRIVATE PRACTICE. | | | PUBLIC PRACTICE. | | | GRAND TOTALS. |
|--------------------------|-------------------|----------|--------|------------------|----------|--------|---------------|
| | Males. | Females. | Total. | Males. | Females. | Total. | |
| Under 10 years of age... | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 10 to 15 years of age... | 1 | 8 | 9 | 2 | 23 | 25 | 34 |
| 15 " 20 " " ... | 37 | 110 | 147 | 52 | 91 | 143 | 290 |
| 20 " 25 " " ... | 29 | 114 | 143 | 39 | 50 | 89 | 232 |
| 25 " 30 " " ... | 20 | 58 | 78 | 13 | 12 | 25 | 103 |
| 30 " 35 " " ... | 2 | 22 | 24 | 1 | 8 | 9 | 33 |
| 35 " 40 " " ... | 5 | 7 | 12 | 2 | 6 | 8 | 20 |
| 40 " 45 " " ... | 2 | 4 | 6 | 2 | 2 | 4 | 10 |
| Over 45 " " ... | 1 | 0 | 1 | 0 | 2 | 2 | 3 |
| | 97 | 323 | 420 | 111 | 195 | 306 | 726 |

In this table are found 726 cases; 208 males, and 518 females. Of these, simple inflammatory acne was recorded alone in 469 cases, associated with functional sebaceous disorder in 181 cases, occurring with acne indurata in 46, and with acne rosacea in 31 cases. These figures, here and elsewhere, however, do not represent the real frequency of association of these sebaceous diseases, for particular mention of these data was often omitted in the records; the eruption in each instance was classed according to the predominant lesion.

The youngest age, at which acne simplex was recorded was that of a girl of ten years, in public practice, and one of eleven years, in private practice; at the age of thirteen there were two cases, one girl and one boy. Between the ages of thirteen and fourteen there were 7 cases, 1 male and 6 females; between fourteen and fifteen, 23 cases, 2 males and 21 females. The total number of patients of fifteen years of age or under was 35; of these 3 were males, and 32 females.

During the next five years the number of cases is largely increased, there being no less than 290 patients, or almost 40 per cent. of the whole. During the succeeding five years the number is also large, after which it declines greatly, so that after the age of twenty-five the disease was comparatively seldom met with. But it will be noted that the eruption of acne simplex was observed in a considerable number of elderly persons, which is quite contrary to the common idea that inflammation of single glands, constituting this disease, is solely an affair of youth; it is continually met with in older persons, quite unconnected with any rosaceous element. Some curious differences may be observed in regard to the frequency of the eruption in the two sexes at different periods. Thus, while the number of females in private practice increases between twenty and twenty-five, the number

of males diminishes ; whereas during the next five years the relative proportion of males is greatly increased. The ratio of the sexes is also very different in public and private practice.

In the next table (III.) are presented the ages of the patients in whom the condition acne indurata was noted.

TABLE III.
AGES OF 172 PATIENTS WITH ACNE INDURATA.

| AGE. | PRIVATE PRACTICE. | | | PUBLIC PRACTICE. | | | GRAND TOTALS. |
|--------------------------|-------------------|----------|--------|------------------|----------|--------|---------------|
| | Males. | Females. | Total. | Males. | Females. | Total. | |
| Under 15 years of age.. | 0 | 2 | 2 | 0 | 0 | 0 | 2 |
| 15 to 20 years of age... | 6 | 6 | 12 | 15 | 3 | 18 | 30 |
| 20 " 25 " " ... | 13 | 29 | 42 | 14 | 15 | 29 | 71 |
| 25 " 30 " " ... | 5 | 30 | 35 | 0 | 3 | 3 | 38 |
| 30 " 35 " " ... | 4 | 8 | 12 | 1 | 2 | 3 | 15 |
| 35 " 40 " " ... | 3 | 7 | 10 | 0 | 5 | 5 | 15 |
| After 40 " " ... | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| | 31 | 82 | 113 | 31 | 28 | 59 | 172 |

Comparatively few cases are seen here—but 172 in all ; 62 males, and 110 females—partly because this form of eruption is much less common than either the preceding or the succeeding variety, and partly because in the hurry of public practice care was not always exercised in recording the character of the lesions, many cases having been recorded only as having acne, or acne vulgaris, or disseminata, when the indurated form was really present. It will be noted that patients thus affected are generally somewhat older than those with acne simplex, but not as old as the average of those with acne rosacea. The youngest patient with acne indurata was thirteen years of age, a most typical case in a girl, in private practice ; the oldest was forty-five years of age. Of these cases, the condition of acne indurata was recorded as occurring alone in 86 patients ; 24 times in connection with functional sebaceous disorders ; 46 times associated with acne simplex ; and 19 times with acne rosacea.

The ages of the patients presenting the last variety of inflammatory sebaceous disease, acne rosacea, are given in the next table (IV.), which represents 370 cases—109 males, and 261 females.

TABLE IV.
AGES OF 370 PATIENTS WITH ACNE ROSACEA.

| AGE. | PRIVATE PRACTICE. | | | PUBLIC PRACTICE. | | | GRAND TOTALS. |
|--------------------------|-------------------|----------|--------|------------------|----------|--------|---------------|
| | Males. | Females. | Total. | Males. | Females. | Total. | |
| Under 20 years of age.. | 2 | 5 | 7 | 2 | 5 | 7 | 14 |
| 20 to 25 years of age... | 8 | 25 | 33 | 7 | 11 | 18 | 51 |
| 25 " 30 " " ... | 6 | 33 | 39 | 7 | 11 | 18 | 57 |
| 30 " 35 " " ... | 7 | 39 | 46 | 9 | 11 | 20 | 66 |
| 35 " 40 " " ... | 9 | 32 | 41 | 3 | 16 | 19 | 60 |
| 40 " 45 " " ... | 11 | 25 | 36 | 10 | 9 | 19 | 55 |
| 45 " 50 " " ... | 6 | 14 | 20 | 6 | 6 | 12 | 32 |
| 50 " 55 " " ... | 8 | 10 | 18 | 0 | 3 | 3 | 21 |
| Over 55 " " ... | 6 | 1 | 7 | 2 | 5 | 7 | 14 |
| | 63 | 184 | 247 | 46 | 77 | 123 | 370 |

It is readily observed that this eruption occurs at a later age than the two preceding. The youngest patient recorded in this table was a female, aged fourteen years; the oldest a female, aged sixty-five years. Comparatively few cases are seen before the age of twenty-five years; between this and thirty there were 57 cases, 13 of males, and 44 of females. Between thirty and thirty-five, 66 cases, and between thirty-five and forty, 60 cases. It is a little interesting to note that the greatest number of females were seen between the ages of thirty and thirty-five, while the greatest number of males were between forty and forty-five years of age; also, that previous to the age of forty the females were very largely in excess, the males forming generally only from twenty to twenty-four per cent., whereas after forty the males formed nearly forty per cent. of all cases.

Of these cases acne rosacea was recorded as present alone in 327 patients; in 12 instances combined with

functional sebaceous disorders; in 31 with acne simplex; and in 19 with acne indurata.

In regard to the duration of the eruption, it is somewhat difficult to make definite statements. It is not always possible to discriminate between the existence of the eruption present at the time of record, and the tendency of the eruption to recur again and again. But the following table (V.), taken from the records of patients among the more intelligent classes, in private practice, affords some data in this direction.

TABLE V.

DURATION OF THE ERUPTION AT THE TIME OF FIRST OBSERVATION IN 500 PRIVATE PATIENTS WITH ACNE.

| DURATION. | ACNE SIMPLEX. | | | ACNE ROSACEA. | | | GRAND TOTALS. |
|------------------------|---------------|----------|--------|---------------|----------|--------|---------------|
| | Males. | Females. | Total. | Males. | Females. | Total. | |
| Under 1 year duration. | 8 | 23 | 31 | 5 | 19 | 24 | 55 |
| 1 to 2 years' " | 8 | 32 | 40 | 4 | 23 | 27 | 67 |
| 2 " 3 " " | 15 | 43 | 58 | 10 | 24 | 34 | 92 |
| 3 " 4 " " | 12 | 37 | 49 | 3 | 17 | 20 | 69 |
| 4 " 5 " " | 5 | 27 | 32 | 4 | 11 | 15 | 47 |
| 5 " 6 " " | 5 | 27 | 32 | 3 | 11 | 14 | 46 |
| 6 " 7 " " | 7 | 10 | 17 | 2 | 10 | 12 | 29 |
| 7 " 8 " " | 1 | 7 | 8 | 2 | 7 | 9 | 17 |
| 8 " 9 " " | 2 | 9 | 11 | 2 | 5 | 7 | 18 |
| 9 " 10 " " | 1 | 3 | 4 | 0 | 2 | 2 | 6 |
| 10 " 11 " " | 3 | 5 | 8 | 2 | 2 | 4 | 12 |
| 11 " 12 " " | 3 | 3 | 6 | 1 | 3 | 4 | 10 |
| 12 " 13 " " | 0 | 3 | 3 | 1 | 2 | 3 | 6 |
| 13 " 14 " " | 1 | 3 | 4 | 1 | 1 | 2 | 6 |
| 14 " 15 " " | 1 | 1 | 2 | 0 | 2 | 2 | 4 |
| Over 15 " " | 2 | 4 | 6 | 5 | 5 | 10 | 16 |
| | 74 | 237 | 311 | 45 | 144 | 189 | 500 |

From this table it may be learned that the eruption of acne is not always a transient affair, but that it may persist even many years. The largest number of cases had lasted between two and three years before coming under observation, while over fifty cases had lasted more than ten years. In a number of instances the acne had recurred again and again, and the number of years given related to the last appearance of the eruption. The

duration of the cases of acne indurata is not given because it was often difficult to determine the date of the commencement of this eruption, it often following upon an acne simplex or rosacea; in most of the private cases it had existed a considerable length of time, often a number of years.

In a very considerable proportion of the cases of acne simplex it was found that the eruption had first developed at or near the age of puberty, and had persisted with greater or less severity to the time of the record. Several of the cases of rosaceous acne in females had begun with the approaching menopause, and had remained until removed by treatment.

In the following table (VI.) is exhibited the age at which the eruption of acne simplex and acne rosacea first appeared, in five hundred patients in private practice.

TABLE VI.

AGES OF 500 PRIVATE PATIENTS WITH ACNE, AT THE BEGINNING OF THE ERUPTION.

| AGE. | ACNE SIMPLEX. | | | ACNE ROSACEA. | | |
|--------------------------|------------------|----------|--------|----------------------|----------|--------|
| | Males. | Females. | Total. | Males. | Females. | Total. |
| Under 10 years of age.. | 0 | 2 | 2 | Under 20 yrs. } 9 | 19 | 28 |
| 10 to 15 years of age... | 17 | 67 | 84 | | | |
| 15 " 20 " " ... | 41 | 101 | 142 | 7 | 29 | 36 |
| 20 " 25 " " ... | 7 | 46 | 53 | | | |
| 25 " 30 " " ... | Over 25 yrs. } 8 | 18 | 26 | 4 | 35 | 39 |
| 30 " 35 " " ... | | | | 9 | 16 | 25 |
| 35 " 40 " " ... | | | | 7 | 23 | 30 |
| 40 " 45 " " ... | | | | 5 | 12 | 17 |
| Over 45 " " ... | 7 | 11 | 18 | 7 | 11 | 18 |
| | 73 | 234 | 307 | 48 | 145 | 193 |

It is here seen that in 86 patients with acne simplex, or 28 per cent. of the whole, the eruption began at or before 15 years of age, and 228 patients, or 74 per cent., first exhibited the eruption at or before 20 years of age, while in but 26 patients acne simplex began after the age of 25 years. In striking contrast to this stand the figures of acne rosacea, where it is observed that in but 28 cases, or

14 per cent., the eruption appeared as early as at 20 years of age. It is also seen, however, that the eruption of acne rosacea is very commonly developed in early adult life, it first appearing after the age of forty years, in comparatively few of the cases. A curious diminution is here seen in the number of cases first developing between the ages of thirty and thirty-five years, that most active in child-bearing, the number then increasing after thirty-five years of age, as the time of the later menstrual derangements approaches.

Acne is not infrequently observed in connection with other eruptions, and the following table (VII.), taken

TABLE VII.

OTHER SKIN DISEASES COMPLICATING ACNE IN 879 PATIENTS IN PRIVATE PRACTICE.

| DISEASES. | MALES. | FEMALES. | TOTAL. | DISEASES. | MALES. | FEMALES. | TOTAL. |
|------------------------|--------|----------|--------|-----------------------|--------|----------|--------|
| Abscessus..... | 2 | 5 | 7 | Nævus..... | 0 | 2 | 2 |
| Alopecia..... | 3 | 1 | 4 | Onychomycosis..... | 0 | 1 | 1 |
| Anthrax..... | 0 | 3 | 3 | Paronychia..... | 0 | 3 | 3 |
| Atrophia (linear)..... | 1 | 0 | 1 | Pemphigus..... | 1 | 1 | 2 |
| Chloasma (uterinum)... | 0 | 5 | 5 | Pompholyx..... | 1 | 0 | 1 |
| Cornu cutaneum..... | 1 | 0 | 1 | Pruritus hiemalis.... | 1 | 1 | 2 |
| Dermatitis..... | 3 | 2 | 5 | Psoriasis..... | 4 | 3 | 7 |
| Eczema..... | 13 | 38 | 51 | Purpura..... | 0 | 2 | 2 |
| Ephelis..... | 0 | 2 | 2 | Scabies..... | 1 | 0 | 1 |
| Erysipelas..... | 1 | 5 | 6 | Scarlatina..... | 6 | 14 | 20 |
| Erythema..... | 0 | 7 | 7 | Sycosis..... | 1 | 0 | 1 |
| Furunculosis..... | 8 | 13 | 21 | Syphilis..... | 13 | 2 | 15 |
| Herpes..... | 2 | 7 | 9 | Tinea circinata..... | 1 | 3 | 4 |
| Hirsuties..... | 0 | 8 | 8 | Tinea versicolor..... | 2 | 2 | 4 |
| Hordeolum..... | 0 | 8 | 8 | Urticaria..... | 3 | 6 | 9 |
| Hyperidrosis..... | 3 | 4 | 7 | Varicella..... | 1 | 2 | 3 |
| Keloid..... | 0 | 1 | 1 | Variola..... | 1 | 0 | 1 |
| Leucoderma..... | 0 | 1 | 1 | Verruca..... | 2 | 0 | 2 |
| Lichen pilaris..... | 1 | 2 | 3 | Xanthelasma..... | 0 | 1 | 1 |
| Lupus..... | 0 | 1 | 1 | Unclassified..... | 8 | 8 | 16 |
| Morbilli..... | 7 | 12 | 19 | | | | |
| Total..... | | | | | 91 | 76 | 167 |

from patients in private practice, exhibits the number of instances in which this was recorded. It is understood, of course, that other patients may have had eruptions which escaped notice, or those which had made their appearance

before or after coming under treatment for the acne. But this table represents the concurrence as it was recorded, generally for the purpose of treating both affections.

This table shows the necessity of exercising care in the diagnosis of cutaneous diseases, inasmuch as no less than forty distinct affections or morbid conditions of the skin are here recorded in patients who came under treatment for acne; many of these were entirely dissimilar diseases, requiring decidedly different means for their relief.

It will be noted that eczema here stands first in regard to its frequency of occurrence in connection with acne; the same was recorded in regard to eczema,* acne being the most frequent accompaniment of that disease. This may be explained in part by the fact that these two being the most common of all skin affections, are therefore most likely to occur together. But the real explanation lies in a greater or less relationship between acne and eczema. The latter is a disease which expends its energy largely in the Malpighian layer of the skin, and the sebaceous glands are the direct offshoots from this cellular portion of the integument. It is very natural, therefore, in eczema to have the sebaceous glands involved in the inflammation, and clinically the occurrence of the two eruptions is much more common than the figures here given would indicate. In many cases of eczema the sebaceous inflammatory element is very marked in another manner; either in the arrest of the secretion, thus producing a very dry, hard skin, or in the great increase of the secretion, giving a peculiar, yellowish, gummy character to the exudate and tenaciousness to the crusts.

The relationship between eczema and sebaceous disorders is especially well exemplified in acute eczema of

* Eczema and its Management; A Practical Treatise based on the Study of 3,000 Cases of the Disease: New York, Putnam's Sons, 1884, 2d edition.

the hairy scalp, where we find a large amount of yellow, gelatinous exudation, caused by excessive and abnormal secretion from the very large number of sebaceous glands there present.

Next to eczema in frequency of occurrence with acne come furunculi and hordeoli, which were observed even more frequently than here indicated. The conditions causing them are quite similar to those operating in sebaceous diseases, and it was frequently noted that as the patient was cured of the latter, the former ceased to recur.

Syphilis was recorded in fifteen of the patients with acne; in these the eruption was not a papular or tubercular syphilide proper, nor was the acne regarded as at all due to this disease; in some of the instances it was undoubtedly aggravated if not caused by the iodide of potassium employed.

In eight females with acne advice was also sought in regard to hirsuties, although this condition was noticed in very many more patients. The sexual disturbances which often produce the acne may undoubtedly have more or less share in causing the unnatural growth of hair upon the face.

Statistical analysis in regard to certain matters relating to etiology will be presented in the next chapter, and other details drawn from these cases will be mentioned later, in connection with the treatment of various portions of the subject.

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CHAPTER IV.

ETIOLOGY OF ACNE.—ANALYSIS OF CASES.

THE etiological factors which have to do with affections of the sebaceous glands are so varied, and the causes of the eruption in individual cases differ so greatly, that it is very difficult to determine with absolute certainty the real bearing of any one of the influences which have been asserted to be productive of acne, or of the clinical conditions which may be observed in persons with this eruption. In regard to each feature developed it may be claimed that multitudes are similarly affected without the concurrence of acne, and that there are, again, many cases of sebaceous disease where these etiological factors cannot be recognized.

But, on the other hand, the same is true in regard to many other diseases, and at the best the study of etiology is yet in its infancy, and of but few maladies can it be asserted absolutely that they are always caused by a definite, fixed, and determined agent or factor. This, certainly, is not the case in regard to acne, for there is no one single cause or condition which will invariably produce it; unless it be such articles as iodine and bromine, and practically such agencies have no bearing upon the real question at hand.

But, as medical science is based largely upon observation and experience, clinical facts closely studied and recorded do furnish data from which may be drawn, with

tolerable certainty, conclusions which will at least aid in understanding a disease as it is presented for treatment. It is in this light that we shall study the causes of acne, not asserting that the clinical features developed are certainly and invariably those which produce the eruption, but, while presenting the opinions of others, the aim will be to illustrate the subject and to confirm or oppose previous views by matter drawn from personally observed cases. The question of etiology will be considered in this chapter in a general manner, while special application of the points will be subsequently mentioned in connection with the various forms of sebaceous disease.

The causes of acne may be considered under three heads :

First. General causes, pertaining to classes of cases.

Second. Special constitutional or systemic causes, relating to individual cases.

Third. Local causes.

Under general or predisposing causes we have to consider sex, age, heredity, constitution, general dyscrasic conditions, etc. First, as to sex.

From the tables in the preceding chapter it is seen that acne is presented for treatment much more frequently in females than in males; in private practice males formed but 29 per cent., and in public practice but 37.6 per cent., and in the total but 32.6 per cent., or less than one-third of the entire number. It is therefore probable that the eruption is much more common in the former than in the latter, for reasons which it is not difficult to discover. The sedentary habits of females predispose largely to the sluggish circulation, and the consequent dyspepsia and constipation, which, with imperfect tissue interchange, are at the bottom of many cases. The greater disturbances of the system which occur at puberty and at the menopause, as well as of the monthly per-

turbation of the system, contribute also greatly to the production of acne in females, while the special diseases to which they are subject likewise play an important part. As a local element of causation may be mentioned the greater tendency in females to make applications to the skin in the way of perfumes, powders, and cosmetics, which may act injuriously.

In regard to age affecting the development of sebaceous diseases, the tables show that these affections occur comparatively seldom very early or very late in life, two-thirds of all the cases being between 15 and 30 years of age when presenting for treatment. Only 9 patients out of the 1,500 exhibited sebaceous disorder before 10 years of age, and 100 after 45 years of age; these, as we shall see later, were mainly of the functional varieties of acne.

Turning now to Table II., exhibiting the ages of patients with acne simplex, we find that almost 72 per cent. of the cases were presented for treatment between the ages of 15 and 25, and in Table VI. it is further seen that in 74 per cent. of the cases of acne simplex the eruption appeared at or before twenty years of age. In regard to the early appearance of acne in females, it is noted that in 24 cases the eruption of acne simplex began with the establishment of the catamenia, and in 8 cases it began from one to three years before their appearance.

Puberty, therefore, has been justly charged as the most frequent predisposing cause of acne simplex, and the name *acne juvenilis*, which has been applied to the eruption, expresses this element very properly. The reasons for the greater tendency of the sebaceous glands to take on morbid action during this early, developmental period of life is undoubtedly their increased physiological activity at this time, in connection with the growth of hair. With this development of the hair and sebaceous

glands there is increased nerve activity and augmented blood-supply, and with these comes the liability to congestion and inflammation, as is the case in other organs and portions of the body.

But puberty and the development of the hairs and sebaceous glands are natural processes or conditions, and should not be followed by untoward symptoms under circumstances of perfect health. And this, indeed, is what is observed, namely, that when the health is perfect and the functions are normally performed, puberty passes without the occurrence of acne, or, if single glands become inflamed, they rapidly subside and the disturbance is very transitory.

We cannot, therefore, in the strictest sense of the term, regard puberty as a cause of acne simplex, although the age of puberty is almost a necessary element, as senility is almost an effectual obstacle, to its occurrence. But the frequency of acne at the period of puberty may be rather attributed to the derangements of health, to be noticed hereafter, which are especially liable to occur during this time of youthful carelessness and indiscretion. The bearings of sexual disturbances at this period will be considered later.

It will be seen, however, that even inflammatory sebaceous diseases are not confined to the age of puberty, but that severe and obstinate eruptions of acne indurata and rosacea occur much later, and long after full development has taken place; and also that even acne simplex, or superficial inflammations of single glands, is occasionally met with quite late in life. Puberty is, therefore, but one of the predisposing causes of sebaceous disease.

Heredity has sometimes been claimed to be a factor in the causation of acne, but there does not seem to be much evidence that this element can be regarded as of very great importance. It was quite exceptional to have

more than one member of a family under treatment for acne, and the notes of these cases do not present much proof of the heredity of the complaint. The following table (VIII.) may be of some interest in showing the number of patients in whom points bearing on the subject were recorded. It is to be understood, however, that this table presents the matter very incompletely, for inquiry into these particulars was necessarily made in comparatively few cases.

TABLE VIII.

HEREDITY, AS RECORDED IN 879 PRIVATE PATIENTS WITH ACNE.

| DISEASE. | PARENTS, ONE OR BOTH. | BROTHERS AND SISTERS. | UNCLES AND AUNTS. | COUSINS. | CHILDREN. | GRANDPARENTS. | "FAMILIES." | TOTAL. |
|------------------|-----------------------|-----------------------|-------------------|----------|-----------|---------------|-------------|--------|
| Acne | 41 | 119 | 9 | 2 | 6 | 2 | 6 | 185 |
| Eczema | 27 | 13 | 1 | 2 | 1 | 1 | 3 | 48 |
| Psoriasis..... | 2 | 4 | .. | 1 | 1 | .. | .. | 8 |
| "Eruptions"..... | 6 | 9 | 1 | .. | 1 | .. | 3 | 20 |
| | 76 | 145 | 11 | 5 | 9 | 3 | 12 | 261 |
| Rheumatism | 44 | 16 | 2 | .. | 1 | 5 | 17 | 85 |
| Gout | 32 | 7 | 4 | .. | .. | 7 | 16 | 66 |
| Phthisis..... | 23 | 12 | 1 | .. | .. | .. | 21 | 57 |
| "Scrofula"..... | .. | 4 | .. | 1 | .. | 1 | 2 | 8 |
| | 99 | 39 | 7 | 1 | 1 | 13 | 56 | 216 |

In this table the figures represent separate patients who were related to the individuals affected, and in many instances there were several in a family who presented the diseases mentioned: thus, there were 119 among the cases analyzed who had one or more brothers and sisters affected with acne, and 44 whose parents, one or both, had suffered from rheumatism, etc.

Although there is little to prove that acne is hereditary to any degree, much can be found to show that certain general dyscrasic conditions, or states of constitution in families, rather tend to the eruption at one time or another.

This is especially true in reference to the strumous state or inheritance, and also in reference to rheumatism and gout, and it appears that those to whom these conditions are transmitted with any force are peculiarly liable to sebaceous affections. Rheumatism, more or less severe, was noted as present in 75 patients with various forms of acne.

Certain physical characteristics and features are noted clinically to have somewhat to do with the occurrence of diseases of the sebaceous glands. These affections are met with much more commonly in those of light complexion than in those possessing dark skin and hair; they are most frequently seen in subjects presenting a thick, doughy skin, and exhibiting features belonging to what is known as a lymphatic, scrofulous, or strumous state or temperament. But many cases also occur in those with thin, delicate skin, and possessing a gouty diathesis; this is especially true in regard to acne rosacea, and the sebaceous diseases of middle life. Thus, with many authors, we may class scrofula and gout among the predisposing causes of sebaceous disorders.

Syphilis is sometimes spoken of as a cause of acne, but the papular and pustular eruptions of syphilis, even when occurring on the face and back, are not an affection of the sebaceous glands—an acne—but are inflammatory or neoplastic formations quite independent of this class of diseases. It has never been proved that syphilis can directly cause sebaceous disease, but the debility attending it may become an etiological factor, and thus it appears at times to produce an acne sebacea, or seborrhœa, of the scalp.

Malaria has been charged as a causative element in acne and other skin affections, but seemed to be of little influence in the cases here analyzed. In but 121 of the 879 private patients was it recorded that they had ever

suffered from malarious diseases, and often this was many years previous, and in very few instances was there any evidence of such at the time of observation.

We come now to the second and most important group of causes of diseases of the sebaceous glands, namely, the special conditions which are found in individual cases, and which, from clinical observation, must be regarded as of great moment in the production of acne. These are the results produced by functional or organic disorders of the organs having to do with nutrition and reproduction.

In regard to the mode in which the glandular disorder is produced by these systemic derangements, there is need of still further study and observation. Many ascribe the eruption of acne entirely to a nervous influence, it being dependent on "reflex irritation originating in the nervous plexuses of the stomach and organs of digestion, and also in the reproductive and uterine system" (WILSON, PIFFARD). Others claim that the nerves which supply the face, the branches of the trigeminal, are compressed in their passage through the bony canals by the repeated dilatation of the blood-vessels accompanying them, from causes which congest the face; in this way an amount of irritation is excited which is sufficient to cause increased glandular secretion and even inflammatory changes (EULENBURG, LANDOIS, MISSET). It is also very commonly supposed that the glandular disorder is caused by direct irritation from blood which is improperly elaborated, and contains elements injurious to the tissues through which it circulates and to which it supplies nourishment.

In regard to the suggestion that a local irritation of the branches of the trigeminal nerve would account for the occurrence of acne on the face, it may be stated that

the theory has not been accepted, and finds little or no support in facts; moreover, it entirely fails to account for the occurrence of acne in other localities, as on the neck, back, and chest. The same is more or less true of the explanation given by SIMON, who considers that the distance from the centre of circulation is an element to be considered in the localization of acne on the face; in a healthy state the activity of the circulation being sufficient to preserve a normal state of the tissues, but with a weakened heart-power, or with unusual local influences, retardation of the blood-current, congestion and stasis readily occur. This theory is undoubtedly correct to a certain degree.

The real part played by the nervous system in the production of acne is difficult to determine, but for many reasons it seems very probable that it takes no unimportant share in the process. The very great influence of the nervous system over the cutaneous circulation, especially that of the face, and also over the sweat glands, is well known: this is seen in blushing, also in the reddening of the face by excitement or exercise, and the blanching of the face in fatigue or fear; in the flushing which follows the use of liquor, and the paling of the face in nausea; in the ruddy color following exposure to heat, and the whitening from prolonged cold. The cold sweat attending various nervous conditions is also familiar to all. It seems not improbable, therefore, that secretion from the sebaceous glands is likewise largely under the influence of the nervous system, and that through the agency of the sympathetic system, possibly also through the pneumogastric, such changes may occur as will also lead to inflammation in and around them. AUSPITZ classes acne rosacea among angioneuroses, and SCHWIMMER recognizes the trophoneurotic element in all the forms of acne.

The reflex congestive element was marked in very

many of the cases here analyzed; many patients complained of flushing of the face after certain articles of food and hot drinks; in 18 cases it was recorded that the eruption became worse after grief, anxiety, excitement, and nervousness. In multitudes of instances, as will be detailed shortly, the eruption appeared to stand in direct relation to gastro-intestinal, uterine and ovarian derangements.

Whether a reflex nervous agency, originating in alimentary, sexual and mental disturbances, is the sole method of production of sebaceous disorders, cannot now be determined, for it is quite possible that imperfect assimilation can so alter the blood-state that a direct irritant effect may be produced upon the tissues to which it is supplied, and through which it circulates; this might appear to be the case where lesions are caused by bromine and iodine taken internally. Also, in many instances, the inflammatory action appears to be set up by imprisoned sebum, and it is quite possible that the faulty secretion of sebum, which allows it to harden and distend the gland, may be due to an improper blood-supply from which the gland elaborates its secretion. Finally, in some few instances, the eruption appears to be caused by local agencies obstructing free exit of sebum or causing local irritation. But the more the subject is studied in all its bearings, the more does it seem probable that, in the majority of instances, the direct cause of faulty secretion from, and congestive and inflammatory action in and about the sebaceous glands is found in a nerve influence transmitted or reflected from other organs or portions of the body.

We will now study the departures from the normal state which are observed in patients with the various forms of acne, and which are recognized as having more or less to do with its production. Owing to the difficulty of obtaining reliable information and keeping full notes

of cases in public institutions, the data will be given from those seen in private practice.

In not a small proportion of the cases of diseases of the sebaceous glands, we find that anæmia and general debility play a very important part, and seem indeed to be the only tangible factor. In certain other cases, neurasthenia, or lowered nervous power, seems to be the only cause which can be recognized, the eruption being aggravated at each period of nervous depression, whether this be occasioned by overwork, loss of sleep, worry, or other cause. Many cases of acne in various forms are seen constantly to vary with the general condition and tone of health, and yield readily to any measures which restore vitality to the system. Thus, it not uncommonly happens that the eruption quite disappears under change of scene and relaxation from care, as during a summer vacation in the country, and returns again when the patient exhibits fatigue. This was distinctly recorded to have occurred in 48 cases, but was observed in a much larger number of patients.

In quite a number of cases of acne the beginning of the eruption can be directly traced to some particular cause which has produced the debilitated condition, and not infrequently this is found in the exanthemata, or in acute disease or accident. Thus, in 7 cases the eruption dated immediately from scarlet fever or measles; and in 3 from syphilis; in 23 cases the eruption followed, or was greatly increased, by attacks of malarial fever, pneumonia, bronchitis, etc., and in several cases it appeared just subsequent to a surgical operation or an accident.

The mode of operation in the production of acne in these cases is not difficult to understand. We have seen in the chapter on the Anatomy and Physiology of the Sebaceous Glands that the process of secretion from them is one of proliferation and fatty degeneration of the lining

cells; this in a normal state proceeds regularly to completion, with the result of producing an oily fluid which oozes upon the skin. In those portions of the integument which possess hairs of some size the muscles attached to the latter serve to empty the glands, if their action is sluggish. But on the face, chest, and back these muscles are absent from the rudimentary hairs which are found with the sebaceous glands, and when, from an enfeebled state, the secretion of the glands proceeds sluggishly and imperfectly, the partially metamorphosed cells are retained and block the gland and its duct; the presence of this hard plug of sebaceous matter then acts as an irritant, resulting in the papules and pustules of acne. In some individuals this low tone of vital action seems to be almost their normal condition, and the sebaceous disorder recurs readily as soon as measures are discontinued which have temporarily raised the local or general vitality, or whenever some slight disturbance occurs in the gastro-intestinal tract. In 53 cases it was noted that the eruption was aggravated after taking certain articles of food, a great variety being named, including cheese, nuts, cake, sweets, pork, etc.

Prominent among the clinical features which are presented by patients with the various forms of sebaceous disorder are imperfect digestion and excretion, and a little care will demonstrate these elements in a very considerable proportion of the cases. Although many individuals will assert at first that they are in perfect health, being solicitous solely for the immediate removal of their annoying or disfiguring eruption, careful investigation will frequently demonstrate that such is not the case, and they will constantly acknowledge that the eruption is worse as they suffer from one or another of these departures from health, and in the progress of the case the relation between the two may be repeatedly observed.

The most frequently occurring disorder is that of constipation, or faulty bowel excretion and evacuation. In many instances this will be found to depend upon deranged primary digestion, which will be considered next ; in other instances the trouble appears to be mainly dependent upon faulty liver action, while in a certain proportion of patients the constipation has arisen merely from neglect, the abuse of purgatives, etc. But whatever the cause, the clinical fact stands very prominent that sebaceous disease of almost any form is greatly aggravated by a state of imperfect excretion and evacuation from the bowels, and in dozens of instances was it observed, if not noted, that the eruption was thus increased or generated anew. Almost all writers agree in regard to the influence of disorders of the gastro-intestinal tract upon acne ; HEBRA, however, denies their power to affect acne simplex, but considers them of importance in the production of acne rosacea.

Of the private cases of sebaceous disease the notes relating to 751 patients are sufficiently full to admit of analysis in regard to this point. Of these 337 were recorded as having constipation to a greater or less degree ; 283 of these were habitually affected, and 54 were more or less troubled with the same ; while in 414 cases the record was that there was regular action from the bowels. Thus, in almost 45 per cent. it was acknowledged that this function was badly performed. In how many of the cases recorded as having regular action of the bowels this was also the case it is impossible to determine, as considerable difficulty is often experienced in discovering the exact state of this function, partly from ignorance and carelessness on the part of the patient, and partly from delicacy in regard to entering into details. But the experience connected with the treatment of these cases makes it probable that this

element, most important in relation to the cure of the various forms of acne, will often be found to be at fault. It must be remembered that there may be a daily evacuation of the bowels and yet a very imperfect and faulty intestinal excretion. It is sometimes necessary to inquire very carefully into the matter in order to get at the exact truth.

As this constipation may arise from many different causes, much care will often be required to reach and thoroughly remove it, while in certain cases it will cease readily under tonic and other remedies, which bear upon the general health and nutrition. While cathartics temporarily benefit many cases of acne, the eruption cannot be permanently removed by purgation, but the treatment should aim at removing the cause, and inducing a regular, full, satisfactory and healthy evacuation from the bowels daily.

Evidences of imperfect digestion in the upper portion of the alimentary tract are also of very common occurrence in the various forms of acne. * In 746 private cases notes in regard to this were made, and in 386, or over one-half, there was marked evidence of digestive disorder recorded; of these, 209 patients exhibited constant and prolonged indigestion, and in 177 this was more occasional. Of the 360 patients who claimed to have good digestion 101 were habitually constipated, and in 16 others this was frequent enough to warrant notice.

The elements and signs of imperfect digestion here alluded to were of various kinds, and it is hardly necessary to enter into further close analysis here; they exhibited all the varieties of gastric and duodenal dyspepsia, such as heart-burn, oppression after eating, acid eructations, wind, etc., together with many of the minor symptoms of deranged stomach and liver action. Among these latter there were frequently recorded a coated and

indented tongue, clammy, bitter taste in the mouth, especially in the morning, weariness and aching in the limbs, drowsiness after meals, and wakefulness or restlessness at night, etc.

Headache, more or less constant or oft recurring, in various forms, was very frequently recorded—no less than 230 times among the 879 private patients. In 60 cases neuralgia was noted as a troublesome affection. Chronic sore throat was recorded in 47 cases, and post-nasal catarrh was noted in 33 cases; but both of these latter conditions were more frequently met with than this would indicate, and are, indeed, not very unusual accompaniments of acne.

Derangements in the urinary secretion are of not infrequent occurrence in patients suffering from the various forms of acne, and may often be observed to bear a more or less close relation to the condition of the eruption present. These disorders are mainly of the functional variety, and not associated with structural disease of the kidney; this latter was comparatively seldom met with in the cases here analyzed.

These urinary alterations do not generally attract the attention of the patient, but are readily recognized on chemical and microscopical examination. My notes contain records of 174 separate analyses of the urine relating to 69 patients. In these the specific gravity varied from 1.006 in the night urine of a lady with acne rosacea, to 1.040 in the night urine of a young lady with typical acne indurata; the former contained a trace of albumen, the latter was not otherwise abnormal, the morning specimen from the latter patient standing at 1.020. The average density was generally in excess. Taking from 1.016 to 1.021 as a normal specific gravity, in 28 patients with acne rosacea the urine was above the latter point in 47 specimens out of 73; of these, 31 were of the night urine

and 16 of the morning. In a very considerable number of cases the urine passed on retiring stood at 1.026 or over. In 21 cases of acne simplex, out of a total of 44 specimens of urine the specific gravity was over 1.021 in 26 specimens. In acne indurata and sebacea the specific gravity averaged much lower than in the forms mentioned.

Of microscopic urinary deposits, in 66 samples of urine from patients with acne rosacea, 26 presented oxalate of lime, 17 urates, and 13 uric acid; in 91 samples of urine from other forms of acne, oxalate of lime was observed in 18 specimens, urates in 15, and uric acid in 6 specimens. In all these instances the amount of crystalline deposit was sufficient to warrant attention; many other specimens, in which a small amount only was discovered, are omitted from this calculation.

It is understood, of course, that it is not intended to convey the idea that all patients with acne present these urinary symptoms, for these analyses were made mainly in cases which presented clinical features suggesting the desirability of examination, and they date back, some of them more than twelve years; they are therefore from picked cases, but in conjunction with what may be noted on close observation, they go to show that the assimilative derangements, which are so often observed in acne, manifest themselves in the urinary secretion as well as in that from the bowels.

Subjective symptoms pointing to deranged kidney secretion are not commonly spoken of by acne patients, but may often be discovered on inquiry. Of 61 patients, whose notes were more or less complete on this subject, it is recorded that 39 complained of being obliged to rise at night to urinate, and 5 were troubled with frequent micturition during the day; 15 had noticed urinary deposits, and 2 remarked the unnaturally high color of the urine.

Of these 61 patients, 8 were included in the previous mention of urinary examination, leaving 53 to be added to the 69 previously mentioned, giving a total of 134 out of 879 private patients with acne, in whom some of these departures from health were noted. From my experience in treating cases of acne, I feel confident that this proportion would be increased many times if all cases could be carefully watched and studied in regard to this matter.

Among the clinical features which a little care will discover in many patients with acne, may be mentioned a greater or less departure from the normal character of the sleep. When first asked in regard to sleep, patients will often answer that it is good, and frequently add "too good"; by this latter expression it is generally meant that there is more or less drowsiness at times, a very heavy, unnatural sleep, and a great indisposition to rise in the morning. When further questioned closely, it will frequently be found that they have many deviations from normal, sound, and refreshing sleep; patients will find it hard to go to sleep, will wake in the night and remain awake, will be harassed by distressing or annoying dreams, or will awake unrefreshed and tired. Under proper treatment, directed to the cure of the acne, the observation will be continually made that these troublesome features disappear, and that the sleep has become natural and life-restoring. Of 595 cases in which I find record as to this feature, 347 patients were said to have good sleep, 83 had fair sleep, and in 165 cases, or nearly 28 per cent. of all, the sleep was other than normal. I may add, that I find considerable difference in regard to this matter in my earlier and later notes; in those made during the last few years, since the subject has attracted my attention, more than 40 per cent. of the cases failed to have proper and healthful sleep.

Disturbances of circulation are of common occurrence in patients coming under treatment for acne. These are manifested by cold feet and hands, frequently with cold, clammy sweat, and sometimes with burning and dryness, flushing of the head and a burning pain on the crown, palpitation of the heart without exertion, as at night, cold, chilly sensations while warmly covered in bed, vertigo on suddenly rising, fainting seizures, etc. Of the cases here analyzed, it is recorded that 80 suffered from cold or clammy hands or feet, or both, and in 73 cases some of the other symptoms alluded to were noted.

The evidences of disordered digestion, assimilation and secretion, which have been mentioned, are mainly observed in the more severe and rebellious cases of acne, as might be supposed, and are more frequent in acne rosacea and indurata than in the simplex variety. They are also seen to a considerable extent in those exhibiting functional sebaceous disorders at all severely. In young subjects with acne simplex, it is often difficult to detect them, they will so commonly claim to be, and indeed appear to be, in perfect health. In some cases it seems impossible to discover any cause for the acne other than simple debility, which will manifest itself in a very slight degree in the derangements which have been mentioned, which in turn pass away with the eruption, when the general debility is removed.

We come now to consider the relation between sexual derangements and diseases of the sebaceous glands, and the influence of the former in their production. The connection between the occurrence of the papules and pustules of acne and sexual disorders has been long recognized, and various writers dwell upon it with different degrees of emphasis; some exalt them to a very prominent place in its etiology, others regard them as but of secondary importance, or almost ignore their effect. The

truth undoubtedly lies between the two extremes, and, while in a large share of the cases this element of causation does not exist, in other and particular instances it is of the utmost significance.

“*Matrimonium varos curat*” is the dictum with which PLENCK closes the consideration of *vari or ionthi*; this statement remains tolerably true in regard to *acne simplex*, for this eruption is presented for treatment comparatively seldom in married persons. Of 380 cases of *acne simplex* in which this point was recorded, 338 were single, and but 42 married; of the entire number 85 were males, of whom but 5 were married, and 295 females, of whom but 37 were married. But these figures do not by any means represent the exact truth in regard to the effect of matrimony, for undoubtedly many individuals have the eruption thereafter, as may be everywhere observed, but pay little or no attention to it, whereas during younger life its occurrence is often a serious annoyance. HEBRA, in dissenting from this assertion of PLENCK'S that matrimony cures *acne*, substitutes for it the expression “*tempus varos curat*,” indicating that in the course of time the tendency to inflammation of the sebaceous glands ceases, whether the individual is married or is living in a state of celibacy.

That marriage does not prevent inflammatory affections of the sebaceous glands is shown further by the statistics of *acne rosacea*, where, of 233 cases, 132, or 56.5 per cent., were in married persons; of these there were 32 married men to 23 single, and 100 married women to 78 single. In 3 cases of *acne rosacea* in females, the eruption first appeared, and in one case it became worse, directly after marriage. In *acne indurata*, the figures stand between these two—namely, 20 married to 83 single persons. Of the cases of functional sebaceous disorders in those of marriageable age, the preponderance was among those who were married.

Although the actual marriage state does not appear to have very much effect upon the occurrence of acne, it is undoubtedly true that unnatural sexual life may and often does have much influence in its production. Perfect continence and a pure life are not a cause of acne, nor is normal sexual intercourse a cure of it; but abnormal sexual excitement and unhealthy and imperfect sexual hygiene undoubtedly can produce it. Masturbation in either sex is a cause well recognized, both by writers on the subject of acne and by those on nervous and sexual disorders. Statistical proof of this point is extremely difficult to obtain, but the fact is thoroughly established by many reliable observations, and should always be borne in mind in intractable cases. But, on the other hand, too much stress should not be laid on this point, for such a causation is very rare. MILTON states that among quite two thousand cases of spermatorrhœa he found only one patient suffering from acne rosacea, and not more than thirteen with acne, and only two of these with it in a severe form.

Comparatively little attention has been given to the possible genital derangements in the male subject which may cause acne by reflex irritation; but SHERWELL has recently called attention to the fact that chronic urethral irritation may be a cause for the eruption, as he had observed in two cases of acne rosacea that the eruption yielded after the repeated passage of urethral sounds. It is stated by RIGLER, that although acne is common enough in the Orient, both among those of the white and colored races, it is very seldom seen in eunuchs, whose skin is dry and relaxed (PRUNER). The curious statement is made by RHAZES, that "*coitus consumit humiditatem unctuosam de capite: ideo eunuchus non patitur calvitium.*"

In regard to the connection between sexual disorders and acne in the female sex, we have very much that is

important and definite. The majority of writers recognize the causal relationship, and the apparent connection between the two is also a matter of popular observation and belief. But the true etiological relation between genital disturbances and the eruption of acne have never been fully determined, and the investigation is beset with some difficulty. It is well recognized that thousands of females suffer from the disorders which are commonly regarded as causative of acne, without the occurrence of the eruption, while in very many cases of diseases of the sebaceous glands no sexual disturbances can be discovered, even on careful investigation. Again, many of the female difficulties which are thought to be productive of acne are of the varieties termed functional, and are often found to depend largely upon disorders of the chylo-poëtic viscera, producing uterine and ovarian congestion. The question therefore arises, whether both the acne and the uterine disorder are not determined by the same cause, in many instances at least. On the other hand, the very frequent observation of the appearance or increase of the eruption at each menstrual epoch, the persistence of the eruption in certain cases until some mechanical uterine difficulty is removed, and appearance or aggravation of the eruption during pregnancy, as has been especially noticed by HEBRA, and which I have observed in six cases, all point to a definite relationship between the condition of the reproductive system and acne. It may be mentioned that some writers, as HARDY, and MILTON, deny all such connection, and regard sebaceous disorders as entirely local affairs, unconnected with any internal derangement or disease.

In the cases here analyzed, records regarding the uterine element are found in the notes of 510 patients. Of these the menstrual function was stated to be normal in 191, occasional disturbances were recorded in 60, and

habitual derangements were recorded in 259 patients, as shown in the accompanying table :

TABLE IX.

MENSTRUAL DISORDERS IN 510 PRIVATE PATIENTS WITH ACNE.

| VARIETY OF ERUPTION. | NUMBER OF PATIENTS. | MENSTRUATION NORMAL. | OCCASIONALLY DERANGED. | HABITUALLY DERANGED. | TOTAL DERANGED. |
|------------------------|---------------------|----------------------|------------------------|----------------------|-----------------|
| Acne simplex | 172 | 56 | 25 | 91 | 116 |
| “ indurata | 39 | 11 | 3 | 25 | 28 |
| “ rosacea | 132 | 65 | 10 | 57 | 67 |
| “ sebacea | 52 | 24 | 7 | 21 | 28 |
| Mixed forms | 115 | 35 | 15 | 65 | 80 |
| | 510 | 191 | 60 | 259 | 319 |

In reference to the nature of the uterine or ovarian disease which gave rise to these disorders in menstruation, it would be impossible to make any definite statements, as the patients were regarded purely from a dermatological stand-point, and in a large share of the instances only the subjective symptoms were considered, and in but few cases was it known what the internal conditions really were. These cases presented all possible deviations from health in this respect; amenorrhœa, dysmenorrhœa, and menorrhagia in various degrees were constantly recorded; displacements, ulceration of the os, endometritis, and pelvic cellulitis were occasionally reported; ovarian congestion and neuralgia were frequently recognized; and leucorrhœa was noted as a common event, together with the many aches and pains and distressing conditions recognized as associated with and dependent upon deranged menstruation.

The records of these cases are full of notes relative to the connection which these disorders bore to the eruption on the face. Thus, in 79 cases, it was recorded that the eruption was generally worse *during* each menstrual epoch, and in 5 of these the eruption appeared only at this period; in 52 cases it generally became

aggravated *before* the appearance of the menses, and in 14 cases it was worse *after* the occurrence of the monthly flow; a total of 145 cases where the connection between the two was recorded. In 9 cases it was noted that the eruption was better before, during, or after the period. In very many instances the records of the variation of the eruption with the changing condition of the menstrual element are most interesting and instructive; the note was continually made that the two improved coincidentally, or that when the acne was found to have become worse, or to have recurred, menstrual disturbance had also returned. In the large majority of these cases the treatment employed was by no means gynæcological, but the relief was obtained by general hygienic and therapeutic measures, occasionally aided by vaginal injections, counter-irritation over the ovaries, or such other simple means; in a few cases special local treatment was given by gynæcologists in addition to that employed for the eruption.

In regard to the effect of the menopause upon the occurrence of acne, the opinion is very common that the eruption is frequently occasioned thereby, or at least aggravated by this state. Many writers also state that acne rosacea is particularly apt to occur at this time, and to be in a considerable measure dependent upon the change of life. DANLOS alludes to the frequency of the eruption at this period as a well-recognized fact, and explains that the habitual congestion of the face, which leads to headache, vertigo, ocular troubles, and flushes of heat in the head, is the principal cause of the cutaneous affection.

Among the cases of acne rosacea here analyzed, 54 occurred in females over forty years of age; of these 46 were married, 2 were widows, and 6 were single. Of these 54 cases, there were notes in regard to the menstrual condition in 45 patients. In 26 patients the menses

were recorded as still regular and natural, and in but 7 cases the menopause had fully occurred, in women aged respectively 48, 50, 50, 52, 52, 53 and 54 years; in only two of these did the eruption appear at the time of the cessation of the menses; in one case it began 7 years before, and in another 7 years after the change of life, and in several other cases from 1 to 4 years after the menopause. In but 12 of the 45 cases were symptoms of deranged menstruation recorded which might or might not be attributed to a beginning of this epoch; in but 4 of these, however, was it noted that the menses were "becoming irregular."

Among 500 women at the change of life, whose cases were analyzed by TILT, there were no cases of acne rosacea recorded; but, 4 cases were noted as having "erysipelas," and 18 others with "undetermined cutaneous eruptions." Some of these may have had acne in some form.

One more cause of acne in a few cases may be mentioned—namely, the internal use of iodine and bromine and their preparations. In certain individuals an eruption will appear each time that these drugs are taken, even in small quantity, while in others only large and continued doses will thus affect them, while others still may take almost any quantity with impunity.

We come now to the third class of causes of acne—namely, the effect of local agencies in producing the eruption. Upon this subject the very greatest difference of opinion will be discovered in the literature of dermatology. CAZENAVE asserts most positively—"acne is never an exclusively local malady. The clinical observation has never been made, as far as I know, of a single well-proven example of acne produced solely by an external cause." He repeats the same assertion in

regard to acne rosacea, adding, "No irritant application to the face is capable of producing acne rosacea."

Many other writers, however, dwell with varying degrees of emphasis upon the effects of local causes of acne, and almost all agree that they have more or less power in producing the eruption. Their agency has in the past undoubtedly been greatly exaggerated, and more careful observers of modern times are attributing to them less and less of importance; and the assertion of Cazenave is undoubtedly true, that acne cannot be produced exclusively by any local means.

But certain local elements are, without doubt, of importance occasionally in connection with the causation and increase of the eruption, as clinical observation will abundantly testify.

Changes of temperature have long been recognized as having a decided effect in the production and aggravation of acne, and coachmen are often spoken of as particularly subject to the rosaceous form. It is questionable, however, with regard to this particular class of persons, whether the eruption is not occasioned quite as much by their frequent dram drinking as it is by the effects of temperature. It is certain, nevertheless, that all causes which produce repeated congestion of the face predispose to acne, and greatly aggravate it when present; very many of the cases here analyzed exhibited this feature time and again on coming from a cold to a warm place, also after exposure to the wind or to the sun, as when boating, etc.; in 76 patients these elements were of sufficient importance or degree to call for special note.

Climate is also seen occasionally to have considerable effect in exciting acne, or in increasing the eruption when present. In 15 cases it was recorded that the eruption first appeared or was made worse on or after sea voyages, or at the sea-shore; but the injury resulting from climatic

influences was observed very much more frequently than is thereby indicated, so that it is common each autumn to see cases which bear testimony to the effect of this influence during the summer, especially in the matter of the harm resulting from strong sea air, and excessive exposure in the hot sun. Most cases of acne are improved by mountain air, although in three instances it was recorded that the eruption was worse in the mountains; here, however, there may have been other prejudicial influences at work.

Occupation has been credited with the production of acne, and in occasional instances the influence of this factor is very strikingly manifested. Any occupation which induces repeated or prolonged congestion of the head may be the means of exciting or aggravating acne. Thus, one of the worst cases of acne rosacea among those here analyzed was in the person of a young woman who was engaged in a shoe store, and the continued stooping position rendered her disease practically incurable; whenever she relaxed from her work the eruption would respond perfectly to treatment, but a return to her occupation invariably caused its relapse in full degree. Another excessively severe case of acne indurata was in a blacksmith, whose experience was similar. In many instances it was noticed that an acne was aggravated or even redeveloped by the attempt to engage in kitchen work over a hot range, etc. Acne of all kinds may often be observed to be aggravated by sitting with the head bent forward, as in sewing or reading, especially in the close proximity to a hot light; in this position a double cause is found in the obstructed return of blood from the head and in the direct heat to the face. These patients should always be directed to sit erect, and with the back to the light.

The effect of direct local agents in the production of

acne is not so easy of demonstration ; many assertions are made by writers in regard to the effects of cosmetics, and patients frequently charge eruptions of acne as due to the use of advertised nostrums. But the question always arises as to the reason for the employment of these cosmetics, and it is more than probable, in most instances, that the eruption existed to a greater or less degree before their use, and that the causes being neglected they naturally increased, while obstruction of the orifices of the glands, together with over-stimulation by their use, led to an aggravation of the existing trouble. Among the cases here analyzed, there are notes of but five who attributed the eruption to cosmetics, one of these being stated to be from Oriental Cream, another from Rimmel's face powder, and in three the agent was not noted. In a number of other instances, however, it was observed that acne eruptions had been distinctly aggravated by various patent remedies, which had been employed for the supposed cure of the complaint.

In regard, further, to dangers which may attend the use of advertised cosmetics and lotions, it may be stated that, while it is questionable if acne is often caused by them, a number of authenticated instances are on record where serious symptoms of poisoning have been recorded from their employment (DUHRING). These applications contain mainly mercury or lead, and not infrequently in very considerable quantities.

Various local irritants may at times be observed to be followed by acne, and can, therefore, in many instances, be considered as the exciting cause of the eruption. This is far more often the case in regard to the inflammatory and congestive forms of acne rosacea than in acne simplex, where the single inflamed points appear without any apparent local causation, other than the irritation from the imprisoned plug of hardened sebum, which may gen-

erally be expressed from them, as will be described later. As illustrative of the direct causation of acne rosacea by a local irritant, it may be mentioned that in three patients the eruption was attributed to the wearing of a long crêpe veil, and in one or two of these the irritant effect of this was very marked and decided; in one instance in particular the veil became wet and frozen to the face, and the irritation produced thereby was very great, and was continued in the form of rosaceous acne.

There is one local agent, however, which is well recognized as capable of exciting inflammation in the sebaceous glands, namely, tar and its preparations, whether applied medically for other diseases, or accidentally in the arts and sciences, as will be mentioned later. This element of causation is of such rare occurrence, that, practically, it may be left out of consideration.

The question is often raised, in connection with the causation of acne, in regard to the effect of soap and water upon the face. Some have asserted that the avoidance of the use of soap in washing is the cause of the sebaceous accumulations and the consequent glandular inflammation. This is by no means the case, for these lesions are continually seen on those who have used soap assiduously; and not infrequently after the glands have become blocked patients will endeavor to remove the darkened condition of the skin by washings of such severity as even to inflame the surface, but often with little effect. The real etiology of the deranged glandular action lies deeper, in the causes which have been already detailed; and although it is true that blocking of the orifices of the ducts will cause retention and distention of the gland, this does not ordinarily occur from want of free ablution. There is no reason why good soap should not be used in moderation on the face, as it is continually applied medically as a stimulant

in proper cases of acne and other eruptions; but in many instances it is found to make the skin dry and hard, and it will repeatedly be observed that soap has rather aggravated an acne. In many cases of the more inflammatory forms, even the free use of water will be found to act prejudicially.

It is a common event to have an eruption of acne become much aggravated, for the time being, by measures and applications which have been prescribed medically; but in this case we are not right in regarding this as a production of the eruption by local means, for it is only stimulating to greater intensity of inflammation lesions which have already existed; it often also occurs that comedones which had no inflammatory action, or even were hardly visible, are excited by local measures to the formation of papules and pustules.

We have thus seen that acne is not a local affection, but that it has internal relations which are often of the greatest importance. While the eruption in certain instances may be developed by local agencies, and may sometimes result from local skin debility or disordered gland action, in a large share of cases general and constitutional derangements can be demonstrated with which the lesions on the skin may be observed clinically to stand in close relationship; and it is probable that these internal causes operate through the agency of the nervous system. We have seen that puberty is not a necessary cause of acne, and also that while heredity is not an important factor as regards the eruption itself, yet certain inherited or acquired states of constitution or system do predispose to the complaint. The further and closer relations of these various etiological factors in acne will be more fully considered in connection with the different varieties and forms of the eruption.

CHAPTER V.

NON-INFLAMMATORY SEBACEOUS DISEASES.—ACNE SEBACEA,
ACNE PUNCTATA, ACNE MOLLUSCUM.

FUNCTIONAL disorder of the sebaceous glands may be exhibited in several different manners, giving rise to a number of well-recognized clinical states, to which various names have been given. First, the secretion may be abnormal in quantity or quality, or both, while there is still free exit to the sebaceous matter, constituting the various forms of *Acne sebacea* or seborrhœa; Second, the secretion may be abnormal, and retained within the follicles, forming *Acne punctata*, or comedo and milium; and, Third, the secretion may be abnormal with great retention and distention, resulting in sebaceous cysts or *Acne molluscum*.

I. ACNE SEBACEA. (Synonyms: *Seborrhœa*; *Seborrhagia*; *Steatorrhœa*; *Allosteatodes*; *Fluxus sebaceus*: French—*Acné sébacée*: German—*Schmeerfluss*; *Gneis*.)

Sebaceous acne, or seborrhœa, consists in a derangement of the secretion of the sebaceous glands, whereby the sebum may be altered either in quantity or quality, or both, and appears on the surface in the form of an oily coating or film, or dries into crusts or scales. Of this, four varieties are recognized: *Acne sebacea oleosa*, --*cerea*, --*cornea*, and --*exsiccata*.

1. *Acne sebacea oleosa*. (Synonyms: *Acne fluida*; *Cutis unctuosa*; *Seborrhœa oleosa*: Fr.—*Acné sébacée fluente*: Ger.—*Der fettige Schmeerfluss*.) In this variety the secretion is more abundant than normal, and is also

of a very fluid or oily consistency, so that the diseased surfaces appear as if continuously bathed with oil; this greasy film readily catches the dust, and skins thus affected have a dirty appearance. The ducts of the glands are often quite large and visible, and in some cases the secretion can be seen standing as minute drops at the orifices of the follicles; a piece of soft linen or blotting-paper passed over the surface, is readily soiled by the secretion and the accumulated dust.

The surface from which this excessive secretion flows may be of a normal color, but not rarely the affection is attended with considerable reddening of the skin, and sometimes the dilated capillaries can be readily seen with the aid of a lens.

2. *Acne sebacea cerea*. (Synonyms: *Seborrhœa sicca*, or *squamosa*; *Stearrhœa flavescens*; *Tinea furfuracea*: Fr.—*Acné sébacée concrète*; Ger.—*Der trockene Schmeerfluss*.) In this form, which represents the condition more commonly known as seborrhœa, the altered sebum dries with the epidermis into scales and crusts of moderate thickness, which adhere with greater or less tenacity, and re-form very rapidly after their removal by ordinary means; the scales and crusts generally exhibit their oily nature in a marked degree, but are sometimes quite dry.

Beneath the dried secretion the skin may appear perfectly normal, as is commonly the case on the scalp; on the face and chest, however, there may be more or less reddening. The follicles are often found gaping, and sometimes on the removal of a crusted scale there will be seen projecting from its under surface minute plugs, which have been drawn from the open mouths of the glands.

Under this head belongs a certain very rare anomaly of sebaceous secretion, which has been reported by several observers; this is the so-called *stearrhœa nigri-*

cans, or *stearrhœa cerulea*. In this, the sebaceous secretion has a tint of gray, black or blue, and in some of the reported cases, it has produced considerable disfigurement on the face where it was located. WILSON states that under the microscope the nuclei of the scales found in the secretion were black, and in places formed masses of considerable size. It is questionable if this is really a special form of disease, or whether the crusts formed do not take these darker colors from external and unusual causes.

3. *Acne sebacea cornea*. (Synonyms: *Ichthyosis sebacea*: Fr.—*Acné sébacée cornée*; *Dartre crustacée stalactiforme*.) In some instances the secretion from the sebaceous glands appears to be very materially altered, so that there is an almost total failure in the process of fatty degeneration in the cells, and the crusts and masses which accumulate have a hard or even horny consistency, and become firmly adherent to each other and to the skin. These growths may in time increase and harden so as to resemble small horns, and it is probable that some cases of cutaneous horns have their origin in this manner.

4. *Acne sebacea exsiccata*. (Synonyms: *Asteatodes*; *Xerosis*: Fr.—*Xerodermie*.) In the fourth variety of this form of sebaceous disorder the secretion is scanty or altogether absent, and the skin, lacking its normal lubricant, becomes dry, harsh, inflexible, and somewhat scaly. This condition may occur alone, or it may appear in connection with, or in consequence of, other diseases.

Clinical description.—While these functional forms of sebaceous disorder are not very uncommon, they do not form any considerable portion of the cases applying for treatment, and statistics fail to exhibit their true frequency, as the condition is often disregarded; these con-

ditions also exist very often in connection with inflammatory forms of acne, and escape record. Sebaceous acne was recorded in 129 patients out of the 879 private cases here analyzed; in 111 cases it was noted alone, in 11 associated with acne simplex, and 7 times in connection with acne rosacea. But in reality quite a large share of all the cases exhibited one or another form of acne sebacea.

Of these 129 patients, 61 were males and 68 females; the ratio of the sexes here is quite different from that observed in the inflammatory forms of sebaceous disease, in which latter, females were found to be twice as numerous as the males.

The various phases of sebaceous acne may occur as separate affections, or in connection with the inflammatory forms of the eruption, and the oily and dry varieties are apt to occur together, or alternately; they present somewhat different appearances as they affect various portions of the body, and these may be best considered separately. All the forms of acne sebacea are so commonly spoken of as *seborrhœa*, that these terms will be employed synonymously in treating of the subject.

Upon the face, seborrhœa very frequently takes the oily form, and may be confined to a single locality, as on the nose or forehead, or it may affect a larger surface; it is more or less present in many cases of acne simplex and indurata. The surface presents a shiny, oily appearance, which returns very shortly after wiping or cleansing; in aggravated cases the condition becomes very obnoxious, and occasionally all local efforts to check the flow seem but to increase the trouble.

The persistency and rebellious character of the localized form of oily seborrhœa, is well shown in the following case:

Mrs. A—, aged 35, in apparently fair general health, the mother of two children, sought relief from a red and oily condition of the forehead, which had existed for about a year. Five years previous, when five months pregnant, chloasma had appeared on the forehead, and had been removed several times with a lotion of bichloride of mercury, strong even to the extent of blistering. This application had been repeated several times, and within the past year the surface had remained reddened and had become very oily and itchy. When first seen, the centre of the forehead for about three inches was the seat of marked redness, with an oiliness which at times would stand out in minute drops upon the surface. The follicles were large and gaping, and some of them blocked with small comedones.

She was found to be obstinately constipated, with much flatulence and occasional hemorrhoids, was the subject of sick headaches every two or three weeks, and the urine was constantly loaded with urates, and at times very scanty; during treatment, she had a slight attack of gouty inflammation in the feet, with a history of several other previous attacks. In spite of careful treatment for almost seven months, but little permanent benefit was obtained, although at times the oily secretion would cease for a while, and then return in full vigor; many applications served only to aggravate the condition. Subsequent special treatment in another city also failed to remove the difficulty.

The following case illustrates a milder and more general form of oily seborrhœa, in which the secretion was at times of greater consistency, and formed greasy scales:

Miss B—, aged 32, had for a year been troubled on account of the greasy condition of the forehead, which had begun after a severe friction with hot water, the reason for which was not stated. Since that time the skin had been unnaturally reddened and oily, with occasionally fine papules and slight, greasy crusts in places.

When first seen, her entire forehead was thus affected, and there was also considerable oiliness of the nose and cheeks adjoining. She was subject to dyspepsia, with occasional palpitations, with globus hystericus, and an asthmatic shortness of breath under certain circumstances. Under treatment, the skin regained its perfect condition, although on several occasions there was more or less of a relapse, when the general health became depressed; once the oily condition was replaced by inactivity of the glands, producing a dry, harsh state of skin.

The oily secretion is sometimes very persistent upon the nose, causing no little disfigurement; it is generally accompanied by redness, and yet the part is commonly quite cold to the touch; the follicles are often gaping, and from them may be squeezed a milky or oily fluid. The form of sebaceous disorder may change, being at one time of a drier, and at another of a more oily character.

Dr. C—, aged 33, had generally enjoyed fair health although subject to indigestion, with eructation of acid and wind, for ten years; he subsequently developed

phthisis. For a year and a half he had noticed roughness and scaling of the nose and cheeks, with some seborrhœa in the beard and on the scalp.

When first seen the follicles of the nose were all filled with hardened sebaceous plugs, projecting so as to give a rough sensation on passing the finger over the part; the cheeks had a moderate amount of yellowish, greasy crusts adhering to the surface, and the same were seen on the scalp. Under treatment the scaling ceased, and in a short time there was left only the redness and oiliness of the nose, with a certain amount of dilatation of the sebaceous ducts, from which he continually expressed slightly hardened contents. But the oily condition proved very rebellious, and varied very greatly with the state of the health. After relaxation and exercise in the country it would cease, or be easily removed by applications, but with increase of dyspepsia and lung trouble, the nose would always look worse.

The more generalized oiliness, which accompanies the inflammatory forms of acne, is less rebellious, and commonly ceases under the proper treatment for these conditions. Some skins, however, are much more subject to this hyper-secretion than others, and are more or less covered with an oily film much of the time, in spite of all medication.

The drier form of sebaceous disorder (*acne sebacea cerea, seborrhœa sicca*), exhibits greasy concretions upon the surface, which may vary considerably in quality and color. Ordinarily the scaly crusts are of a dirty yellowish color, moderately adherent, but easily removed with gentle scraping, leaving the surface beneath somewhat reddened, and with gaping follicles from which minute plugs of sebum have been drawn. A common location for seborrhœa is the side of the nose near its union with the cheek, and extending upon the cheek generally on both sides. The surface is reddened, and the sebaceous matter is accumulated in small quantity, rather irregularly distributed over the surface, being washed off in the daily ablutions, and re-forming during the day. In some cases these scaly crusts are quite thickly set, forming a continuous covering even of some thickness; in others they are thinner and more diffuse. The color may vary from a light yellow to a brownish, and, in rare cases, to a bluish or even blackish tinge,

due in part to extraneous influences. While subjective symptoms are seldom urgent, and may be absent, in some cases considerable burning and tingling are complained of.

Occasionally there may be actual inflammatory action in connection with this disorder, quite different, however, from that of the ordinary inflammatory forms of acne, attended with localized infiltrations. In this there is a general and superficial congestion and inflammation beneath the crusts, as in the following cases :

Mr. D—, aged about 28, had been much run down, and had taken a tonic for two months previous to being seen. One month later an eruption began on the right side of the nose, and soon spread over much of the face and neck ; the points of inflammation soon became covered with crusts, and for a month he had been confined to the house with little or no treatment.

When first seen he was found to be anæmic and weak, pulse 100, tongue pale and somewhat furred, and with dyspepsia for some time ; he was also subject to hemorrhoids. The whole face and nose showed evidences of the eruption, and about one-third of it was covered with yellow, greasy crusts, which were removed with difficulty, leaving the orifices of the glands gaping. These latter were especially marked on the nose. On portions where the eruption had existed, the skin was reddened and greasy, and comedones were rather abundant and large. Under protective and astringent treatment, with tonics internally, the process ceased very quickly, leaving no traces except the reddening, which remained for a time.

Mr. E—, aged 50, had had seborrhœa of the chest and scalp for twenty years or more, and for the last six or eight years had been subject to attacks of the eruption on the face. He appeared to be in perfect health, but occasionally became greatly run down, at which time the sebaceous difficulty would especially manifest itself ; he was an excessive smoker.

The eruption for which he sought relief had appeared on the chin a few days previously, and had been in the mustache for some weeks. When first seen a portion of the chin was the seat of moderate inflammatory action, and covered with a greasy, slightly adherent crust of a yellowish color. The skin beneath the mustache was red, and upon it a whitish yellow crust, easily separable ; the scalp and chest were also the seat of seborrhœa. He complained considerably of the burning and itching about the face, and the eruption on the chest occasionally gave him much trouble from the itching. The eruption disappeared entirely from the face within two weeks under tonic treatment with local astringents, and that on the scalp also ceased without any external applications. Some months later, however, after exhaustion from a severe illness, the eruption returned on the face and scalp, but yielded again readily.

The dry, hard, horny variety (*acne sebacea cornea*), appears on the face in the form of small, yellowish-brown concretions or excrescences, which sometimes become quite dark in color. They seldom attain great size

or extent, rarely covering more than half an inch in diameter in any one place ; but they may project considerably from the surface, and at times assume the character and appearance of small cutaneous horns. When it is attempted to forcibly remove these crusts, they will sometimes be found to be quite firmly adherent by means of the horny plugs of hardened sebaceous matter extending into the dilated follicles, and slight bleeding may be occasioned by their removal ; if these patches are harshly treated and picked at some inflammation ensues, and epithelioma may develop from them, especially in elderly people, on whom they are generally seen.

Mr. F—, aged 56, had for four years noticed a slightly horny crust forming on the left side of the nose, about the middle portion ; this crust he had removed from time to time, but it was always reproduced. It did not cause him much annoyance except from the unsightly appearance, and from the fear of further trouble.

When presenting for treatment there was a rather hard, somewhat horny mass about one-third of an inch in diameter, which was of a yellowish-brown color and adherent ; slight bleeding followed its removal as the prolongations on its under surface were pulled from the open follicles. There was little redness of the surface, and no infiltration, such as is seen in lupus erythematosus. Under a mildly stimulating lotion of caustic potash, and an astringent ointment, the surface became perfectly natural, and remained so for some weeks, when the former trouble slowly returned, and again disappeared under treatment.

Judge G—, aged 90, had been in the habit of coming to the late Dr. H. D. Bulkley periodically for many years, to have hard, dry concretions of sebum removed from the nose ; he had never employed any means to prevent their formation, but left them to be removed by a physician.

He was found to be in fair condition for his age, with a rather red face and prominent veins. The sebaceous follicles of the nose seemed all to be dilated and filled with dried sebum ; over portions there were moderately thin, dirty crusts which were easily removed, and exhibited on their under surface plugs drawn from the gaping follicles. In one place, about the middle of the nose, the concretion was very hard and adherent to the skin over a surface of nearly half an inch square, and was of about a line in thickness. The attempted removal of this caused pain and some bleeding, and was not persisted in ; but he was directed to remove it more gradually with the aid of a weak soapy lotion

Upon the hairy portions of the face, the dry form of seborrhœa is sometimes very annoying ; the scales are generally quite greasy, and may accumulate in abundance in the mustache, beard and eyebrows. Frequently,

however, the scales are quite dry and branny, and fall continually on the clothing.

Upon the scalp sebaceous disorder is very common and troublesome, and is very apt to be accompanied or followed by loss of hair, producing early baldness. The oily form is not uncommon in a mild degree, and may occur as a transitory condition in connection with dyspeptic or other disturbances, or may remain for years, giving the hair a greasy, shining appearance. In rare cases the oily flow may be so excessive that the scalp actually seems to be dripping with the greasy moisture, which returns again and again as often as the scalp is washed, as in the following case :

Miss H—, aged 35, an exceedingly nervous and delicate lady, came under treatment for an erythematous eczema about the face. She gave the history of great indigestion with constipation and diarrhoea, and excessive and frequent menstruation. Three years previous to her visit she had had Roman fever, followed by dysentery, and since that time had been specially debilitated; soon after this the hair had fallen somewhat, and the scalp had never been normal since. The hair had been cut off three times and was growing in fairly, though still thin, but the excessive oiliness was a cause of much annoyance; at times this condition would be replaced by a considerable accumulation of greasy scales.

On examination, the hair, which was still short, was in a repulsive state of oiliness, which was readily transferred to the fingers; the separate hairs were adherent in bundles or masses, and the surface gave off an unpleasant odor. It had been repeatedly washed, but the scalp would be in the same state two or three days after cleansing.

The first description of this condition by Cazenave, in 1850 (*Traité des maladies du cuir chevelu*), under the name, *acne sebacea fluente*, remains unexcelled in clearness and faithfulness to clinical features.

More commonly seborrhœa of the scalp is of the dry, scaly variety which forms a large share of the cases of so-called "dandruff" or "dandriff" (*seborrhœa sicca* or *squamosa*). In this there is an abundant formation of yellowish, greasy scales, generally more or less evenly produced over the entire scalp, but with a greater tendency to concentrate on the top of the head. Some considerable difference is observed between the character

and appearance of the coating in different cases. In many patients, the scales are very dry and become readily detached, falling on the clothing. In others they are far more oily, adhering in considerable quantity, and may be scraped off, as with the finger-nail, in a dark, greasy mass which burns readily. Between these two extremes all degrees of the affection may be observed, and the condition is often seen to vary greatly from time to time, both as to the amount of the accumulation, and as to its dry or oily character. The following case exhibited this deranged secretion in an unusually severe and troublesome degree :

Mr. I—, aged 29, had for several years suffered from an acid dyspepsia, with flatulence and tendency to constipation. One year previous to his visit, his scalp began to be hot and itchy and the hair began to fall, and at the same time he noticed an unusual amount of greasy secretion upon the surface. This condition had remained since that time in spite of repeated washings ; at the time of observation the dyspepsia had greatly improved under treatment.

On examination, the entire scalp, from ear to ear, and from the occiput over and on to the forehead, was the seat of a most extensive and excessive seborrhœa ; the hair was quite thin on top. In front, the surface was very oily, and the dark, greasy, adherent secretion could be scraped in masses from all portions. Where it was removed the surface beneath was pale and apparently normal, except that all the sebaceous orifices were abnormally dilated.

Few cases present as much of the oily element as exhibited by this patient, and in a very large proportion of instances the scaling is much more dry and branny ; the following represents an average case, where the scalp trouble was associated with inflammatory sebaceous disease of the face :

Miss J—, aged 17, a strumous-looking, but very bright and precocious girl, easily run down from over-work, was brought for the treatment of the scalp disease. For many years her scalp had been the seat of very considerable dandruff, which had increased and had produced some falling of the hair. She was said to be in perfect health, but her pulse stood at 100, and was weak ; under tonic treatment later, it was discovered that the contrast with her feelings and ability to work then demonstrated that she was far from being in perfect health at first.

On examination the entire scalp was found to be the seat of much scaling, of a greasy character but quite dry, which extended even on to the forehead ; beneath the scaly crusts, which were easily detached and in some places came off in coherent masses, the skin was normal or rather pale. The face was the seat of a moderate

amount of acne simplex and punctata. The scalp trouble yielded very rapidly to treatment, and remained well until almost a year later, when, becoming a little run down, the scaling reappeared on the vertex.

There is seldom much redness associated with sebaceous disease of the scalp. The skin is usually of an unhealthy, grayish or dead hue, and the hair is commonly dry and lustreless. Sooner or later the hairs fall, and are replaced by only fine, downy structures, which come out easily, and before long cease to be produced. As the surface becomes more and more bald, the sebaceous glands generally participate in the atrophy, and the production of scabs and crusts is lessened; although sometimes a considerable accumulation of dirty sebaceous crusts is seen on the scalp of elderly persons with little hair.

Itching is not a common feature in seborrhœa of the scalp, but in the drier forms it may sometimes be very annoying, especially when the head becomes overheated or the brain actively engaged.

Sebaceous accumulations are sometimes seen on the scalps of young children, as remains of the *vernix caseosa*, or they may develop anew after the original coating has been removed. They appear as a dark, greasy, adherent coating or crust, which may be so soft as to be easily scraped up, or may have the consistency of tallow, and cling so closely by the aid of the hairs which have become embedded in it, that its removal is very difficult; not infrequently harsh measures for freeing the scalp from it excite an inflammation which readily develops an eczema.

The dry, scaly form of seborrhœa has often been described as *pityriasis capitis* by older writers, and many now fail to recognize the sebaceous element in these cases; the points of difference which distinguish the affection under consideration from *pityriasis capitis* and other eruptions which simulate it, will be more fully considered in the section on diagnosis.

Upon the body acne sebacea sometimes gives rise to conditions which would hardly be recognized from the foregoing descriptions of the disease. The most frequent sites of the eruption are the front and back of the chest, preferably in its upper and central portion. Here it takes the form of more or less nummular or circular patches from a quarter of an inch to an inch or more in diameter ; these often coalesce so as to form irregular figures, seldom, however, to any great extent. These patches are of a yellowish-red color, quite sharply outlined, and with but a small amount of greasy, adherent scales ; their surface is little, if any, elevated above the skin. On lightly scraping these spots the coating is easily removed, adhering to the knife, and the surface is left reddened, with the mouths of the follicles gaping, and filled with hardened sebaceous matter.

There is not infrequently an annoying amount of itching attending these patches, especially on the chest when overheated. More or less of an oily condition is generally seen over the rest of the surface, and not infrequently this affection is associated with pustules of acne on the back and elsewhere. The following case exhibited the eruption in a characteristic manner, the tendency to sebaceous disorder being also exhibited in many locations :

Mr. K—, aged 29, had had a marked tendency to acne since 14 years of age, and eight years previous to his visit, the eruption had developed in the form of acne sebacea upon the chest ; since this time he had never been quite free, although the eruption was often greatly benefited by treatment. He had always enjoyed good health, and investigation failed to reveal the derangements common to these cases ; but his general tone of health seemed somewhat below par, and his whole appearance was very suggestive of the strumous diathesis.

Upon the chest, toward the centre, there were about half a dozen circular patches of reddish-yellow color, some of them touching each other, the largest hardly an inch in diameter, the smallest half that size ; the surface of these spots was covered with an easily removable greasy coating ; upon the back there were a number of similar patches, many of them very small, hardly a sixth of an inch in diameter, without any grouping, but mainly within the central third of the upper portion of the back. The eyebrows and mustache were also the seat of a sebaceous scaling, and, to

a slight degree, the scalp; this latter had been more affected, and the hair was quite thin. The entire surface of the body had a greasy appearance, the openings of the sebaceous glands everywhere seemed choked, giving a general dark appearance to the skin, and the back was the seat of considerable acne simplex and indurata, with abundant scarring from previous lesions.

In this case the local lesions yielded very satisfactorily to treatment from time to time, but as soon as this was discontinued, they would return. Itching was often very annoying upon the breast.

The last variety of sebaceous disorder, namely, *acne sebacea exsiccata*, *asteatodes* or *xerosis* where the secretion is scanty or absent, is most commonly seen on the trunk or limbs, but occurs also on the face and scalp. In it the skin is dry and hard, and may present moderate desquamation. It differs from the milder forms of ichthyosis in being generally an acquired condition, sometimes transient, often rebellious of removal. When there is any amount of scaling, this results rather from the drying and detachment of the normal epithelial elements, than from any excessive growth of epidermic scales.

This condition forms an element in the lesions accompanying *senile atrophy of the skin*, also in *ichthyosis*, *prurigo*, *scleroderma* and other cutaneous affections; some portion of the dryness and harshness observed in *erythematous eczema* is undoubtedly due to the failure in the action of the sebaceous glands. In patients with phthisis the same is observed, forming what is known as *pityriasis tabescentium*; in chronic kidney, liver, and other diseases the skin also assumes this condition from inaction of the glands charged with secreting sebum.

Seborrhœa of the genital region is frequently observed in both sexes. The excessive secretion forms soft, white, creamy or cheesy accumulations, with usually a strong odor. When these are left long beneath the prepuce, considerable itching is occasioned, and balanitis may result, which usually yields readily to proper care and an astringent powder.

Diagnosis.—The diagnosis of the forms of sebaceous

acne is not generally difficult, although some of the lesions may at times resemble other eruptions very closely. The oily forms of seborrhœa can never be mistaken. Upon the face the drier, scaly variety may sometimes resemble a *squamous eczema*, but in this latter affection the surface is more red, and, instead of having a greasy condition, there is an absence of sebaceous secretion, and a peculiar, dry harshness, and also an itching which is much greater than that ever attending seborrhœa; the crusts which form in eczema are more hard and inflammatory in character than those ever seen in seborrhœa. Localized patches of seborrhœa about the nose and cheeks often suggest *lupus erythematosus*, and it is sometimes difficult to determine if the eruption is not an early stage of this disease, so that the diagnosis may have to be held in abeyance for a while; the sebaceous disease yields comparatively easily to treatment, while erythematous lupus generally resists when fully developed; the lupus patches are well defined, of a much deeper red, and covered with rather horny scales, adherent by means of the prolongations from their under surface into the ducts of the glands, much like those described in connection with seborrhœa; but in lupus there is a congestive element which is striking, and an infiltration of tissue whereby the orifices of the ducts are seen to be large and open, as though pinholes had been made in a surface of pink wax. Seborrhœa is more superficial, and if there is redness, it is of a lighter character and never so pronounced as in lupus.

The hard, horny form of sebaceous disorder, seen on the faces of elderly persons, can be mistaken for nothing but beginning *epithelioma*; the easily detached crusts of the latter, with the bleeding surface beneath, and the hardened edges which appear later, are generally sufficient for the diagnosis.

Seborrhœa of the scalp may at times be mistaken for *eczema*, *psoriasis*, *pityriasis*, *tinea tonsurans*, and *favus*. *Erythematous eczema* of the scalp is characterized by considerable redness, and generally by some thickening of the skin, with the continued production of branny scales, which may at times be combined with inflammatory matter. There is always a troublesome amount of itching, and very frequently a history of moisture at some period of the disease. The eruption of eczema is generally diffused over considerable surface, but may appear in separate patches, especially at the back and sides of the scalp, where seborrhœa less often comes. In sebaceous disease, the scales or crusts are more oily and adherent, the surface beneath is commonly anæmic, or of a leaden color, and never exhibits exudative moisture. *Psoriasis* can be distinguished by the abruptly defined, generally circular, reddened patches, separated by healthy tissue, with a considerable amount of silvery, epidermal scales more or less heaped up and adherent; there is also generally a characteristic eruption elsewhere.

Some cases of *pityriasis capitis* are difficult to differentiate from seborrhœa of the scalp. In both affections the disease may cover much of the surface, or exist over large areas, and both exhibit much furfuraceous desquamation from a pale surface. But in true pityriasis the scales are lighter and more epidermic in character, are not at all greasy, and often adhere in quite large, micaceous plates; there are also almost always seen small epidermal prolongations embracing the hairs, extending from the layer of hypertrophied epidermis. These little white sheaths may be slid along the hairs, and differ greatly from the greasy crusts, or loose scales of seborrhœa, which become entangled among the hairs. This affection has been regarded by some as but a form

of sebaceous disorder, but a careful study of the cases and a microscopical examination of the scales, will demonstrate the purely epidermic character of the disease (PINCUS, PIFFARD, VAN HARLINGEN).

Tinea tonsurans in its early stage should not be confounded with sebaceous disease of the scalp, the separate patches, of a grayish color, usually circular, with broken hair, should distinguish it; but when ringworm has existed a long time, and there results a general, scaly condition over a large surface with considerable long hair upon it, the diagnosis may be difficult. Careful examination with a lens will usually discover some broken and brush-like hairs in the latter, and the microscope will demonstrate the spores and mycelium of the parasite in the hairs and scales. The history of a ringworm, developing from one or more points, with the shorn appearance of the spots, will also aid the diagnosis.

Tinea favosa also, in its early stages, bears no resemblance to seborrhœa; but when favus has long affected the scalp to a moderate degree, and there are none of the yellow cups, a state of affairs may be presented which can be mistaken for acne sebacea. But if the adherent scaly crust from an old favus scalp be raised, a reddened, apparently moist, often slightly bleeding surface is left, and the hairs are readily extracted, with large, succulent roots, and microscopic examination reveals the parasite in abundance.

On the body acne sebacea may suggest *eczema*, *psoriasis*, *tinea circinata* and *tinea versicolor*. The patches of seborrhœa are reddish, discrete, have moderate scaling, and often itch, thus resembling considerably the three affections first mentioned; but careful study will generally suffice for the differentiation. *Psoriasis* and *eczema* very rarely affect the middle of the breast or back alone, as does seborrhœa; they are more pronounced and

definite when occurring in these situations, and do not present the greasy element seen in seborrhœa. There is very great resemblance between the lesion of seborrhœa on the trunk and patches of *tinea circinata*, and often the matter can only be decided positively by the microscope, which reveals the parasite in the ringworm disease. In both eruptions the lesions are circular, of varying size, of a reddish-yellow color, and with a moderate amount of scaling; but in the sebaceous disease the scales are more greasy, and the spots less red than in *tinea circinata*. Seborrhœa of the chest or back should never be confounded with *tinea versicolor*, in which the patches are much more brown or yellow in color, much more superficial in character, and with much fewer scales; in these latter the parasite may be readily demonstrated with the microscope.

Syphilis does not present any lesions which should be confounded with acne sebacea, but often the cachexia of syphilis, rather late in the disease, will give rise to a seborrhœa differing in no manner from that ordinarily observed.

Pathology.—The pathology of acne sebacea is simple, and consists in but a functional derangement of the secretion of the sebaceous glands. No microscopic changes in the sebaceous glands have been reported in this disease, and it is probable that no alteration takes place in their structure, except the derangement of the secretory power of the lining cells. In long-continued disease, however, the whole gland undergoes atrophy, and shares with the skin and hair in a general loss of vitality.

In the oily variety the secretion is in excess and in a very liquid state, often also possessing an odor which is unpleasant. In the drier, scaly form there may be an excess of secretion, but the main error lies in a

failure of the gland cells to carry through the process assigned to them—namely, the undergoing a fatty alteration to the full extent of liquefaction—and, as a result, the imperfect cells are pushed forward, partially transformed, and filled with their fatty contents, and readily adhere to the surface in lamellæ or crusts. In the last variety, *acne sebacea exsiccata*, the gland cells appear to fail almost, if not quite, entirely in their action, leaving the skin devoid of the fatty secretion which is necessary for its perfect condition.

The scales and crusts of *acne sebacea* are found to contain a considerable amount of oily matter, readily greasing and staining linen and soft paper; to the touch they are unctuous, and can be pressed into masses. Under the microscope they are seen to present an indistinct, granular mass, composed of cells, epithelial in character, in various stages of fatty degeneration; the contents of the cells are granular, and in many of them free oil globules can be seen. Many cells contain a nucleus which in some cases appears shrunken, and is contained within a vacuole; in others the place of the nucleus is occupied by a vacuole alone (VAN HARLINGEN).

Etiology.—The etiology of *acne sebacea* has very largely to do with disorders of the digestive system, as discussed in the preceding chapter, and with debility, anæmia, and chlorosis. In a number of patients the connection of this state with digestive derangement was most striking. Several physicians, who watched their cases very carefully, noted that with each occurrence of indigestion the sebaceous disorder was aggravated, or produced anew, also that the trouble often disappeared spontaneously as the digestive disorder was overcome. In a considerable number of patients, it was observed that there was a morbid secretion of sebum whenever they were run down or exhausted, and it frequently happened

that the seborrhœa ceased as strength was regained, often by absence from work and worry. In young people it was repeatedly noted that country life during the summer resulted in the removal of the sebaceous derangement. Sexual disorders do not appear to have much influence in acne sebacea; a curious confirmation of this may be found in the fact that, while in the inflammatory forms of acne the number of the females was between two and three times that of the males, in acne sebacea the proportion of the two sexes was almost the same.

It is not at all clear as to what part local causes may have in this disease; in the large majority of cases no such cause is traceable, but in several instances oily seborrhœa was found to have followed very irritative applications to the surface for the removal of chloasma, the relief of headache, or other reasons. Some little difference may be observed in regard to personal conditions. The drier forms of seborrhœa are found more commonly in those exhibiting a light complexion and hair, and a strumous habit; subjects with darker skin and hair are more apt to have the oily variety.

Treatment.—To be successful, constitutional measures must be adopted in conjunction with local treatment: of the two, the former is the more important element in a large share of cases. The constitutional treatment should embrace much that affects the general life and health of the patient. To determine this often requires not a little time and trouble, and patients are often very restive under the necessary attention to matters which they consider to have no connection with what they imagine to be quite a local trouble. But this is necessary in order to obtain permanent benefit, and, especially in seborrhœa of the scalp is it essential to enter the constitutional treatment if it is desired to check the disease, and to prevent permanent loss of the hair.

The general treatment embraces diet, hygiene, and internal medication. Articles of diet or modes of living, which tend to congest the head, must be avoided; such are spirituous and fermented liquors, soup, and much tea or coffee, also articles known to be indigestible, or which have proved so to the individual affected. Special care will have often to be exercised in regulating the diet in dyspeptic cases, for the disease can be aggravated at any time by digestive derangement, in spite of all medication. If fatty preparations are well borne they are rather beneficial in this affection; I have also found that a diet rich in phosphates, such as the preparations of whole wheat, was of service in scalp cases, in aiding in the nutrition of the hair, and in preventing subsequent baldness.

In regard to hygiene, a close, unhealthy atmosphere and lack of exercise can greatly contribute to the disease, and should be guarded against; the wearing of the hat continuously increases the difficulty, and hastens the fall of hair.

Internal medication will vary very greatly with the individual treated. In quite a proportion of the cases a good tonic will be all that is required. Perhaps one of the most serviceable is a combination containing a little arsenic with iron and bark (Formulæ 1, 2). If there is much tendency to congestion of the surface, one containing a slightly refrigerant laxative in connection with iron may be of more service (Formula 5). In some cases, dependent upon anæmia and chlorosis, the effect of iron with an alkali, in pill form (Formula 16), is very striking. Some cases are best treated with cod-liver oil, alone, or in combination with phosphates. Where no definite disorder of the system can be made out, and no clear indications for internal treatment can be decided upon, an alkali with nux vomica and a bitter tonic (Formulæ 9, 10) will often be followed by the very best re-

sults. In all these cases the greatest attention must be paid to the excretion from the bowels, for, if constipation exists, these remedies are often worse than useless: it is often well to begin with a moderate purgative, and to follow this by slightly laxative remedies in connection with the tonic.

In the treatment of those patients manifesting digestive derangements, very great care will often be required to reach the trouble. Sometimes the eruption is relieved at once by a very simple alkaline tonic (Formulæ 9, 12). In other instances an acid will be required (Formulæ 7, 8), and in certain cases it will seem as if no treatment would suffice to cure the difficulty, and only the most thorough regulation of the diet and mode of life, together with medication varied according to the conditions present, will be of service in the acne. Arsenic is of very little benefit, except as an adjunct to other remedies. This subject will be more fully discussed in connection with other varieties of acne.

The *local treatment* of acne sebacea will vary greatly with the condition present and the part affected. Oily seborrhœa of the face frequently accompanies acne simplex and acne indurata, and disappears under the treatment used for these lesions, especially under the employment of a lotion of sulphuret of potash and zinc (Formula 19). Repeated washing with hot water, in which twenty to forty grains of carbonate of soda are dissolved in the pint, and the subsequent application of a spirituous lotion (Formulæ 27, 32), will generally suffice to check the excessive secretion. In localized oily seborrhœa of the face, as on the forehead and nose, lotions of bichloride of mercury will yield good results (Formulæ 29, 30), also lotions containing ergot and belladonna or atropia in moderate strength. Upon the scalp oily seborrhœa is best controlled by frequent washings with

borax and water (3 ii—3 iv ad Oj) or solutions of green soap (Formulæ 33, 34), and stimulating lotions (Formulæ 38, 39, 40).

The drier form of sebaceous acne requires different treatment, as it affects the non-hairy or hairy regions. Upon the face it frequently yields readily to an ointment of bismuth and white precipitate (Formula 50), or a mild mercurial ointment (Formula 51) alone, or in conjunction with a soapy lotion (Formulæ 33, 34). This latter is applied diluted at first with equal or more parts of water, and is to be well rubbed on the surface with a bit of white flannel. The part should then be covered with the ointment, and left undisturbed for some hours. Much ordinary washing should be avoided, and the ointment must be kept applied, if even in a thin coating, the greater part or all of the twenty-four hours; the friction with the soapy lotion may be made once daily, at bedtime, or less often if too irritating.

Not infrequently during the treatment of this form of acne, the character of the secretion will become changed, and an oily seborrhœa will take the place of the drier condition, which will in turn yield to the measures previously mentioned in connection with this state. Or, occasionally, a very dry, harsh, and slightly scaly condition may result, which will yield to a soothing lotion (Formulæ 24, 25).

Acne sebacea cornea, presenting the hard, dry, almost horny concretions, requires more stimulating treatment, and a lotion of caustic potash (Formula 35) will serve to dissolve and remove the hardened masses; this is then to be followed by an astringent sulphur or mercurial ointment (Formulæ 45, 50). Care must be taken not to irritate these diseased patches too greatly, as improper stimulation can result in the development of an epithelioma; it is well occasionally to omit active treatment

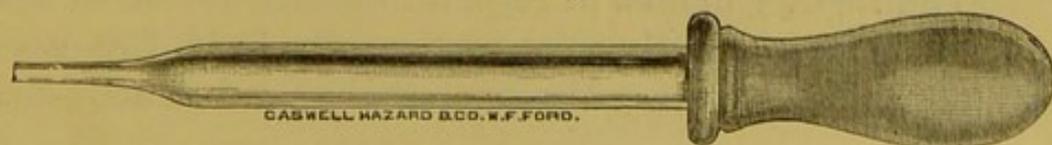
and allow undue irritation to subside under a bland ointment (Formulæ 43).

Upon the chest and back acne sebacea requires much the same treatment as upon the face—namely, mild stimulation with an alkaline or soapy lotion, and a subsequent astringent ointment.

Seborrhœa of the scalp varies so greatly in severity, in different cases, that the measures required also vary considerably. In the milder cases, where the secretion is not very excessive, but is mainly annoying by the constant “dandruff” shed on the garments, astringent and mildly stimulant lotions are all that are required (Formulæ 36, 39, 40). These should be freely applied at night, the scalp being made damp all over, a small amount being added in the morning.

As it is of some little importance that the remedy be thoroughly applied to the scalp itself, and not to the mass of the hair, a few words of further explanation may be added. The lotion should not be used irregularly nor imperfectly, but the scalp should be wet with it equally, day by day. Nor need a large amount of the liquid be used, for it is not necessary or desirable to soak the entire hair with it, as is frequently done when the lotion is poured into the palm, and thence applied to the head. To insure the making of these applications perfectly and pleasantly, I have for some time past advised the employment of a medicine-dropper for this purpose. For those not familiar with this little affair, I may state that it is a small glass tube, drawn down to a fine opening at one end, and fitted at the other end with a rubber cap expanded into a bulb, as shown in the accompanying figure, drawn full size :

FIG. 5.



By means of this little instrument, the lotion may be ejected in any desired place, while the fingers of the other hand are used at the same time to rub it well into the scalp at the roots of the hairs; thus the scalp may be moistened to any desired degree, and the remedy applied to the portion affected without making the hair unpleasantly wet. This method of making various applications to the scalp has given great satisfaction to the many patients who have used it during some years past.

But this simple employment of a lotion does not suffice in the more severe cases of this affection. In the worst cases the amount of sebaceous accumulation is sometimes very considerable, and a dense coating is formed which ordinary washing will fail to remove, and more active treatment is required. It is not well to attempt to remove these masses with the fine-toothed comb, for much irritation of the scalp may be produced thereby, and the stimulation of the scraping with the comb seems to increase the sebaceous secretion. In these cases the crusts may be softened by the repeated and thorough application of a soft ointment, and that which I commonly prefer contains a little tannin (Formula 42), which acts as an astringent as well. After keeping the surface of the scalp well greased with this, it being thoroughly rubbed in with the fingers between the hairs, morning and night for two or three days, the scalp is to be washed, and the ointment reapplied, in somewhat less quantity. Many writers recommend the use of an oil for the purpose of softening the crusts: sweet almond or olive oil may be used, or, benne oil (*oleum sesami*), as recommended by VAN HARLINGEN, on account of its non-drying qualities and absence of tendency to clog the hair.

Some further details in regard to the cleansing of the scalp will aid in securing the best results from this portion of the treatment. Various alkaline substances are

often employed for this purpose—borax, ammonia, carbonates of soda and potash, and various soaps. These are frequently charged with being injurious to the growth or health of the hair, but nothing is proven in regard to this; it is more than probable that the disease which renders their use necessary, together with the wrong methods of treating the hair, are to be charged with the injury rather than the agent employed for the cleansing. But excessive washing of the scalp is undoubtedly harmful, and neglect of the proper treatment of the disease which necessitates the washing, is frequently followed by loss of hair, which is more or less permanent. The healthy scalp should not be frequently washed or wet, the diseased scalp should be so cleansed only when required for purposes of treatment; after one or two washings, the scalp should be sufficiently clean, so that the applications made will suffice to keep it so free from scales and crusts that the process need not be repeated oftener than from every two to four weeks. To this end the amount of oily matter used in hair lotions should be such that the hairs will not be unpleasantly greasy; this will vary in different individuals on account of the varying amount of oil furnished by the sebaceous glands in different persons.

For cleansing the scalp after the application of the ointment previously mentioned, a good tar soap answers the purpose very satisfactorily. This is to be placed in hot water, so that the latter becomes more or less soapy from it; the scalp is then saturated with this, and the edge of the cake is rubbed upon the scalp, and the hair manipulated until a perfect lather is made, the crusts being raised a little with the finger-nail. The scalp is then rinsed quickly with tepid water, and dried as rapidly as possible; this latter can be best accomplished by means of soft towels, which have been thoroughly dried

and heated by placing a number of them on a plate in the oven. It is desirable that this process of washing and drying be performed as quickly as possible, and that the ointment be replaced immediately, before the scales have re-formed, in order that the subsequent application may reach the surface of the skin itself. Castile soap is not desirable for this purpose, being made with soda, which in general is not as serviceable as potash in preparations and soaps for the hair; Pear's transparent soap and Sarg's glycerine soap answer well. For light cleansing of the scalp nothing is better than the yolk of one or two eggs, beaten up with a little water, and well rubbed in, with subsequent rinsing with pure water.

When the scalp is very greasy and the crusting very abundant, more active measures are necessary, and the shampoo of the scalp can sometimes be best effected by means of solutions of soft potash soap, in spirit if the skin appears strong and unbroken, and in water in those with delicate skins (Formulæ 33), 34. A little of this is poured on the scalp, and with the addition of a small quantity of water and moderate friction a free lather may be produced, which is to be washed off well, and followed, after rapid drying, by a thorough application of the ointment or lotion. Some care must be exercised after washing the scalp not to make too strong applications, for inflammation can readily be excited when the surface is thus softened.

In many of the cases which have lasted for some time, stimulation is required, and after using the tannin ointment for a little while, as for a week or two, with one or two washings, a lotion will often serve to keep the surface free from scales and restore the part to health (Formulæ 36, 37, 38, 39, 40).

For the later baldness, which is apt to follow seborrhœa of the scalp, still more stimulating remedies may

be used, and the preparations of cantharides, as the acetum cantharidis, or even a little of the essential oil of mustard, may be added to the lotions previously mentioned. WILSON prescribes cantharides in the form of ointment (Formula 57).

The preparations of mercury, in the form of ointments, are of value in obstinate cases of seborrhœa of the scalp (Formulæ 50, 51), as also those containing sulphur and tar (Formulæ 45, 58). But such applications are rather difficult of employment except when the hair is thin, and often prove very annoying to the patient. It must be remembered that the ointment, to be efficacious, must be well and thoroughly rubbed into the roots of the hair; it is not to be put on the palm of the hand and applied on the outside, but should be inserted with the tips of the fingers deep among the hairs on the surface of the scalp itself. This can generally be far better done by another than by the patient, and I frequently direct that a barber shall make the application from time to time.

In regard to the matter of cutting the hair in the treatment of sebaceous disease of the scalp, it may be stated that this is rarely if ever necessary, if proper care and attention be given to the treatment. It is possible and tolerably easy to treat a scalp even with a long and thick crop of hair, without sacrificing any portion of it by cutting; it is never necessary to shave the scalp for this purpose. But if the hair is falling rapidly, it is often expedient to trim it to a greater or less degree, for the loss of hair is thereby lessened at each manipulation, and there is less continual strain upon the follicles. Trimming the hair undoubtedly stimulates its growth, and should be practiced to the extent of keeping the ends in good condition, free from splitting. When the hair has already been cut short, or shaved, it is often well to con-

tinue this state for a while, until a firm and more or less thick growth of hair has established itself. Blistering the surface with cantharidal collodion, will often serve well on spots which prove tardy in reproducing hair.

In the treatment of that condition where the sebaceous glands fail to act, producing *acne sebacea exsiccata*, both constitutional and local measures are necessary; every element tending to produce normal health will often be called for in order to secure any permanent results. When the condition is localized, the soothing and mildly stimulating measures mentioned will often suffice to keep the skin in a normal state. When a considerable portion is affected, the best results are obtained from the use of alkaline baths, followed by free inunctions (Formulæ 59, 60), the former being repeated about twice weekly and the latter being used daily. Turkish and Russian baths, followed by inunctions, are often of service, but may sometimes prove too stimulating, and defeat the object desired.

Prognosis.—The prognosis of *acne sebacea* varies greatly with different cases, and must always be given with some caution; in general it is good, and careful treatment will generally suffice to cure the trouble. Some forms, however, are especially rebellious. In young persons the oily variety will often persist on the face most annoyingly, and recur again and again after removal. Sometimes in adults localized oily seborrhœa, as on the nose or forehead, will resist treatment in a very provoking manner. The dry form of seborrhœa on the face and trunk, will commonly yield to treatment and remain absent. Upon the scalp the condition is apt to recur with each lowering of the health. When the hair has begun to fall, as is frequently the case when the patient comes for treatment, having exhausted the claims of patent remedies, a cautious prognosis must be given in the

matter of saving and restoring the hair. If everything can be satisfactorily carried out, the hair need not fall much more, if any, and often considerable regrowth can be produced. In young persons, where the vitality and general health and strength can be restored, the hair often grows luxuriantly again, but in elderly persons the lost hair is seldom very greatly regained. In most cases of seborrhœa, especially of the scalp, the medical care or supervision necessary must be measured by weeks or months even, rather than by days. In the cases of general failure in the action of the sebaceous glands, the prognosis is very uncertain; often the condition yields very promptly, and again it is very rebellious, especially if the condition approaches to that of ichthyosis.

II. ACNE PUNCTATA.—The second variety of functional disorder of the sebaceous glands is characterized by abnormal secretion, with retained product and gland distention; the glands and their ducts are filled with the altered secretion, but are not so distended as to form cysts, as in the next variety.

Two forms of this disorder are recognized, one with the duct open, *acne punctata nigra*, or comedo, and one with the duct closed, *acne punctata albida*, or milium.

1. *Acne punctata nigra* (Synonyms: *Comedo*; *Acne follicularis*; *Grubs*; *Flesh-worms*: French—*Acné ponctuée*: German—*Die Mitesser*; *Hautwürmer*). This represents a disorder of the sebaceous glands, in which the altered and retained sebum distends the gland and its duct, generally producing a slight prominence externally with a dark point in the centre, which latter occupies the orifice of the duct, from which may be expressed a small, whitish, worm-like plug of hardened sebum. The minute elevations are usually of the color of the skin or a little yellowish, but may become reddened through slight

congestion, caused by irritation of the retained mass. When inflammation is excited around them, the papules and pustules of acne simplex are produced. The name comedo is applied both to the affection and to each single lesion; the latter is also sometimes spoken of as a *comedon* or *comedone*, plural *comedones* or *comedoes*.

Clinical description.—These little lesions are usually brought under notice in connection with acne simplex, or indurata, but in most cases may be observed some time before these inflammatory conditions appear; they are also occasionally presented alone for treatment. Among the cases here analyzed, acne punctata nigra was recorded as existing in 136 patients, of whom 34 were males and 102 were females. Of these it existed alone in 14 cases, in 102 cases it was associated with acne simplex, 20 times with acne indurata, and 9 times variously combined with other forms of sebaceous disease. Comedones are, however, infinitely more common than these figures would indicate; in very many of the cases of sebaceous disease here analyzed, they existed frequently without being recorded.

This form of acne belongs to an early age: the youngest patient among those whose cases are here analyzed was aged ten years; 15 patients were fifteen years or less of age, and the larger share of all cases were twenty-two years of age, or under; no case was recorded over forty years of age. They are also not infrequently seen even in very young children. CROCKER reports them in infants twelve and fourteen months old, and CÆSAR has reported a number of cases in boys and girls, from two to eleven years of age. I have also repeatedly met with them in young children.

The greatest difference is observed in regard to the number of comedones present in different cases. There may be one or two, or more, formed here and there, or

they may exist in such numbers as to prove a serious annoyance. They vary also very greatly in size, from a minute dark speck, not very much larger than the natural opening of the duct, and producing no elevation, but only a darkening of the skin by their great numbers, up to accumulations of sebum which greatly distend the gland and its duct, and raise the surface perceptibly, even to the size of a small shot, presenting a black centre as large as the head of a good-sized pin.

The more frequent seat of comedones is about the sides of the nose and the chin; they are also common on the forehead and cheeks, and are also often met with on the lips, neck, and back. Within the cavity of the external ear they sometimes attain relatively great size, and produce much disfigurement. They may appear on any portion of the body, wherever there are sebaceous glands to become sluggish and obstructed; in those who are exposed to the influence of tar, the blocked sebaceous glands, with their blackened plugs, are often seen on the arms and legs.

Comedones are not commonly presented for medical treatment, except in connection with other forms of acne, as little attention is usually paid to them by the patient, except to remove them when particularly prominent. In some cases, however, the number of the sebaceous glands which become thus blocked is so great, that the entire face seems covered with them, giving it a dark appearance, as though from a gunpowder explosion, as in the following case:

Miss L—, aged 22, had had considerable difficulty with the face since she was sixteen years of age, in the form of acne simplex, but the condition for which she sought relief had existed only about two years. She had been considered to be in ordinary health, and was able to attend to school duties. She was found, however, to be habitually constipated, to have nausea frequently after eating, with oppression at the stomach, and a continual bad taste in the mouth. She was also subject to repeated sick headaches. Her menses, which had begun at fourteen years of age, had been painful and profuse after the first two years, and just before the time of obser-

vation, she had been under the care of a leading gynæcologist for inflammation of the uterus.

She sought relief solely from the infinite number of comedones which actually darkened the face, and produced a very great disfigurement, which was especially distressing in view of her approaching marriage in a month. The entire face, including the forehead, nose, cheeks and chin, was found to be literally covered with hundreds of black specks, large and small, as if every sebaceous gland had shared in the disorder; the skin was also greasy, and the entire appearance was that of a dirty, unwashed person who had been on a long railroad journey. But the condition could not be altered by washing. There were no papules or pustules, except a few small inflamed points which had been produced by ineffectual efforts to express the comedones. There was also considerable seborrhœa of the scalp. Under very active local treatment, including much personal attention in removing the comedones, the skin was restored almost to a normal condition within the month which elapsed before her marriage; the change can only be likened to that resulting in thoroughly washing a face begrimed with railroad dust. One hundred or more comedones were taken out repeatedly at a sitting, and her mother extracted many at home between her visits. During this treatment she was also placed under active internal measures, with careful regulation of the diet and hygiene, which undoubtedly contributed somewhat to the result.

The separate comedones tend to remain an indefinite length of time, single ones may continue unchanged for many months, unless removed artificially or by the development of inflammation around them, or they may gradually disappear as the normal secretion of the gland is restored. Their more common termination is by inflammation set up in the gland and surrounding tissue, either by the irritation produced by their mechanical presence, as of a foreign body, or possibly by chemical alteration which takes place in the plugs of retained sebum, producing elements injurious to the normal tissues; that is, by their development into acne simplex. In very many instances the inflammation is excited by inefficient attempts at squeezing out the comedones.

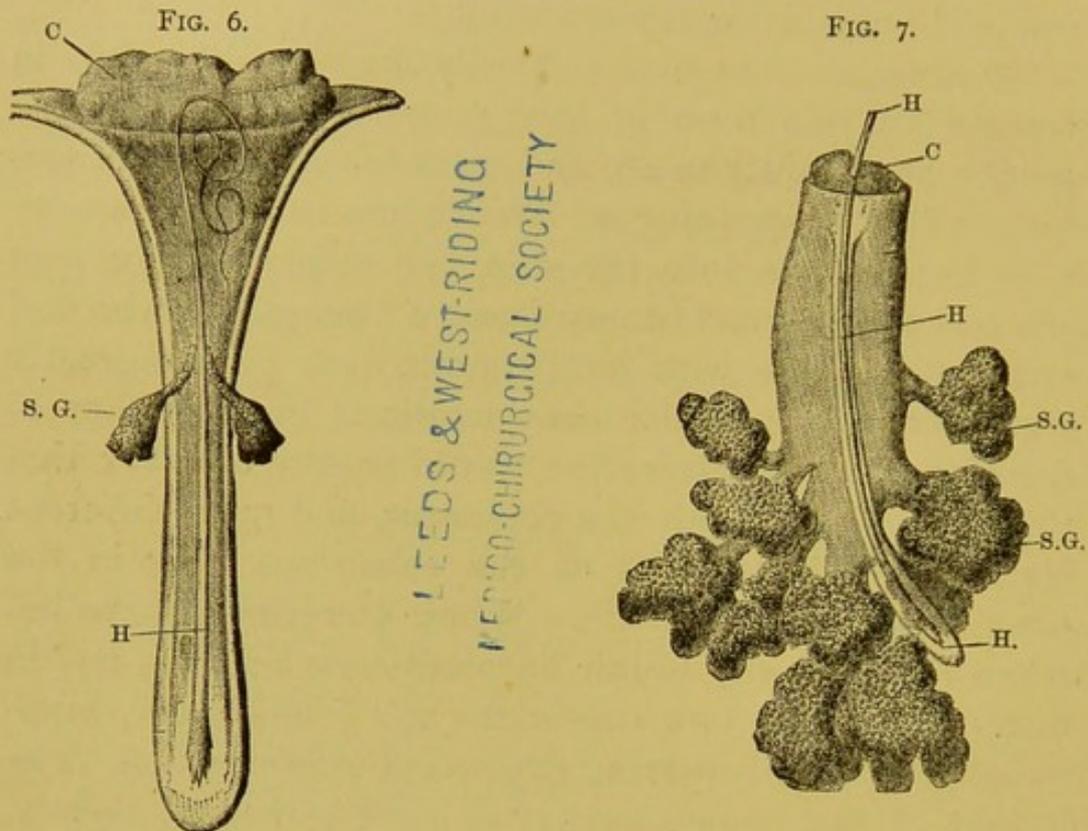
When removed mechanically by force, the glands tend to refill, and from one to two weeks will usually suffice to replace a comedo which has been squeezed out, unless measures are taken which produce a change in the character of the secretion; thus the disease may last for years, although the tendency is for their production to cease after the period of the full development of the

system has passed. The process of the formation of comedo may very properly be likened to constipation of the intestines, where imperfect excretion with weakened expulsive power, results in a product which tends to be retained until artificially removed.

Diagnosis.—There can hardly be any difficulty in recognizing this form of acne punctata, the little black specks are familiar to all, and no other disease state presents a similar appearance. When grains of gunpowder have been blown into the skin, the points may suggest comedo, and in one instance I saw a young man who had tattooed his face with innumerable dark points, greatly resembling those under consideration; but in either of these cases close inspection would readily discover that the color was beneath the epidermis, and quite different from the darkened end of the sebaceous plug in the open mouth of the follicle. When comedones have become inflamed, the lesion becomes acne simplex, and in many cases the two conditions are found freely intermingled, and with varying degrees of inflammation. The lesions of the second variety of acne punctata, namely, milium, are so distinctly characteristic that the two need never be confounded, as will be more fully mentioned later.

Pathology.—The pathological condition in comedo is exceedingly simple. The secretion of the sebaceous glands becomes disordered, and the lining cells fail to undergo complete fatty transformation to the production of the oily matter, which is the proper secretion of the glands. At the same time the glands lose their normal tone and what little contractile power their walls possess, become paralyzed, as it were, and then passively dilate with the accumulation of imperfectly formed sebaceous matter; this then hardens in their interior, aided possibly by the evaporation and absorption of its liquid elements.

The gland itself and its duct become thereby filled and distended with a plug of sebum, which by its presence further prevents the exit of sebaceous matter. This condition is shown diagrammatically in Figures 6 and 7,



Small and large sebaceous glands, S. G., obstructed by comedo plugs, C, C. In each of them there are fine lanugo hairs, H, H, connected with the glands, which aid in the obstruction of the duct.

taken from SIMON. In Figure 6 the hardened sebaceous mass has dilated the mouth of the duct of a small hair follicle, and extends but a little distance; in Figure 7 the accumulation is greater and distends the entire duct and also some of the acini of a large gland, which has a small hair attached.

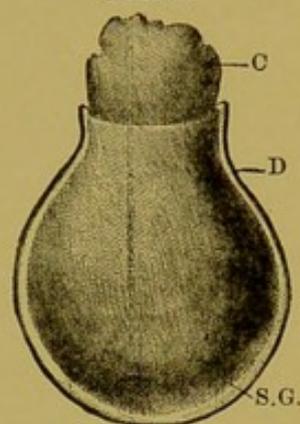
It is well known that an essential element of living matter is a constant change in structure, and that tissues cannot remain stationary; the cells lining the sebaceous glands must therefore multiply and be cast off, even if in an imperfect condition and if their exit is impeded. Con-

sequently the partially transformed secretory cells accumulate more and more, and harden on the occluding mass, which may thus enlarge to such an extent as to fully distend the gland and the duct into a pear-shaped cavity, obliterating many or all of the acini of the gland. All living tissue when pressed upon tends to undergo absorption, consequently the walls of the sebaceous glands suffer a thinning when this accumulation is excessive, so that in time the secreting structure becomes almost if not entirely lost (BARENSPRUNG), and we may have but a sac of connective tissue containing hardened sebaceous matter, as is shown diagrammatically in Figure 8, taken also from SIMON. This destructive process, however, is comparatively rare, more commonly the glands continue to secrete, and the plug is slowly forced forward by secretion from beneath, and rubbed off on the surface; and thus the same gland may continue to be partially blocked for a long time, often until the obstruction is removed mechanically or until inflammatory action is excited; this later history of the comedo will be considered under acne simplex.

The actual microscopic appearances of a comedo in situ are well shown in Figure 9, taken from a section of the skin of the nose. Here the central comedo plug is seen to be of some size, and the secretory cells of the gland are still in normal condition.

The contents of these distended ducts and glands may be readily extracted by pressure, and the mass of sebum forced out is seen to vary very considerably in the size and shape presented, and in its consistency; often the extruded mass appears as a small, hard, pear-shaped body,

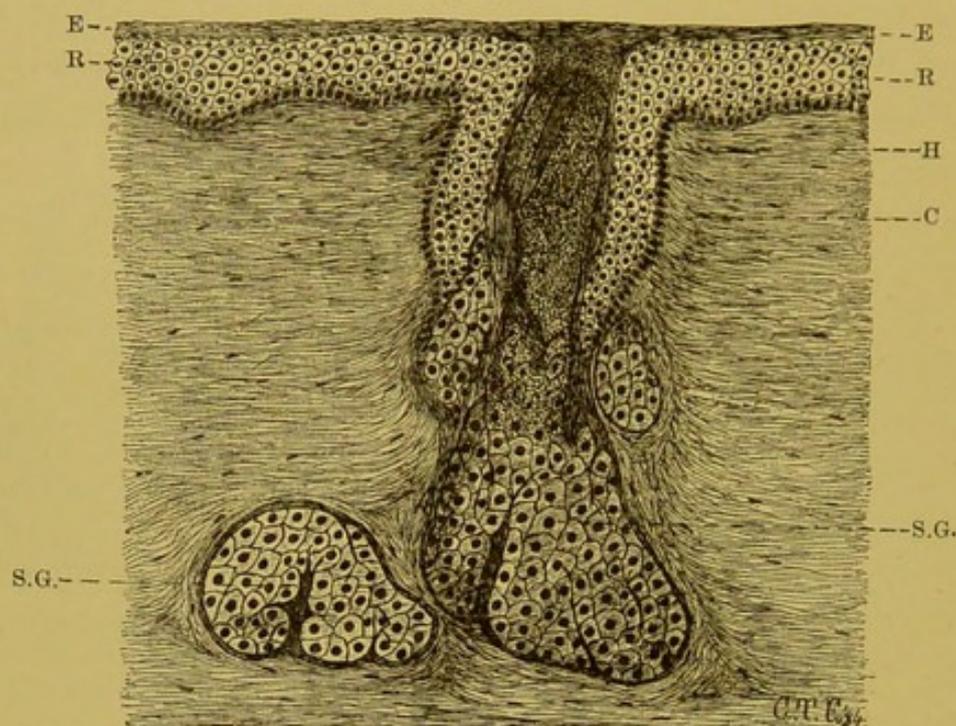
FIG. 8.



Diagrammatic representation of a sebaceous gland, S. G., and its duct, D, transformed into a sac filled with a comedo mass, C, projecting from its mouth.

retaining its form when moderately pressed upon, which represents the entire contents of a small gland and duct. Sometimes these masses are so hard that they will not

FIG. 9.



Section through a comedo situated on the nose. Hyperosmic acid preparation, saffronin staining; E, epidermis; R, rete Malpighii; H, lanugo hair embedded in C, comedo; S. G, sebaceous gland.

come out with pressure until the orifice has been slightly enlarged. Again, on squeezing a follicle the sebaceous matter will issue in the shape of a long cylinder, many times the possible depth of the gland, or even that of the skin. This represents a less solid mass, which has occupied a cavity of some size (see Figure 8), and which takes the form of the orifice through which it has been forced. The sebaceous matter thus expressed may sometimes be of a very soft consistency.

Examined under the microscope these little plugs are seen to consist largely of altered epithelial cells, with considerable fatty matter, and generally with one or more minute hairs. I have counted as many as fourteen hairs

in a mass of sebum from a single gland. These hairs are generally curled up and thoroughly surrounded by the fatty mass. There is also sometimes found a minute animal parasite, to be described later.

The outer layers of a comedo plug appear like ordinary flat, horny scales, resembling those from the epidermis; as though the cells of the gland had finally failed entirely to undergo the fatty metamorphosis, and were simply shed and compacted together. The body of the mass is composed mainly of rounded cells in various stages of fatty degeneration, with a few free fat globules. Some of the masses give the appearance of an epithelial nest, as seen in epithelioma, they probably being the accumulation which had formed in a single acinus of the gland, and which had been added to on all sides. After macerating the masses for half an hour in liquor potassæ and glycerine, many scales, almost as large as those of the epidermis, become detached, which are filled with minute fat globules, as many as seventy-five being counted in a single cell. If a mass of sebum from a comedo is washed repeatedly in chloroform, to remove the fat, the scales are seen to be shrunken, and among them is seen more or less fibrous or stringy matter, the exact nature of which it is difficult to determine.

In sebaceous matter, which has been confined for some time, crystals of cholesterin are found, also, occasionally, leucin and tyrosin (CHARLES).

The end of the sebaceous plug is seen to be darkened, sometimes almost black: this coloring has been generally ascribed to external causes, coming from its exposed situation, or, in other words, to dirt; some writers have explained it as a chemical change caused by the action of the air on the exposed portion of the sebaceous plug. Recently UNNA has made some studies

on the subject, and claims that the dark color is due to pigment matter, either free or contained within epidermal cells. This he considers to be the same pigmentation as seen in the hair cells, in the horns, hoofs, and claws of animals, on the nails in certain diseases, and in keratosis simplex, and, to a greater degree, in keratosis nigra. KRAUSE, in commenting upon Unna's investigations, declares that certain bluish granules, described by the latter as ultramarine, are from extraneous sources.

It is certain, however, that the color of the outer end of the comedo plug is greatly influenced by external surroundings; thus, after a dusty railroad ride the condition will be greatly aggravated, and much may be done by great cleanliness in making them less apparent. Not at all infrequently certain lotions, sometimes those containing mercury, and sometimes those with sulphur or lead, will cause comedones to become exceedingly prominent, and will develop large numbers which were not previously visible; this constantly happens when, by any chance, applications containing these substances are used together or soon after each other.

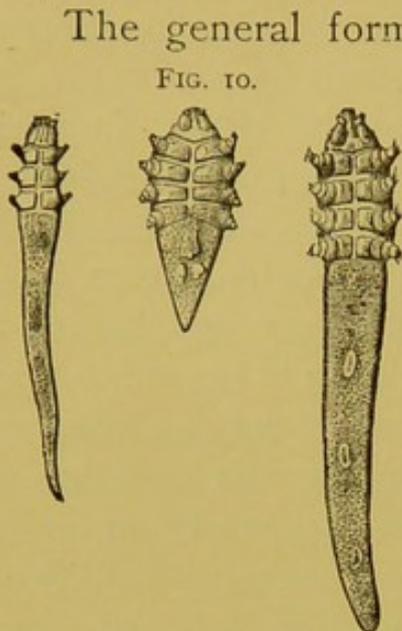
The little plugs which are expressed from the lesions of acne punctata are very suggestive of a worm, with a black head and worm-like body, and the resemblance has given to the condition the name of "flesh-worms," "grubs," etc. These names have a slight foundation in the fact that there often exists within the sebaceous follicles an animal parasite, which, however, is of more interest entomologically than from any practical bearings on the subject: this is known as the *demodex folliculorum*, called also the *acarus, steatozoon*, or *entozoon folliculorum* (*Ger.* Haarsackmilbe). This very minute creature has very little, if anything, to do with the production of diseases of the sebaceous glands, and is found in the

sebaceous follicles of the healthy skin as well as in the larger comedo plugs; it lives upon the sebaceous matter, and some writers have asserted that its presence serves to maintain the glands in healthful activity.

This parasite was first announced by HENLE in 1841, and was discovered and described independently by SIMON in 1842: during this latter year WILSON made extensive studies on the subject, and many others have added to our knowledge of the anatomy and habits of the creatures, but have contributed little in regard to their pathological import. Specimens of them may be obtained without much difficulty by expressing the contents of glands, or scraping the surface firmly with a blunt knife, and examining the sebaceous matter microscopically with a magnifying power of from two to four hundred diameters; the plugs, or masses, should be softened with a drop of olive oil, or glycerine, and a cover of thin glass should be pressed tightly down, so as to render the mass very thin. They cannot always be found at once, and often many specimens may be examined without finding them; they are most likely to be found in those with thick, greasy skins, and especially on the nose, lips, chin, forehead and cheeks. The demodex is said not to exist in newly born infants, but GEBER has found them in children two and four years old.

The *demodex folliculorum* is an extremely small affair, as may be judged from the fact, that as many as thirteen have been found in a single follicle: it is rare, however, to find many of them at once, more commonly not more than from two to four occurring together. They are found embedded in the sebaceous matter, their long axis corresponding with that of the follicle, and their heads directed inward. These parasites vary somewhat in size. The appearance of the demodex, or acarus folliculorum, in the forms observed by SIMON, are given

in Figure 10, which represents three stages of development.



Demodex folliculorum in various forms or stages of development (SIMON).

The general form of the parasite is long and worm-like, and it consists of a head, thorax, and abdomen, the latter constituting more than two-thirds of the entire length, which is between 0.30 and 0.40 mm. The head is conical, and joined to the thorax by a loose membrane, and appears to pass immediately into the thorax, but, according to Wilson, can be retracted into the body, so as to give the creature the appearance of being headless. On the head there are two lateral, two-jointed palpi, a tubular proboscis and a triangular biting organ. From the thorax, in the perfectly developed state, there protrude four pairs of short, conical, three-jointed feet, with minute, claw-like extremities. These legs can be moved in various directions, and they can be retracted or stretched out, but the creature can hardly be said to walk, although it changes position, partly by movements of the entire body.

The abdomen varies in length, being tapering to more or less of a rounded point. Several varieties in form are described, the most common that in which the abdomen is about three times the length of the thorax, while others have been observed in which the abdomen was thick, short, and conical. The younger forms have but six legs, but its very earliest condition is not known; considerable additions, however, have been made to our knowledge of the form and habits of the parasite by the recent labors of LANDOIS, MEGNIN, CSOKOR, and GEBER, the latter having determined the differences in the sexes and identified the eggs.

A parasite very like that under consideration has been repeatedly observed in lower animals, and accounts have been given of serious lesions occasioned thereby in dogs by GRUBY, SIMONDS, and SPARKS. The latter made very careful studies of sections of the skin affected, and gives a full description of three cases of dogs, all of which, in spite of careful treatment, died in a few weeks from the presence of these parasites, in a state of wretchedness and emaciation, apparently accelerated by their inability to keep themselves warm from loss of hair. Other dogs, which were kept in the kennel with one of the former, contracted the disease, and had to be killed eventually. All the three cases resembled one another in the enormous number of acari present, dilating the hair follicles, and filling the sebaceous glands so as to completely destroy their secreting cells. The acari were found at all depths, both in the hair follicles and in the sebaceous glands. In all three cases inflammatory changes, of a greater or less extent, were found in the cutis, arising from the irritation of the acari, and the scratching of the dogs. The external lesions consisted of pustules, with crusts and scales of pus and exudation, with almost complete loss of hair, accompanied with itching. The perfect examples of the parasite resembled those found in man, in every respect. "Thus," says Sparks, quoting Gruby, "a parasite which exists in man as a physiological condition, occasions in the dog a disease of a very grave character." Several observers, however, have denied the identity of the parasites, and it is quite possible that as there are several varieties of the *acarus scabiei*, so there are also several of the *demodex folliculorum*. NEUMANN has also reported observations made upon dogs and pigs, and states that there existed between 100 and 200 of the parasites in a single follicle of a pig which he examined; the subject has

likewise been studied by a number of veterinary surgeons.

Etiology.—The etiology of comedo is essentially debility, producing an altered and imperfect state of secretion, and inefficient expulsion of sebaceous matter. It is useless alone to remove the contents of the dilated glands, as far as relates to a cure of the difficulty, for the condition returns again and again. But if proper internal tonics and external stimulants are employed, the glands regain tone and retention ceases. The various elements leading to and associated with this debility, that is, the etiological factors in *acne punctata*, are largely those which have been already detailed in the chapter on etiology, and will be more fully dwelt upon in connection with *acne simplex*, with which eruption this condition is so closely related.

Treatment.—The treatment of this form of sebaceous disorder is, as just suggested, a tonic one internally, and a stimulant externally. The internal measures and remedies required, are so commonly those which are called for in *acne simplex*, that their consideration will be deferred until treating of that eruption. While the local treatment of comedo is often very important, there can be no doubt but that to obtain permanent benefit, internal and constitutional measures are absolutely essential, at least in the greater proportion of cases. Not at all infrequently *acne punctata* will cease soon after a change of diet and improved hygienic surroundings, and will reappear and persist in spite of local treatment, when a depraved nutrition and debility return.

The first point to be considered in regard to local treatment, is the mechanical removal of the plugs of sebum from the distended glands. It is often stated that this is injurious, but the truth is quite the reverse; it is beneficial to remove them if their expulsion is accom-

plished thoroughly and properly, but if the attempt is unsuccessfully made, the eruption is apparently made worse by the inflammation which follows. The reason for extracting the plug in comedo is, that if it is left to distend the follicle, the latter cannot return to its normal state; the continued presence of the hardened mass of sebum may then act as an irritant, exciting inflammation around it, with the production of a papule or pustule of acne simplex, which latter can be avoided in a measure by keeping the glands freed from their hardened contents.

As is well known, the sebaceous plugs in comedo can be forced from their situation by firm pressure at the sides with the fingers; but this measure often fails in completely emptying the gland. It is also a common practice to use a watch-key pressed vertically upon the skin, whereby the little plug is made to rise into the aperture of the key. This is liable to bruise the skin by the sharp or rough edges of the key, and a little instrument has been devised for the purpose, made somewhat in the same form, as shown in Figure 11. This answers the purpose very fairly, but has the objection that the surface pressed upon the skin being flat, it tends to close the opening of the follicle, and render it more difficult for the plug to escape.

To remedy this the end of the instrument should be slightly conical, with an opening in the centre, care being taken that the edge of the orifice is not so sharp as to cut into the skin when pressure is made. The most convenient form for practical use is that exhibited in Figure 12,

FIG. 11.



Comedo Extractor.

FIG. 12.



CABWELL HAZARD & CO. W. F. FORD

Comedo Extractor.

drawn full size. This consists of a small silver tube, one eighth of an inch in diameter and about three inches long. Each end is hammered over carefully until the aperture is about one sixteenth of an inch in diameter and the end perfectly rounded. In using this little instrument the pressure is to be made firmly against the subjacent parts, and then with a slightly greater and sudden impulse the plug is found almost invariably to rise completely from the follicle. Even the large masses which sometimes accumulate within the cavity of the external ear may be thus removed completely. Sometimes it is necessary to enlarge and clear the opening of the duct a little with the aid of a fine needle. If the plugs are difficult of removal they may be somewhat softened and their extrusion facilitated by soaking the face with hot water, as described in connection with the inflammatory forms of acne.

If the first trial fails to remove the plug, it is well to wait until another sitting, for undue inflammation can readily be excited by unsuccessful efforts. Ordinarily there is little if any irritation after expressing the sebaceous masses, but occasionally an urticarial wheal will develop around each opening, and in some instances the redness may remain for a day or two. Care should be exercised not to remove too many comedones near together at one sitting; in very severe and extensive cases it sometimes requires several days to completely free the face. It is well to perform this little operation on retiring, as then any irritation has a chance to subside before morning, and any applications which may be made will have a longer time to remain undisturbed.

It is not expected that the glands and their ducts will always remain empty after their contents are thus removed, for, in fact, they may and generally do fill up one or more times before their wrong action has been remedied. But the removal of this distending mass allows

the glands to contract, and it may be observed that the plugs, which should be removed as they again become visible, become less and less in size, until they cease to be produced.

In connection with the mechanical expulsion of the sebaceous collections, soapy lotions (Formulæ 33, 34), or the pure green soap, *sapo viridis*, may be employed as a stimulant to aid in softening and removing the masses; but care must be exercised not to cause undue irritation. If the skin becomes too dry and harsh during treatment a soothing lotion or ointment (Formulæ 24, 25, 43), will prove of service.

Many of the lotions used in the other forms of sebaceous disease (Formulæ 19, 29, 32), and those more particularly described under *acne simplex*, are also of service. DUHRING recommends an ointment containing sulphur (Formula 46), also a paste composed of equal parts of sulphur, glycerine, alcohol, carbonate of potash, and ether, applied every second or third night if the skin is irritable. Some care should be exercised lest patients use lotions or ointments containing lead or mercury in conjunction with or near the time of using sulphur preparations; it frequently happens that patients inadvertently do this, and there results a staining of the sebaceous plugs to such a degree at times as to cause no little temporary deformity; this, however, passes off soon after ceasing to use the remedies.

2. *Acne punctata albida*. (Synonyms: *Milium*; *Strophulus albidus*; *Tubercula miliaria*; *Acne miliaris*; *Grutum*: French—*Varus miliaire*; *Tubercules sébacées*: German—*Der Gries*; *Milien*). This name is given to the minute, white, pearly lesions often found about the eyes and cheeks, also on the nipples and genitals. They are rounded in form, slightly embedded in the skin, varying somewhat in size, though generally about as large

as a medium-sized pin-head; they seldom exist in great numbers, there being generally half a dozen or so, more or less grouped together. These little bodies appear to be just beneath the epidermis, completely covered and enclosed by it, and the contents cannot be forced out by pressure, unless the overlying tissue has been previously punctured. After a very slight puncture a little lateral pressure will force from its seat a small, white, roundish body, which preserves its shape even under considerable manipulation, but can be readily crushed with a little force; frequently a little blood is seen after the incision, but with care this does not necessarily follow. These lesions are of little pathological significance, but when inflamed they can give rise to a papule or pustule of acne simplex. Once developed they generally remain indefinitely, without change, although occasionally they may be observed to disappear spontaneously, by absorption; they never give rise to pain, and rarely to any morbid sensation. Nothing is known as to their etiology.

The condition is not a rare one, but it occasions so little annoyance that it is very seldom presented for treatment. It was recorded comparatively few times among the cases here analyzed.

Diagnosis.—Milia can hardly be mistaken for any other condition; there is no other disease presenting quite similar appearances. The little whitish masses might, however, possibly be confounded with certain *comedones*, with minute vesicles, as seen in *sudamina* or *dysidrosis* of the face, and with very small masses of *xanthoma*. Comedones always have a darkened plug presenting in the central opening, from which the gland contents can be squeezed; they are generally present in much larger numbers than are milia, and are in localities spared by the latter; and are also commonly associated with other sebaceous lesions. Minute vesicles, with milky

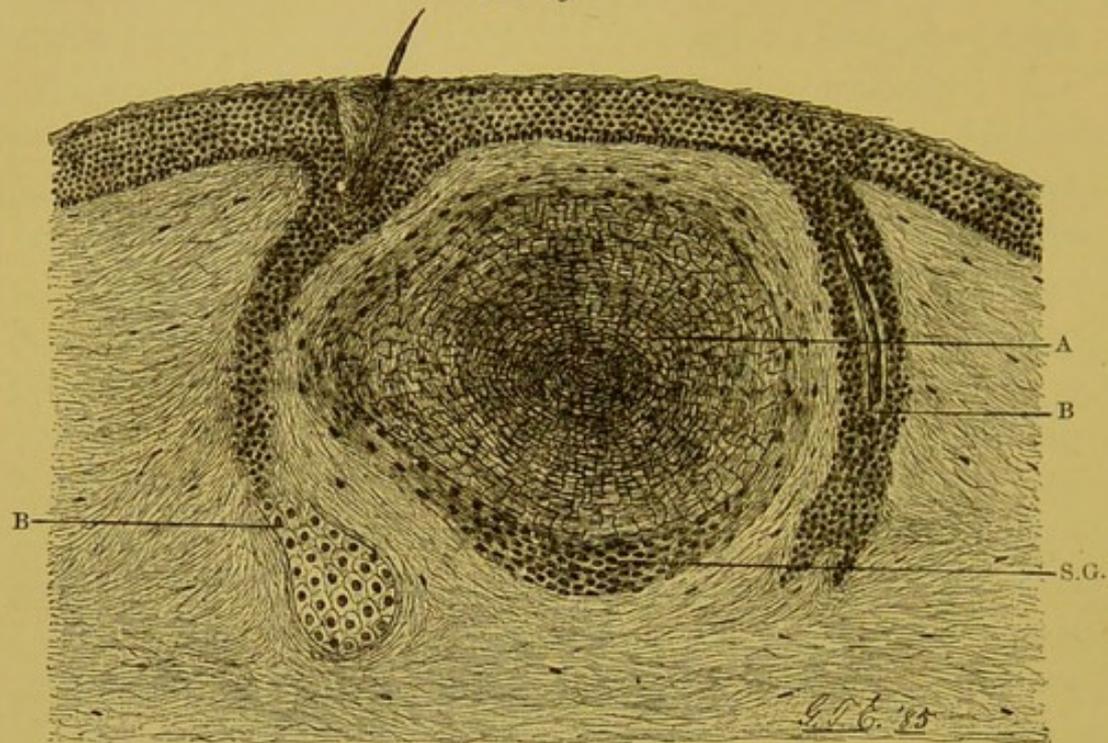
contents, may always be readily detected on puncture, if their true character is not previously determined. *Xanthoma* seldom presents such small lesions as are milia, their color is more of a buff yellow, and the patches are usually seated on the eyelids, and apt to be symmetrical.

Pathology.—These little tumors consist of cellular masses, closely compacted together, and surrounded by a completely closed capsule; the contents are composed of epidermal cells arranged concentrically around a granular or fatty centre. The investing membrane is seen to be cellular within and fibrous without, and the rete and epidermal layers of the skin are perfect over the tumor; no trace of an external opening or duct can be discovered. The compacted mass appears somewhat cracked and fissured transversely, and NEUMANN has described certain connective-tissue bands running through the mass; these latter I have not been able to discover in a number of sections taken from several perfectly characteristic milia excised from the region of the eye. The structure of one of these is exhibited in Figure 13, where the tumor is seen situated between two small lanugo follicles and sebaceous glands which it has pushed aside.

In regard to the mode of formation of milium but little is known; the little tumors appear spontaneously in apparently healthy individuals, but have also been observed to follow pemphigus and erysipelas, and also to occur in consequence of cicatrization from lupus, syphilis, burns, etc. (KAPOSI). Most writers agree in regarding milium as resulting from the retention of sebum in the sebaceous gland; some believe that they have their origin in the hair follicles. ROBINSON has recently claimed that true milium has no connection with the sebaceous glands, that it does not arise from a retention of sebaceous matter, but that it is caused by a "miscarried embryonic epithelium from the hair follicle, or from the rete;" he would

separate the strophulus albidus of children, and the milia caused by inflammatory diseases and cicatrization from

FIG. 13.



Vertical section through a milium excised from the face. A, Mass composing the milium surrounded by the hypertrophied wall of the sebaceous gland, S.G. Hair follicles and sebaceous glands, B, B, pushed aside by the mass.

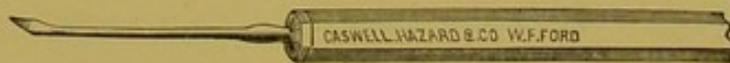
true milium, and regard them as deep-seated comedo. The suggestion of Robinson appears to be well grounded, both from the clinical and pathological aspect of milium.

Several curious conditions have been observed in connection with milium. WAGNER has described a condition which he named colloid milium, where the contents of the tumors appeared of a pale yellowish, homogeneous, semi-transparent or colloid mass. In other instances the contents are found to have undergone calcareous degeneration, and a case is reported by FOSTER where the mass had the appearance of a small urinary calculus, consisting of phosphate and carbonate of lime.

Treatment.—This consists solely in the mechanical

removal of the minute tumors, and slight stimulation by means of lotions (Formulæ 29, 32). As the masses cannot be removed by pressure alone, there being no external openings as in the case of comedo, it is necessary to puncture the overlying tissues slightly; this may be done with a knife or lance-shaped needle, or with one devised by PIFFARD especially for the purpose and represented in Figure 14. After pricking the surface lightly the tumors

FIG. 14.



Miliun Needle.

are readily pressed out, and usually this is all that is required. If they persist in returning, the cavity may be touched with nitrate of silver or iodine, to excite an inflammation which obliterates the sac. HARDAWAY has advised treating the cavity with electrolysis, by means of a needle. Occasionally the little white tumors disappear spontaneously, and some patients claim that they vary in numbers and size, according to the state of the general health.

Prognosis.—The prognosis in both comedo and milium is usually good, although the tendency of the former to recur during youth must ever be borne in mind. Proper care will keep the skin free from the disfiguring specks of comedo, and if internal treatment is followed out and the tone of the system can be improved, they will generally remain absent, although occasional plugs may sometimes appear during a considerable length of time. In milium a single thorough removal is generally sufficient. The prognosis, therefore, should be guarded, as it will generally depend upon the care and assiduity with which the treatment is carried out.

We come now to the third and last division of this first class of non-inflammatory sebaceous diseases.

III. ACNE MOLLUSCUM. (Synonyms: *Atheroma*; *Steatoma*; *Sebaceous cyst or tumor*; *Wen*; *Follicular tumor*: French — *Kyste sébacée*; *Loupe*: German — *Balggeschwulst*). When the secretion from the cavity of the follicle increases to a still greater extent than in the two preceding affections, and exit is prevented, a small tumor forms, having the greatly dilated gland for its sac, and for its contents the altered sebaceous secretion.

Clinical description.—Sebaceous tumors commonly occur singly, often several exist at once, and occasionally they are met with in great numbers. Their most common site is about the scalp and face, less frequently on the back and scrotum, and occasionally on any portion of the body. They are situated in the subcutaneous tissue, and vary in size from that of a large shot to that of a large chestnut, or larger, and are generally of a flattened, globular shape, presenting a hemispherical appearance. They are freely movable, and fluctuation can generally be made out in them, with care; some are more solid than others and give a doughy feeling when pressed on. The skin over them is generally of a normal color and appearance, or of a pale and waxy tint, but may sometimes be red and inflammatory from friction or the irritation arising from over-distention, and sometimes of a purplish-red color from dilatation of blood-vessels.

The larger number of tumors of acne molluscum exhibit no external opening, but are completely closed cysts; others have a larger or smaller opening from which the contents may be squeezed more or less completely, only to have the tumor refill again and again. The contents thus escaping are of a thick, creamy or cheesy consistency, and generally have an unpleasant odor. This latter variety resembles in this respect the little tumors

of epithelioma molluscum, more commonly known as *molluscum sebaceum*, which, however, is quite a different affection, and is not here considered among diseases of the sebaceous glands.

Sebaceous tumors give little, if any, annoyance from subjective symptoms, and may exist for years without inconvenience. Occasionally they occur in situations exposed to friction and pressure, and may then ulcerate and become troublesome.

Diagnosis.—Sebaceous tumors may be confounded with *fatty tumors*, *fibrous tumors* or molluscum fibrosum, *multiple sarcomata*, *multiple neuromata*, and *epithelioma molluscum*. Fatty tumors are usually larger, flatter, and more indefinite in outline. Fibrous tumors are apt to be more pedunculated, and have an elastic, fibrous feel, quite different from the sensation imparted by the sharply defined sebaceous cyst, resistant when pressed upon. Multiple sarcomata are also less distinct in their outline, softer to feel, and are apt to become pigmented soon after their formation. Multiple neuromata and the subcutaneous painful tubercle are hard and very painful; moreover they are very rare.

Epithelioma molluscum or molluscum contagiosum, as it is more commonly called, resembles the form of sebaceous tumors mentioned with an open duct, as far as relates to the discharge of a thick fluid from a central opening, but in appearance its lesions are quite different from any which can occur in sebaceous molluscum. The former are small, globular, or flat, of a waxy, whitish or pink color, with a depression in the centre, in which is seated the opening; the fluid from them is of a creamy or curdy character, and the amount expressed is small. According to most recent and complete studies these latter are not connected with the sebaceous glands, but are outgrowths from the rete Malpighii.

Pathology.—Sebaceous cysts are formed by a more or less complete occlusion of the excretory duct, and the continued production of the secretion of the sebaceous gland, with its retention. As the secretion increases, the walls of the cyst become thickened and fibrous in character, until they form a capsule which can be removed entire, either by dissection or by pulling it out after it has been incised.

The wall of the cyst is composed of an epithelial and a connective-tissue layer, and in young atheroma this latter is usually very delicate. On the inner surface of this wall the youngest, often cylindrical, epithelial cells are situated. On these is a thick layer of cells, the lower ones of which are still supplied with nuclei, while the upper or older ones are already cast off and form the major part of the contents of the cyst.

The duct of the hair follicle or sebaceous gland, the closure of which has produced the tumor, can be traced and demonstrated in nearly every cyst, in the younger ones as a slight, shallow depression, while on the older ones it may have developed into a solid fibrous cord.

The contents of the cysts vary considerably, from a quite thin, yellowish fluid, to one of a cheesy or even almost a calcareous consistency; they are very apt to have a fetid odor. Microscopically, the retained mass is composed largely of altered epithelial cells, mixed with free nuclei, some free fatty matter and some enclosed in epithelium, also leucin, tyrosin, and cholesterin (*cholestoma*), and occasionally small lanugo hairs.

Etiology.—The same causes which favor the formation of comedones and milia, also operate in facilitating the origin of these cysts, which are etiologically connected with these two affections. Special causes have been found in wounds. At times atheromata have developed after erysipelas, and not rarely general diseases of the scalp

have preceded them. Pregnancy has been also observed to favor the development of sebaceous cysts (BIRSCH-HIRSCHFELD). They occur under all conditions of life, and are more commonly observed in those of middle age.

Treatment.—The treatment is wholly mechanical, no internal remedies having effect upon the tumors of acne molluscum. While the sac remains the tumor will pretty certainly refill, however often it is emptied, either through a natural opening or by incision. The treatment, therefore, looks to a removal of this secreting membrane, or its destruction by inflammatory action. The surgical operation of removal is that to be preferred in the majority of cases, as it is simple, quick, and certain.

In smaller tumors, after a slight incision into and evacuation of the tumor, the point of the thumb forceps may be introduced, and the capsule seized and extracted with little difficulty, and often almost without pain. If it breaks in pieces, as frequently happens, some little care must be exercised to find and remove all possible portions. If it is completely removed the entire affair will heal and disappear in a surprisingly short time, often in two or three days. In larger tumors it is often easier to extract them entire, without breaking the capsule. For this purpose the skin is to be incised carefully down to the sac, which may then be enucleated with its contents entire with very little difficulty, the attachments being very slight. They may also be removed by transfixing the base of the tumor with a slender bistoury, and then cutting through the growth outward. Unless it has been inflamed or ulcerated the cyst wall is very loosely attached, especially on the scalp, and can usually be pulled out without the trouble of dissection (ASHURST). The incision usually heals readily by first intention; but in operating on the scalp the danger of erysipelas must always be borne in mind.

When it is desirable to avoid such a surgical procedure, the tumors, after being evacuated, may be injected with iodine; the sac is thus destroyed, and absorption results. Some, again, advise the destruction of the tumor by means of caustics. Smaller tumors may be bored into with a moistened point of nitrate of silver, thrust into the central opening, if such exists, or it may be made to penetrate the tissues with a little rotary motion. After the first eschar has fallen the cyst may be penetrated with the silver, and its walls destroyed; comparatively little scar is left after this in the smaller tumors. For larger tumors MISSET recommends a destruction by Vienna paste applied through an opening in diachylon plaster about one quarter the size of the cyst. This is carefully removed after about twenty minutes, and in two or three weeks the eschar falls off, bringing with it the cyst shrunken and mummified. The wound, which is at first of some size, fills up, and leaves but a small linear cicatrix.

Prognosis.—The atheromata are usually benign tumors; if, however, they ulcerate, they may become malignant. PAGET and others have often observed an epithelioma develop from a sebaceous cyst. With complete removal of the cyst relapse is impossible; if it is left in situ, or partially removed or destroyed, the tumor is very likely to re-form. There is no tendency for these tumors to disappear spontaneously except by the process of ulceration.

CHAPTER VI.

INFLAMMATORY SEBACEOUS DISEASES.—ACNE SIMPLEX.—
ACNE INDURATA.—ACNE ROSACEA.

THE inflammatory diseases of the sebaceous glands are grouped under three heads, namely: First, *Acne simplex*, constituting the mildest form of simple inflammation in and around single sebaceous glands, with or without the production of pus; Second, *Acne indurata*, representing a deeper and more extensive involvement of the peri-glandular tissue and generally including several sebaceous glands; and, Third, *Acne rosacea*, a more superficial and diffuse congestive condition of the vascular supply of the sebaceous glands, often causing their inflammation, and at times followed by greater or less hypertrophy of the entire skin (*acne hypertrophica*). These various forms of sebaceous disease are not uncommonly observed more or less combined with each other, may pass one into the other, and are also very frequently associated with the functional forms of glandular disorder previously described.

I. ACNE SIMPLEX. (Synonyms: *Acne vulgaris*; *Acne disseminata*; *Acne pustulosa*; *Acne juvenilis*; *Folliculitis sebacea*; *Varus*; *Ionthos*: French—*Boutons*; *Dartre pustuleuse disseminée*: German—*Finnen*.)

Acne simplex is the simplest form of sebaceous folliculitis, an inflammatory affection of the sebaceous glands and the surrounding tissue, usually chronic in character owing to the repeated and continued production of the elements composing the eruption. It is characterized by

the formation of acuminate inflammatory papules or pustules, generally isolated and discrete, without particular grouping, and upon otherwise healthy skin, or upon that which is the seat of the functional sebaceous disorders previously described. The most common location of acne simplex is upon the face and back, although it may appear upon every portion of the body except the palms and soles, where, as previously mentioned, no sebaceous glands exist.

Clinical description.—Acne simplex is the most common of all the varieties of acne, and formed nearly one-half of the 1,500 cases here analyzed, it being noted 726 times. In 469 cases it was recorded alone, in 108 cases associated with acne punctata, 72 times in connection with acne sebacea, 46 times with acne indurata, and 31 times with acne rosacea. The eruption occurred 208 times in males and 518 times in females. It is probably much more common in females than in males, as these figures show, the former having the sexual element of causation very marked in a considerable proportion of instances. But, on the other hand, the eruption occurs more frequently in males than is here indicated, less attention being paid to it by them than by females.

This eruption is decidedly one of youth and early life, beginning at or just before puberty, and tending to cease as sexual functions become established. Of the cases here presented, 325 were in subjects twenty years of age or under, 232 between twenty and twenty-five, and only 66 over thirty years of age, as shown in Tables II. and VI. in Chapter III.; the youngest patient seen with acne simplex was a girl aged 10 years. In 163 cases it was recorded that the eruption had first appeared at or before the age of sixteen; of these latter, 129 were girls and but 34 boys. The eruption appears later in males than in females.

The amount and duration of the lesions in acne simplex may vary greatly in different cases, from a few scattered pimples or pustules, or even a single one at a time, up to a very extensive and abundant eruption, covering much surface, and producing great disfigurement. It may occur as a temporary affair, occasioned by indiscretion in diet or other causes, and cease very shortly, or it may remain continuously, or return persistently from one and another cause, even for many years. Thus, in Table V., in the chapter on Statistics, it appears that out of 311 cases in whom this point was recorded, the eruption had lasted at least three years in over forty per cent., and in 31 cases, or one-tenth of the whole, it had existed ten years or over.

The form and appearance of the eruption may also vary considerably in different cases, from very small papular lesions (*acne papulosa*) the size of a pin-head, upward to those of the size of a small pea. They may be decidedly pustular (*acne pustulosa*) or may seem to be wholly inflammatory, and, even though of some size, often run their course without presenting externally much evidence of suppuration. In strumous subjects the pustular element is apt to be predominant, while in those exhibiting the gouty or nervous temperament the amount of pus formed is often exceedingly slight, sometimes hardly perceptible even on lancing the lesion. Between the small papules and the larger inflammatory masses various degrees of inflammation commonly present themselves in the same subject, also lesions in different stages; those just forming will appear close to those which may have been present several weeks, either disappearing spontaneously or yielding to treatment.

If left undisturbed an acne pimple runs its course generally in from four to ten days, but may occasionally take very much longer; it becomes less and less red, the

summit dries, a small scab forms, which is often picked off, and after discharging a little serous fluid the lesion ceases to exist, leaving only a little redness, or perhaps a slight infiltration, which vanishes in some cases slowly, in others in a day or two, or longer. Occasionally it will be noticed that the same gland becomes inflamed again and again, but generally the lesions occur here and there without any apparent rule or reason.

The natural course of the lesion is greatly altered, however, by treatment. Under proper internal and constitutional measures, and also with appropriate local applications, the papules and pustules last a much shorter time, and prompt mechanical interference can cause them to quite disappear in a single day or two, as will be described later.

Ordinarily there are few if any subjective symptoms connected with acne simplex, except a tenderness of the inflamed points when pressed upon; not infrequently nervous patients will state that there is a burning or pricking sensation preceding and accompanying the formation of each papule or pustule, and often a general soreness of the surface may be complained of greatly. Itching occasionally accompanies the healing of the pustules, or occurs when the skin gets dry, and in rare cases it may be a rather marked feature in the eruption, as in the following instance:

Miss M—, aged 26, had had acne lesions on the face for many years, off and on, in varying severity, but in the winter previous to her visit the eruption had increased greatly and had been accompanied with itching; it had improved in the summer but had grown worse again in the autumn up to the time of presenting herself for treatment.

She was found to be in fair general health, although of a rather slight build; her pulse was 100 and weak, at about which point it remained during several months' observation, in spite of a most carefully directed tonic treatment. The general circulation was poor, hands and feet invariably cold, she was subject to indigestion after indiscretions in diet, and at times had very painful menstruation, with much leucorrhœa just before and after the period. Her eruption at first consisted of a moderate number of papules and pustules of acne simplex scattered about the cheeks and chin,

none of them being very large, and on the forehead a much more abundant development of rather small papules quite thickly set, and imparting a sense of roughness to the finger passed over them. She complained greatly of the itching accompanying the eruption on the forehead, but on close examination no cause could be discovered other than the sebaceous disease. The itching ceased very promptly after using an ordinary acne treatment; but on several occasions subsequently it was noted that with a recurrence or increase of the acne, itching was an annoying feature.

In other, somewhat less rare instances, a burning or flushing is complained of, much as in acne rosacea, while, however, the eruption maintains the character of the simplex variety, as exemplified in the following case :

Mrs. N —, aged 25, had been rather delicate and anæmic for many years ; she had been habitually constipated, the menses were regular but profuse, although subsequently they were often delayed, and she was of a very nervous temperament. She had suffered from acute rheumatism at eleven years of age, and her family gave a rheumatic and gouty history, also with phthisis.

Four years previous to her visit she had acne very badly, which had yielded somewhat to treatment, but had never been removed. Latterly the eruption had been characterized by an amount of flushing of the face after eating and on coming into a warm room, which was very annoying. When first seen the eruption was a characteristic acne simplex, composed of scattered and isolated papules and pustules of varying size and duration, together with a considerable number of small comedones, especially upon the forehead, giving it a dark appearance. The element of flushing of the face continued to be noted repeatedly during several years, while the patient was under observation, but the eruption never partook of the characteristics of rosaceous acne, the single, scattered, more or less acute lesions of acne simplex recurring from time to time with the varying conditions of her health and digestion. The circulation was very apt to be deranged, she suffering at times greatly from cold hands and feet, and from congestive headache.

Acne simplex presents itself for treatment principally upon the face, but is also very common to a greater or less degree upon the neck, shoulders, and back, sometimes alone but generally in connection with lesions on the face. Occasionally it appears solely on the trunk and extremities, as a disseminated eruption of small red papules, with or without pustular summits, which persist for considerable time and are slowly replaced by others. There is no regularity in the distribution of the lesions of acne, but the eruption is commonly more or less symmetrically developed.

The papules and pustules of acne simplex do not

ordinarily leave any scars, the process of inflammation and resolution taking place in a simple and perfect manner, and the tissue regaining its normal condition. In strumous cases, however, where the process is much slower and suppuration more profuse, cicatrization may follow, and at times cause very great disfigurement; although this is much more severe, as also much more common, in *acne indurata*. In certain cases, however, minute indentations will be left after an ordinary *acne* of no great severity, and this scarring will occur insidiously, almost without the patient being aware of it. The following case exhibits an average degree of disfiguration from a rather mild *acne simplex* :

Miss O —, aged 24, a rather strumous-looking subject, had suffered continuously from *acne* for eight or ten years previous to her visit; it had never been very severe or disfiguring, but had always been sufficient to give annoyance. She had always had catarrhal trouble, and three or four years before the date of the first observation, she had disease of the lungs, said to be phthisis, with which she was confined to the house four months.

When first seen she appeared weak, pulse 100, she complained greatly of her cold hands and feet, which were never warm, and of the perspiration of the hands, which wet through gloves in two hours. She had more or less flatulent dyspepsia, and was languid and sleepy all the time.

The eruption was seated mainly on the forehead and cheeks, and consisted of many small papules and pustules with comedones interspersed, and a considerable amount of oily seborrhœa over the entire face. The cheeks, and somewhat the forehead, were the seat of a very decided scarring, which was also very visible some months after, when all lesions had ceased to occur and when she was in a very much improved condition of health. These scars, which had come gradually, being added to year by year, were all comparatively small and superficial, some of them being an eighth of an inch across, many of them quite linear in shape. In some places they touched one another, but generally were quite scattered, there appearing to be several dozens of them.

These scars are not a necessary accompaniment of the eruption even in these strumous cases, for they result from a long continuance of the single lesions, and active treatment can quite prevent their occurrence.

The general derangement of the sebaceous glands seen in some cases of *acne simplex* is very striking, and the improvement in their action under tonic treatment

is also very marked in many cases ; the functional disorders bear a close relation to those which are inflammatory in character, and vary coincidentally with them, as in the following case :

Miss P—, aged 20, a well-developed girl, with light hair and complexion, had always enjoyed good health, and knew of no cause for the eruption; the digestion was normal, with regular, daily action from the bowels, and normal menstruation.

The eruption had existed four or five years, in varying severity, and a year previous to her visit she had had much larger lesions on the cheeks and chin. On examination the entire face was found to be the seat of acne simplex, with small papules and pustules sprinkled over much of the surface, together with very many comedones and much seborrhœa. This latter was mainly of the oily variety, but there was also a considerable amount of greasy scaling on the face. The scalp was the seat of an oily seborrhœa of such extent and severity that the hairs were fairly saturated and matted together with it, and the hand placed on the head became greasy in a moment. Although claiming to be in good health she was found to be rather weak and anæmic, and easily tired ; the pulse ranged from 84 to 90 and was weak; the hands and feet were cold, the former always moist, and when tired she was apt to suffer from headache. The improvement was marked and rapid under a powerfully tonic treatment, combined with local measures to the face. The scalp also soon changed greatly in condition, without any local treatment whatever, the excessive secretion from the sebaceous glands diminishing as her strength increased.

A little careful observation of many cases of acne simplex will very clearly show the intimate relations which exist between the skin lesions on the one hand, and on the other hand errors in diet, the state of the general health, and the many elements of causation considered in the chapter on Etiology. The following case exhibited this relationship in a very marked degree on many occasions, during several years while under observation :

Miss Q—, aged 19, a delicate appearing girl, with light hair and complexion, had never been very strong, though she was never really sick. She had from time to time suffered from symptoms of spinal weakness, and eighteen months previous to the date of the first observation she had been kept on her back four months for its treatment. Her acne had lasted three years, and was aggravated greatly by this confinement to bed, and also by bromides taken for the nervousness caused by the pain in the spine.

When first seen the entire face was covered with a great number of comedones, and many pustules scattered here and there, some of them being of considerable size ; the eruption had been even much worse. She was found to be habitually constipated, the digestion quite poor, with tendency to nausea and no appetite, the menses were regular, but profuse and generally very painful, and she often had leucorrhœa ; she was still suffering from pain in the spine, mainly the middle portion. Her pulse was 120, and frequently registered 110 subsequently, the tongue was coated, and the entire

picture was one of great debility. The diet was regulated, she was given alkalis before meals and iron and nux vomica after, and, with an astringent lotion to the face, she made great improvement in a few weeks. But with a depression in her general health and feelings she again had an increase in the eruption, which yielded with more difficulty. Again and again was this noted during a number of years while she was under observation; with each digestive or menstrual disturbance, or with especial fatigue, as from a long railroad journey, or from increased pain in the spine, which resisted the most careful treatment at the hands of several eminent specialists, she would invariably have a reappearance of or an increase in the eruption on the face. This latter was a source of very great distress to her, and undoubtedly aided in depressing her general health.

Occasionally acne simplex will change its character and develop into one of the other inflammatory forms, acne indurata and acne rosacea, and many cases of these latter eruptions will have some of the smaller lesions of acne simplex associated with them. In other cases the eruption will maintain its distinctive features for many years, and it is not at all uncommon to find the papules or pustules of acne simplex, appearing often singly, even in persons forty or more years old, who have been subject thereto since puberty, upon the occurrence of digestive disturbances; cases could be cited where this had happened almost every time when certain indigestible articles were partaken of at all freely.

Acne artificialis. This represents an inflammation of the sebaceous glands caused by medicinal substances taken internally or applied externally. In certain individuals compounds of iodine and bromine excite an eruption consisting of papules and pustules which are hardly distinguishable from those of ordinary acne simplex. They are conical, seated upon a rather large, bright-red base, and sometimes exhibit much inflammatory action, followed by persistent induration; although very often the lesions amount to little more than a few small pimples causing little annoyance. Bromic acne is apt to be more severe than that from iodine, and in those who are obliged to take large doses of the bromine salts for a long period it may amount to very serious disfigurement;

with this there is often deep-seated suppurative inflammation, followed by much cicatrization.

The external use of preparations of tar may also excite inflammation of the sebaceous glands. The lesions are then characterized by an intensely black point in the centre, with more or less of inflammation of the skin between the papules and pustules. This occurs also in those who work in tar, and in occasional instances, even the presence of the vapor of this substance will be sufficient to cause the eruption. These lesions are most commonly observed upon the extensor surfaces of the extremities. The acne mentioned by PURDON and others as occurring on the arms and faces of those engaged in flax-spinning, is probably of this nature. It occurs in those employed in removing the bobbins from the machines, and in cleaning and oiling the same, the workers at this being generally young girls. The eruption is a papular one with many black specks, showing obstruction of the sebaceous follicles.

Diagnosis.—Acne simplex is an affection which is so common that it would seem that no difficulty should be experienced in its diagnosis. The history of the case with its chronic course and constant reproduction of new lesions, the age of the patient, the presence of other sebaceous disorders, the multiform character of the lesions and their behavior under manipulation, the inflammatory nature of many of them and their tenderness on pressure, form together a group of symptoms which can hardly be mistaken. But it occasionally happens that a sudden development of the papules and pustules, or the presence of another disease elsewhere, or peculiarities in the eruption, or other reasons, will cause some question to arise in regard to the nature of the lesions. The only eruptions which are at all likely to be confounded with it are *papular eczema* and the lesions of *syphilis*. The papules of

eczema are never as large as those commonly seen in acne simplex, except when they are impetiginous or furuncular, which are then distinguished by their more acute and painful character. But the fine, closely set papules of acne on the forehead or chin can often simulate eczema, and when there is some itching, as in the case previously cited, the diagnosis may be a little difficult. But the papules of eczema are smaller, are more apt to be grouped together in patches, and to present some infiltration of tissue; they commonly itch greatly, and exudation shortly occurs forming a scab or crust. In this latter eruption, moreover, there is a diminution or even arrest of the sebaceous secretion, whereas in acne it is excessive.

The papular and pustular lesions of syphilis, especially upon the face, back, and chest, resemble those of acne simplex so closely as to lead many writers to speak of the eruption as *acne syphilitica*. This, however, is a misnomer and should never be employed; the lesions are not acne, but simply inflammatory or neoplastic points in the skin which have much the same appearance as this eruption. When the lesions of syphilis are general and other symptoms are present, the diagnosis should be made readily; but it not infrequently happens that the eruption is concentrated upon the face, and sometimes late in the disease its only manifestation will be a few lesions in this situation. Fortunately the papules or pustules of syphilis have a strong tendency to group themselves together, while those of acne seldom, if ever, are thus seen, but are scattered irregularly over the portion attacked. The lesions of syphilis seldom present the acutely inflammatory character of those in acne simplex, and there is the absence of the sebaceous plug in their centre; their summits are also apt to be rounded, while those of acne are conical. The general, diffused acne of the trunk and ex-

tremities is sometimes very difficult of diagnosis from papulo-pustular syphilis.

In rare cases the lesions of *erythema multiforme* can be mistaken for those of acne simplex, and it has also occurred during epidemics of *small-pox* that this eruption has been confounded with acne. It should never be forgotten that other eruptions may occur in connection with all the forms of acne, and the lesions of two or more diseases may be seen side by side; the iodide and bromide eruption is frequently thus observed, and it may be extremely difficult, if not impossible, to determine which of the lesions are caused by the drug and which arise from other causes.

Pathology. — Acne simplex consists in an inflammation in and around the sebaceous glands. This inflammation stands in close relation to a faulty action of the gland, whereby the secretion becomes hardened and retained to a greater or less degree, forming a comedo, either seen externally or hidden in the cavity of the gland. The immediate exciting cause of the inflammatory action differs widely in different cases, and cannot always be determined with certainty: in some instances it evidently arises from external, mechanical or other irritation, as by attempts at removal of the comedo plug, but in a large proportion of cases the inflammation appears to be spontaneous, the presence of the lesion being accidentally discovered, often by the tenderness in a particular spot, it may be, quite deep seated.

The views of writers in regard to the cause and primary seat of the inflammatory changes in acne vary somewhat, although all agree in considering the gland and its duct, the hair follicle, and the surrounding connective tissue as participants in the process (HEBRA, KAPOSÍ, G. SIMON, VIRCHOW, BIESIADECKI, NEUMANN). HEBRA and his followers regard the comedo as the definite cause of the resulting

pustulation. The ducts of the glands are closed by the hardened masses which prevent the normal excretion of sebaceous matter, which, however, continues to be secreted; over-distention of the gland naturally results, and the sebum acts as a foreign body in causing irritation. Disturbances of nutrition occur, inflammation in the surrounding tissue is lighted up, and pus is formed. Hebra insists that the external redness and swelling are entirely secondary to the pus which has been formed deep about the retained sebum, which may be demonstrated by a deep puncture long before any sign of suppuration can be discovered externally (G. SIMON, RINDFLEISCH).

NEUMANN, on the other hand, while acknowledging the importance of the comedo, thinks that the inflammation is primary in causing the changes observed. He holds that the inflammation causes a hypersecretion of sebum, which then acting as a mechanical irritant by distending the gland, or by virtue of some chemical decomposition, further aids in extending the process to the follicle and surrounding tissue.

RINDFLEISCH regards the inflammation as primary and perifollicular, but considers the corium in which the gland is situated as the focus, the gland wall and its contents being secondarily implicated. He has always failed to find any trace of the external hair-sheath in an acne pustule, and has found the contents of ripe pustules to consist only of pus, some epidermic cells, and the hair proper.

VIRCHOW holds that the inflammation is due either to the stagnating sebum collecting in the duct or gland proper, preventing excretion and acting as a mechanical irritant, or that functional disturbance is the cause, the secretion being either too profuse or chemically altered. E. VEIEL considers that the cause is insufficient action of the glands, allowing the sebum to become inspissated in

the duct, which thus induces inflammatory changes by the irritation of its presence.

BEHREND follows the teachings of the Hebra school. He ascribes, however, the constant occurrence of new lesions in the neighborhood of already existing ones, to the closure of the gland ducts by the pressure excited upon them by the tissue which is distended with inflammatory infiltration; each successive gland as it becomes inflamed thus aids in extending the disease.

The English school (WILSON, FOX, LIVEING, MORRIS), considers retention of sebaceous matter to be the primary cause of the changes observed, and that the irritation of its presence leads to congestion and inflammation of the corium immediately surrounding the duct. The French school is divided in regard to the primary or secondary character of the inflammation, but furnishes little pathological evidence either way.

It will be observed that the weight of opinion is in favor of regarding the retention of sebum in the gland or its duct as the primary cause of the inflammation, the folliculitis, and that the peri-folliculitis is consequent thereupon. This view is confirmed by the clinical features presented, for in many of the papules and pustules of acne simplex, the black extremity of the retained sebaceous plug can be seen in the centre. In many more of the lesions this is not visible, and superficial observation would fail to recognize this element. But if the papule, or early forming pustule, be evacuated by firm and sufficient pressure, as described under acne punctata, aided if necessary by a minute incision deep enough, the inspissated plug can generally be discovered; but in glands which have undergone much suppuration the sebaceous plugs will have become softened, and so are lost in the escaping contents.

The inflammatory process in acne simplex, therefore,

may be looked upon as an effort to free the gland of its accumulation of sebum, just as a splinter or other foreign body causes inflammatory action in the effort of the tissue to expel it. Why this does not oftener occur, and why in so many instances the plugs of sebum in acne punctata remain for so long a time without causing inflammation, cannot be answered with certainty. It has to do, in all probability, largely with personal idiosyncrasies and general conditions of health, which at one time render the tissues less tolerant of the hardened and retained sebum than at another. External and mechanical agencies also have somewhat to do with exciting the inflammation; likewise the changes which take place in the circulation of the face from various causes, which more readily localize and produce inflammatory changes in places where there is a mechanical source of irritation. It is furthermore quite possible that chemical changes may take place in the retained sebum, which render it irritant to the surrounding tissues, as we know that sebum retained beneath the prepuce readily becomes altered by decomposition and can give rise to inflammation of the part. No researches have been yet made to show the part played by the nervous system in the production of these lesions, although, as stated in the chapter on etiology, it appears probable that in many instances sebaceous disease is directly excited by reflex action.

It is probable that in the case of many comedones the secretion really has free exit, as the plug is continually pushed out and worn off by friction. This may be better understood by referring to the description and illustrations of acne punctata nigra (Figs. 6, 7, 8, 9) in the preceding chapter. When now, from some cause the retention increases, and the body of the gland is distended, and possibly the secretion becomes irritating by decomposition, activity of circulation is excited, serum is exuded

into the gland to soften the plug, further irritation causes pus to be formed and the acne papule and pustule are the result. This explanation seems most probable, because clinically we find that the comedones with a large external opening are least often involved in the inflammatory process, while smaller ones, deep-seated, forming a hard, compact mass and with a small opening of the duct, are very apt to be the centre of a papule or pustule.

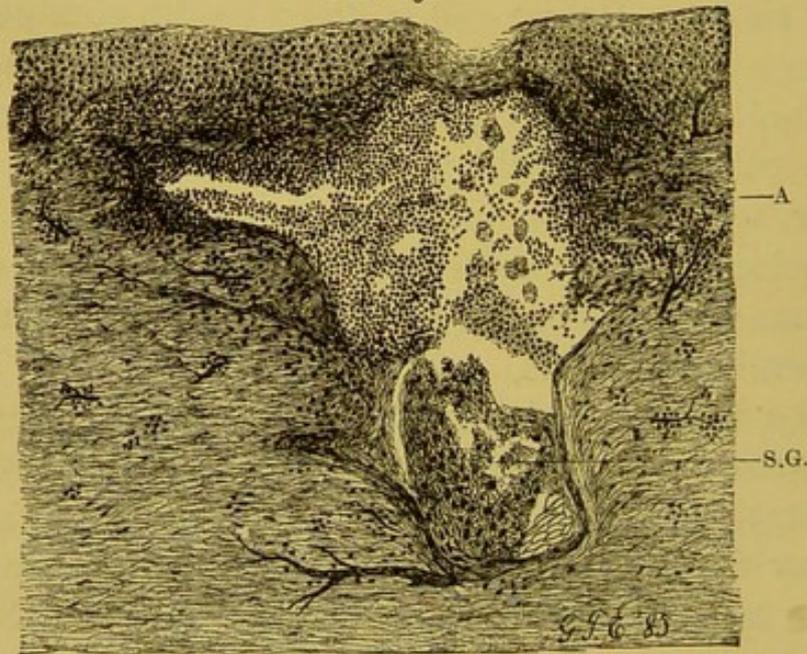
If relief is not obtained the inflammatory process continues until the occluding mass is quite softened and finds ready exit, or is absorbed. If this process continues sufficiently long the gland cells are destroyed, with some of the surrounding tissue, and a pus cavity is produced, which must be filled with plastic material, forming cicatricial tissue. If free exit is given to the confined sebum and pus, either by forcible expression of the plug or by a puncture with a lancet, the individual papule or pustule, which otherwise would possibly have lasted a week or longer, subsides in a single day, and, the source of irritation being removed before the destruction of the secreting cells has taken place, no cicatrix is formed and the gland resumes its functions.

The changes which take place in the skin vary, therefore, according to the intensity of the inflammation and its duration. BIESIADECKI and KAPOSI found that in the papular form of acne simplex the upper portion of the corium and papillæ were alone implicated in the inflammatory process, with turgescent blood-vessels and serum and exudation cells in the distended meshes of the tissue. In pustular lesions the suppuration was in some cases limited to the duct, but in deeper pustules the surrounding tissue was infiltrated and the gland cavity filled with a purulent and bloody mass, the entire structure of the gland and adjacent hair follicle being lost in the case of more severe and deep-seated lesions.

The examination of many sections from a number of pustules of acne confirms the descriptions given, and demonstrates clearly that the amount of change occurring in the tissue depends upon the intensity and duration of the inflammation; the accompanying drawings of two of the sections (Figs. 15, 16) show well the changes observed.

If a section through a pustule of acne simplex be examined under the microscope, it shows only the changes which accompany inflammation in general, there being nothing specific in the inflammation of the sebaceous gland. The vessels are dilated and turgescient with blood, the peri-follicular tissue sodden by serous transudation, and infiltrated with small round cells and leuco-

FIG. 15.



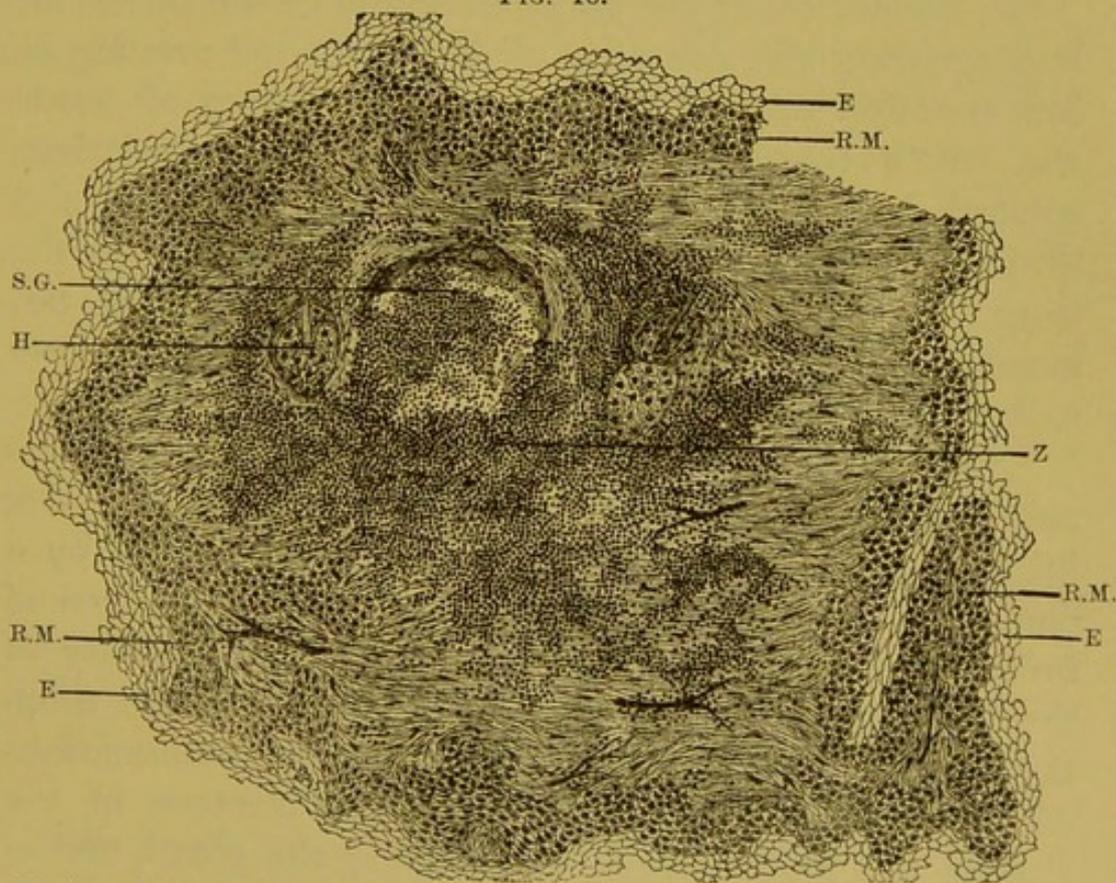
Vertical section through a small acne pustule taken from the back. S.G. Sebaceous gland in a state of inflammation, already destroyed in its upper portion and filled with inflammatory products, A : in its lower portion the secreting cells are still intact.

cytes in varying amount. The infiltration may be only slight and limited to a few papillæ, or may extend widely on each side of the duct or gland. The glandular cells corresponding to the portion affected are early destroyed, and their place occupied and invaded by pus cells. The

wall of the gland also undergoes change, the accumulation of pus within it either bursting it or the inflammation causing it to melt away; thus more or less of its structure will be found to be destroyed.

In milder lesions of acne simplex often only the upper portion of the gland and its duct are destroyed, while the lower portion remains with its secreting cells intact, as already shown in Figure 15. But where the obstruction to the duct has been very great, and no outlet to the accumulation of pus has been possible, the inflammation is seen to involve the entire gland, and only a pus cavity is seen. It will appear later that this deep-seated inflammation is

FIG. 16.



Horizontal section, slightly inclined to the surface, through a small pustule of acne simplex. S.G., Sebaceous gland surrounded by inflammation cells, one side of its wall, Z, being entirely destroyed. On either side of the inflamed gland is a hair, H, with a normal gland attached. In this section the rete Malpighii, R.M., and epidermis, E, are seen surrounding the pustule, being raised up by it and cut through in the preparation of the specimen.

the common event in *acne indurata*, in which the upper portion of the gland is often spared.

In some pustules it will be found that the destruction has affected only one side of the glandular wall, the other side remaining intact, as seen in Figure 16, taken from a cross section through a pustule of *acne simplex*.

An examination of the pus which fills the cavity shows it to contain leucocytes, infiltration cells, epidermic cells, some sebaceous matter, and serum. Where the hair sheath has been implicated, the hair bereft of its coats protrudes into the cavity.

In *acne artificialis* the lesions vary according to the cause. In that induced by tar and its preparations, *acne picea*, the orifices of the ducts are found closed by the tar impregnating the contents of the ducts and exciting an inflammation around them, inducing changes of tissue the same as those previously described. The acne lesions excited by *chrysophanic acid* or *chrysarobin* are also similar, the black point in the centre being caused by the drug; the lesions are, however, larger than those of tar, more tubercular, and the inflammatory area is much more extensive.

Artificial acne, arising from the internal use of *iodine* and its preparations, *iodic acne*, differs from *acne simplex* in having the gland duct free and not occluded by a comedo. PELLIZARI has lately made investigations of iodic acne, and concludes that a special irritability of the blood-vessels plays the important part in the eruption. He finds, upon making microscopic examinations of pustules of iodic acne, a decided increase in the size of the blood-vessels surrounding the gland, and of those in its immediate neighborhood, also an infiltration of round cells in the tissues near them. The lesions seen in acne produced by iodine consist of papules and pustules, in some cases tubercles, and Pellizari mentions a

case in which large subcutaneous tubercles appeared which ran an acute course and, breaking down, presented much the same appearance as is seen in the tubercle of glanders. The amount of infiltration in the tissues is extensive, and pustulation ensues rapidly, but the amount of pus is small.

In a microscopic examination of the so-called acne pustules of an iodide eruption, DUCKWORTH found that they chiefly implicated the superficial layer of the cutis vera. The papillary layer at the affected part was flattened out, stretched, and even excavated, and contained a large number of small cells and a quantity of newly formed fibrous tissue. Blood-vessels were numerous, and ensheathed in exudation corpuscles. The sweat glands seemed entirely unaffected. There was no involvement of the hair follicles. From this he infers that the lesions are not of the nature of acne, but are due to superficial, localized dermatitis, resulting in cicatricial tissue. THIN also states that the lesions are rather due to an effect of the iodine upon the blood-vessel walls, and that they are independent of the glandular or epidermic elements of the cutis. Clinically, however, the lesions appear to be a form of acne, and are often indistinguishable from the ordinary papules and pustules of acne simplex, with which they may be intermingled, and which are certainly often greatly aggravated by the internal use of iodine. This "iodic acne" in its ordinary, milder form seldom leaves scars, but in very severe cases where the eruption has become tubercular this may occur.

NEUMANN and others consider the folliculitis to be due to the irritation produced in the gland by its excretion of the iodine. GUTTMANN claims to have demonstrated the presence of iodine in the contents of the pustules, and ADAMKIEWICZ also found the same. PELLIZARI, on the other hand, failed to find any trace of it whatever. The

matter is yet far from being decided as to the manner in which the iodine causes the inflammation of sebaceous glands; quite possibly as NOTHNAGEL suggests, the iodine salt, which is excreted upon the skin with the perspiration, is decomposed by the fatty acids of the skin, and the iodine thus set free acts as a local irritant. The lesions of iodic acne are very acute, appearing in a single day, and vanishing almost as quickly when the administration of the drug is discontinued and elimination aided.

The pustular eruption which is due to the internal use of *bromine* and its preparations is apt to be more marked and severe than that due to iodine; forming large pustules, tubercles, and even furuncular lesions. NEUMANN has made special studies in this eruption with the following results: On section through the cutis which is the seat of a bromic eruption, the sebaceous glands are seen to be enlarged and to contain sebum and pus cells. Some of the glands are transformed into closed, globular cysts filled with dried masses of epidermis, the inner surface of the cyst being lined with epithelium. Some have their ducts still intact, while the glandular walls of others have developed bud-like prominences. In all of the glands there is an increase of epithelial cells, between which lie pus cells and smegma. The duct of the cyst may also be enlarged and filled with horny cells. In the cutis round cell infiltration is more or less abundant, and lies around the gland and in the papillæ, which latter are lengthened. In severe eruptions from bromine ulceration occurs, followed by a darkly pigmented cicatrix, resulting from destruction of the gland. The hair follicles are also found to be affected. The lesions are plainly due to the effect of the bromine salt taken internally, but the method of its action upon the sebaceous glands has not been determined; bromine has been found by GUTTMANN in the pustules of this eruption.

Etiology.—The first element to be recognized as an etiological factor in acne simplex is undoubtedly youth, as has been already shown in the previous chapters. With the development of the system toward perfect adult life the structure of the body undergoes changes which are familiar to all. The adipose tissue everywhere increases, the form becomes rounded by filling out of muscular inequalities, and the skin takes on an activity in the growth of hairs and the consequent development of the sebaceous glands, which are structurally off-shoots from them. Thus, normal activity leads very naturally to disease, and imperfect action in the glands results in inflammation and in the lesions of acne simplex.

But too much importance should not be attached to youth as a cause of this eruption,—First, because multitudes pass this period without having much or any disease of these structures; Second, because under proper care the vast proportion of cases can be benefited if not cured while youth remains; and Third, because, as will appear later, the other varieties of sebaceous disease appear later in life, and even the separate papules of acne simplex may be observed in middle age, long after the sexual life has become thoroughly established.

We must, therefore, look rather for causes which affect the individual, and we shall find that the same etiological elements induce sebaceous disease at all periods of life, but that these are most apt to be present during youth, as they are also most likely to be operative when the glands are in the state of greatest functional activity. In the chapter on Etiology we have seen that a large number of those coming under treatment for diseases of the sebaceous glands exhibited debility, and in many cases very marked disorders of the digestive system existed. It is in acne simplex that debility and anæmia appear most prominently as a cause of the eruption. With this are

constantly found disorders of circulation, from the weakened heart force. Cold hands and feet, even in summer, are constantly complained of by acne patients, together with anæmic headaches, palpitation, etc. Such symptoms existed frequently and were recorded in 77 patients out of the 420 with acne simplex in private practice.

Constipation, or an irregular and imperfect excretory action of the bowels, is constantly observed in those who exhibit severe or rebellious acne simplex, and it is very common to observe, or to have it remarked by patients, that the eruption is aggravated or even caused to reappear when a sluggish condition of the bowels has occurred. Habitual constipation was recorded in 124 cases, and a greater or less tendency thereto in 44 more cases, out of 374 private patients the notes of whose cases were complete in regard to this point. If cognizance of the character and amount of the secretion could be more frequently and intelligently made, an even larger proportion of these cases would be found to exhibit evidences of wrong action in this direction; the movements were frequently recorded as clay-colored or very dark, or offensive, etc. A remarkable illustration of the connection between acne and obstructed intestinal action is afforded by a case recently reported by SCHAEFFER. A young lady, aged twenty-four, had been out of health for nine years, with constant headache and nausea, giddiness, irregular heart action, etc., and with abundant and persistent acne of the entire face and shoulders. A very large impaction of fæces was found in the colon, for the removal of which complete dilatation of the sphincter ani was practiced. When relief was thus obtained the acne of many years' standing disappeared almost immediately.

But constipation is not an independent cause, the simple removal of which will cure the skin eruption; it is really only one of the signs of imperfect or impeded digestion

and assimilation, which is usually associated with many other evidences of the same, whose removal is necessary for a cure of the eruption.

A certain number of cases of acne simplex present what is ordinarily recognized as dyspepsia, oppression at the epigastrium, and heart-burn, but in a very much larger number of patients a little care will detect many other symptoms equally significant, as has been shown in the preceding chapter on Etiology; although not infrequently correct statements in regard to these matters is obtained with difficulty. Suffice to say these departures from normal digestion are peculiarly liable to occur in the young who are continually taxing their digestive powers by candy, nuts, and many articles eaten between meals, to say nothing of wrong and hasty eating and imperfect mastication, the use of much iced-water with the meals, etc. Out of 369 patients, in regard to whom this point was noted in private practice, there were 197 who presented evidences of imperfect digestion to a degree which was readily recognized and recorded. The experience was very common to find that indiscretions in diet were repeatedly noticed by the patients to be followed by fresh outbreaks of acne.

Sexual disorders in females are recognized by many writers as an element in the causation of acne in general, and a study of the cases here analyzed shows this to be true in regard to acne simplex to a greater degree than is often acknowledged. It is frequently not a little difficult in the case of young girls to discover the real condition of this function, and a hasty questioning will often quite fail in revealing the desired facts; in many the difficulty arises from ignorance, and only careful and repeated interrogation, as to dates, duration, amount, physical feelings, etc., will succeed in determining the matter. In many of the private cases here analyzed no record of these

points was made, but in sixty-two cases it was noted that the eruption was particularly worse just before, after, or during menstruation; and menstrual disorders, such as irregular, scanty, profuse, or painful menstruation were recorded in 186 cases out of 274 in regard to whom this matter was noted; in many of them leucorrhœa was also a troublesome feature. In but very few was any uterine displacement or organic disease determined, but in a number of patients ovarian irritation was noted.

I have not been able to discover with certainty much connection between sexual conditions in the male and acne simplex, although it is claimed by many that masturbation is a frequent cause of the eruption. It is certain, however, that where unnatural sexual excitement or exhaustion exists in either sex the eruption is especially bad and unusually obstinate; it is occasionally asserted by patients that fresh lesions appear after each nocturnal emission.

Local causes seem to take little if any part in the causation of this form of acne.

Treatment.—From what has preceded it is readily seen that to be effectual the treatment of acne simplex must aim at removing the causes which lead to the constant reproduction of the lesions, and should not rest simply with the removal of the lesions present at any one time. Constitutional and general treatment are necessary, both for any permanent success and for speedy benefit to the local condition; but local measures, as will appear shortly, form also a very important part of treatment.

The constitutional measures to be employed relate to the condition present in each individual patient, and no general treatment can be formulated which will prove of service in every case of acne, nor even in the same individual at all times; each patient must be studied separately and the plan of treatment adapted accordingly. There is no specific in any of the forms of acne; arsenic

approaches the nearest to it, and cod-liver oil next, but both of these fail in very many, if not most, cases, if used alone or without proper attention to other details of treatment.

The causal elements mentioned under Etiology must, therefore, be sought for and removed as far as possible, and great care should be given to restore a healthy tone to the general system.

The diet is often a very important factor in the causation and cure of all the varieties of sebaceous disease, and should never be neglected in acne simplex. It is not enough to simply direct that the diet be restricted, but special instruction should be given in regard to articles which can and cannot be taken, etc., to the mode of eating, the avoidance of articles between meals, and the various elements leading to perfect nutrition. The subject will be more fully treated of in the chapter on Diet and Hygiene.

Acne simplex may be regarded invariably as a result of debility in some form, and the general line of treatment—dietary, hygienic, and medicinal—should always be such as will lead to an improvement of the general condition. In ordering the diet, therefore, care should be taken that it be not too greatly restricted, for it frequently happens that patients cut off one and another article of food by the advice of this or that person, until there is not sufficient taken to properly sustain life and strength.

A considerable proportion of cases of acne simplex are benefited by powerful tonics from the very first, and in some cases an iron and arsenic mixture (Formulæ 1, 2) will be all that is required internally, the eruption steadily decreasing under its administration, and finally ceasing and remaining absent until some new cause for an eruption has arisen. Other forms of iron may also be given with advantage (Formulæ 3, 5, 6), and generally arsenic

will be of service, combined with it, especially in anæmic and chlorotic cases.

Care must always be exercised while this is taken, and throughout the treatment, that the action of the bowels is free and natural. For this purpose it is often well to give a mild cathartic occasionally (Formula 13), the compound gamboge or compound cathartic pill answers very well. For habitual sluggishness of action a pill of aloes and iron (Formula 15) is often effectual taken in diminishing doses as the condition improves.

The fluid extract of cascara, in small doses before the meals, is also often an efficient remedy in these cases, while with some patients Kissingen water, taken daily before breakfast, for some time, answers excellently. I have not found the same benefit from the use of the stronger mineral waters, such as Hunyadi, or from such articles as Carlsbad salts, etc., which are frequently employed; and in the main I prefer to modify the intestinal action by substances given as medicines, where the dose can be regulated accurately according to the varied condition of the patient.

But many cases of acne simplex will be made worse instead of better by this course of treatment, or it may happen that at some time during the progress of the case iron or other tonics will not agree. There will then often be found evidences of imperfect digestion, which must be rectified before benefit can be had from any specially tonic treatment. This faulty digestion, however, may not show itself by uneasy sensations in the stomach, but often only by some of the later evidences of imperfect disintegration and assimilation, such as urinary derangements with urates or oxalate of lime, often only by restless and troubled sleep, or by some of the many signs mentioned elsewhere in the chapter and sections on Etiology. More often this indigestion is of the acid form,

and will be removed quickly by a course of alkalies with bitter tonics (Formulæ 9, 11, 12); more rarely acids and pepsin are required (Formulæ 7, 8), the nitric acid being especially beneficial when there is a tendency to flushing of the face. In cases where the indigestion is the result of the excessive use of iced-water, the very greatest benefit to the acne will be found to follow the administration of hot water, in full doses half an hour to an hour before each meal; this is also of great service where, as frequently happens, too little fluid of any kind is taken daily.

Sulphide of calcium is of undoubted value in cases characterized by suppuration, but is very frequently found to fail even in these, if proper care is not given to the diet and to the regulation of the bowels, etc. It is not a specific in acne, and has little if any effect on papular lesions and comedones. It may be given with best advantage in one-sixth to one-quarter grain doses every two hours, irrespective of meals. It is best prescribed in gelatin-coated pills, which generally retain their strength perfectly. When the drug is kept in stock and dispensed in powders or extemporaneous pills, it is often found to have lost its strength, and to have become converted into gypsum, which is inert; this may account for some of the failures in the use of the drug. It must not be forgotten, however, that in occasional instances this remedy will not only fail to relieve the eruption, but may even act prejudicially, and, as is shown by ALEXANDER, may cause lesions similar to those for which it was given.

Glycerine taken internally is at times of considerable value in acne simplex, as recommended by GUBLER some time since. Whether it acts in any peculiar manner upon the glands themselves, or only as a nutritive, I am unable to say. I have obtained very striking effects with it, both alone and combined with iron and quinine

(Formula 3). It requires some addition to make it palatable, and a little compound tincture of cinchona or gentian renders it quite unobjectionable. To get full effects from it the dose should be rapidly increased from a teaspoonful to a tablespoonful or more, after eating. It is especially useful in strumous patients, in which class of cases cod-liver oil often finds its greatest service.

Occasionally acne will not yield to any of these remedies, and an alterative course with a little bi-chloride of mercury will prove of value (Formula 4), associated with free use of a bilious pill (Formula 13), repeated every week or so. It is not supposed that the mercury is given on account of suspected syphilis, although it is not impossible that distant hereditary influence may exist and account for its value in some cases; but, as in other conditions, it acts in some way quite unknown, as a tonic, possibly by an action on the liver in making its functions to be more naturally performed.

Local treatment. Although constitutional measures are necessary for the arrest of the formation of the lesions of acne simplex and the cure of the disease, and to prevent relapses, local treatment plays a very considerable part in the management of the eruption, and is capable of aiding greatly in the relief of the lesions present.

First it may be premised that care is to be exercised against the adoption of too harsh measures, which are often used unnecessarily, as well as prejudicially. The papules and pustules of acne simplex are, to a certain degree, self-limited, and, as has been stated, tend to run a more or less acute course, of from four to ten days' duration, more or less, sometimes lasting but two or three days. The lesions are inflammatory, and if relief is not given to the distended and inflamed gland by the local treatment employed, greater irritation may be produced and the desired end prevented. In the main, then, sooth-

ing and astringent applications are called for in most cases, with the addition of stimulants, as will be mentioned, when the lesions prove resistant.

When there is much congestion of the face, and the papules and pustules are inflammatory in character, much benefit will follow the proper employment of hot water. To be of value the water must be hot and not warm, and should be used in the following manner: The patient takes a soft handkerchief, not a sponge, and, after dipping it in the water, holds it to a portion of the face until the heat is dissipated, say about half a minute, not much more; it is then dipped again, and held quietly to another portion of the face, and the process is repeated until all the affected parts have been soaked thus twice; but the entire operation should not last many minutes, two or three generally suffice. The face is not to be bathed in the ordinary way with the hot water, but should be thus soaked with it, the continuous heat being of service. The portion affected will be found to bear water so hot as to be uncomfortable to the hands, but there is no necessity of scalding the face, as has sometimes happened.

This hot-water soaking should be performed at night, and immediately afterward the face is to be thoroughly covered with a soothing lotion (Formula 24), applied by pouring some out and sopping it on well with a bit of muslin; to inflamed points a bit of linen, or absorbent cotton, soaked in this or other lotion may often be applied and left to dry on, with the best results. This lotion remains on the surface all night, and in the morning the face is to be washed in the ordinary manner with cold water, or that of the temperature of the room; the lotion is then to be lightly applied again, and left on during the day as much as is possible.

With proper dietary and constitutional measures this

will sometimes be all the local treatment which is required in some cases, but in other instances the lesions prove more rebellious, both as to their duration and their continued production. More stimulating and astringent remedies are then called for, and among these such as contain sulphur stand first (Formulæ 17, 18, 19, 20), these being applied in the manner first described. If greater stimulation is required it may be secured with the green potash soap alone or in solution (Formulæ 33, 34), or caustic potash (Formula 35). These are to be briskly rubbed over the part affected by means of flannel, and after a few moments are to be followed by a soothing ointment (Formulæ 43, 44). It is to be remembered that the object of this treatment is to stimulate the part, and to cause lesions which could otherwise take a sluggish course, to come quickly to a termination. This plan of treatment is often followed by very considerable temporary and apparent increase of the eruption, caused by the inflammation of points which otherwise might not be apparent, and by more or less of general desquamation; thus many comedones which before appeared only as small black points may be stimulated and inflamed, and so become very prominent as papules or pustules. These effects, however, soon pass off, and the surface is left smooth and free from the eruption, until the appearance of new points; for it is understood that local treatment has in the main but a local effect, and that the causes which have operated to produce the original lesions may and probably will, in time, produce more, if they are not removed. But this much can be said, that active and severe local treatment by removing many comedones and freeing many obstructed glands does in a measure delay the appearance of inflammatory lesions, until an acutely operating internal cause has passed away.

There are many more local applications which have

been recommended, and which have value in obstinate cases. Vlemingx' solution of sulphur (Formula 23) is a powerful stimulant and should be used with caution, diluted several times with water at first, the strength being increased according to the effect. Ointments containing sulphur are also recommended by many (Formulæ 45, 48), and may be used without much fear of irritation.

The preparations of mercury are also serviceable stimulants in certain cases of acne, but are not as valuable as is often supposed. The caution may be repeated here, that it is always well to warn the patient against using them in connection with or soon after applications containing sulphur, otherwise a black sulphuret is apt to be formed which darkens the skin and the comedo plugs, often to a degree which alarms the patient considerably. I have also observed this decomposition to occur occasionally from a combination of a lotion given medically with some cosmetic or face powder, which was used by the patient without medical sanction. The bi-chloride of mercury is the preparation most commonly employed (Formulæ 28, 31), and forms a basis of many of the advertised cosmetic lotions. More stimulation can be obtained with the green iodide of mercury in ointment (Formula 53), which is highly recommended by French writers. Care must be exercised in ordering it in stronger proportions, for it is an irritating application and capable of exciting very considerable inflammation.

Mechanical means are also of great service in the local treatment of acne simplex, and first in this line comes surgical interference in the way of freeing the obstructed and inflamed glands of their contents. Where the papule or pustule is small, and the end of a comedo plug is seen, the cavity is best emptied by pressure upon it by means of the comedo extractor described under acne punctata

(Figs. 11, 12). It is well, also, to express thus all the plugs visible, as thus much inflammation of single points is saved.

The separate pustules may then be punctured with a lancet thrust perpendicularly into them, allowing the contents to escape freely. This little operation can be best performed by a small lance made for the purpose (Figs. 17, 18) with a shoulder to prevent too deep entrance; two forms of this little instrument are here shown, one of which folds for pocket use.

FIG. 17.



FIG. 18.



Acne Lances.

After a pretty free scarifying of the surface the face is to be bathed in tepid water (not hot) to promote free bleeding, and a soothing lotion (Formula 24) is freely applied; after this more stimulating applications may be made, if there appear still to be indurated points. In larger and more rebellious lesions, where the glands inflame again and again, it has been suggested by Ross to insert a minute drop of nitric acid into the incision, thus producing an inflammation which ends in a minute cicatrix; others have recommended touching each lesion on the summit with a drop of acid, care being taken to prevent it extending to healthy skin. MORIN has recently recommended treating each lesion by means of a darning-needle thrust into it. The eye of the needle is made to penetrate the follicle, and by a rotary motion the gland is emptied. Another needle is then introduced, the eye

having been dipped into tincture of iodine, and by carrying this into the cavity the remedy is applied to the seat of disease; he claims rapid and good results from this treatment.

In extensive eruptions of acne simplex much good may often be accomplished by means of the curette (Figs. 19, 20).

FIG. 19.



FIG. 20.



Dermal Curettes.

By means of this instrument the surface is gone over a little roughly, tearing off the tops of the papules and pustules and dragging out the plugs from the glands, or clearing their orifices so that they come out more readily. The operation seems a harsh one, but is much less painful than would be supposed, and is often borne readily the second time or oftener by patients, after experiencing the benefits resulting from its use. There is often a little bleeding from abraded points, but this quickly dries into crusts, and the improvement which can be effected in a single sitting by means of the comedo extractor, the lance, and the curette, is often very surprising. It is needless to add that none of these procedures are followed by the least subsequent scarring; within two or three days it is often impossible to find a trace of the results of the treatment, except in the improvement in the eruption.

Some years ago ELLINGER recommended coarse white sand locally in the treatment of acne. After a thorough washing with soap and water the surface is rubbed with dampened sand, according to tolerance and the necessity

of the case. Thus a mechanical freeing of the orifices of the glands is effected, and a stimulation results, which is followed by absorption, and with it he claims excellent results. This plan was reported on by several observers, more or less favorably, but has never received great sanction, and it is questionable if it is often now employed.

It is always better to undertake all these harsh measures, indeed to make most of the irritating applications, at night, before retiring, both in order that less annoyance may be caused by the subsequent redness and disfigurement, and also that a longer time may be given for the effects of the stimulation to pass off, by the resting of the parts and protection during the night.

In regard to the treatment of *acne artificialis*, this generally disappears with the cessation of the cause, and if lesions remain they are amenable to the same treatment as previously detailed. When it is necessary to continue the internal administration of iodine and bromine, their evil effects on the skin may be in a measure avoided by giving arsenic at the same time in efficient doses.

Prognosis.—The prognosis of *acne simplex* varies greatly with the age of the patient, the general condition, and the amenability of the individual to restraint and to the directions of the physician. At the best *acne simplex* is often a very obstinate complaint, and unless the patient is quite willing to further the physician in every possible manner, it may prove exceedingly rebellious; but with a careful study of the case and with judicious treatment the eruption is often a very satisfactory one to treat, if the patient observes all directions very exactly.

In very young subjects it is difficult to state beforehand the length of time required, or the probabilities of a permanent cure, for not infrequently the eruption returns again and again, whenever the patient relapses into the former condition or state of life which gave rise

to it originally. In certain cases it seems impossible to do more than to keep the skin free from annoying lesions by persistent treatment, not only until puberty has become well established, but until the age of twenty or twenty-five has been reached. In many other instances of acne simplex in young people, the eruption is produced by a definite cause, often only debility, and remains permanently absent after proper treatment. Separate indiscretions, however, may at any time induce the temporary occurrence of single lesions, which ordinarily pass away spontaneously as the digestive or other disorder occasioning them ceases. Acne simplex is not a disease which can be removed once for all and permanently, as a parasitic or purely local disease is cured, for it is too often impossible to control the causes which lead to its development; in this respect we shall find that it differs considerably from acne indurata and rosacea.

A writer has remarked that the only permanent cure of acne is senility, and while this is true as far as concerns the possibility of an occasional recurrence of the lesions, the probability of a return of the eruption is comparatively slight if due attention has been paid to the removal of the cause, and if sufficient care be exercised by the patient to guard against the elements of causation.

II. ACNE INDURATA. (Synonyms: *Acne tuberculata*; *Acne cachecticorum*; *Stonepock*; *Whelk*: French—*Acné indurée*; *Scrofulide phlegmoneuse*; German—*Die verhärtete Finne*.)

Acne indurata represents a much deeper and more extensive inflammatory affection of the sebaceous glands than is found in acne simplex. Not only are the glands inflamed, but the surrounding tissue is implicated to a considerable extent, and the lesions are larger, deeper, more sluggish, and characterized by much greater supuration than is found in the form previously described.

While the acutely tender points of acne simplex have to do, as a rule, with a single affected and inflamed gland, in acne indurata a series of glands and circumscribed masses of tissue are involved, and the single elements often partake rather of the characteristics of dermic abscesses than of the lesions ordinarily recognized as acne.

Clinical description.—Acne indurata is much less common than either acne simplex or rosacea, it being recorded in only 172 patients out of the 1,500: of these 62 were males and 110 females. But the eruption would be found to be much more frequent than this would indicate, if all cases presenting the features here described were recorded as such; but, unfortunately, in back records the exact form of the eruption was not always particularly noted, and the cases are classified according to the lesion to which prominence is given in the notes, and thus many cases are placed among acne simplex or rosacea which presented also perfectly the lesions belonging to the indurated variety. Among these patients acne indurata was recorded as existing alone in 86 cases, associated with acne simplex in 46 cases, combined with acne rosacea in 19 cases, and with functional sebaceous disorders in 24 cases.

Very great differences may be observed between the most marked and characteristic instances of this eruption and the milder developments of the lesions, so that in the latter it is sometimes difficult to determine whether the eruption should be classed as acne simplex or indurata. Many cases, also, of acne simplex may from time to time develop the larger masses of indurated acne, and these are also occasionally manifested by patients with typical acne rosacea, but much more seldom. It is thus seen that there are no absolutely hard and fast lines separating this from the other two forms of inflammatory sebaceous disease; but it will also appear later, that clinically it is of great service to consider this as a distinct and separate form of acne, while pathologically,

etiologically, and therapeutically, the distinction is also sufficiently well marked to call for special consideration.

The lesions of acne indurata do not represent merely aggravated inflammatory states of the pustules of the simplex variety, and are not as a rule observed to develop from them; but when typical, they are seen to differ from them very decidedly in their mode of formation, and also in their course and termination. Patients affected by the indurated variety are constantly seen to exhibit marked diathetic states, and are frequently found to be the subjects of great debility.

The lesions of acne indurata vary very considerably in size, from that of a large duck-shot or a split pea, up to that of a small chestnut, and in rare instances even much larger. While many of the masses are round, they are more apt to be elongated, and some of the larger lesions may be irregular in shape, forming dermic abscesses which may reach half an inch or more in length, with a less width. They are commonly of a darker color than those seen in acne simplex, presenting a purplish hue, and, as a rule, are very indolent in character; suppuration sometimes requires several weeks, and not infrequently the hard masses may be several months in fully suppurating, and may then discharge a considerable amount of unhealthy pus, with the production of a scar. After incision and evacuation of the contents, the tubercles and abscesses of acne indurata often do not undergo resolution, as in acne simplex, but may continue as indolent masses, either slowly refilling with pus, or discharging the same through the incision, or remaining indurated without much or any tendency to suppuration or absorption. These lesions are seldom if ever acuminated, as in the simple variety, and the redness is congestive rather than inflammatory, returning slowly after disappearance under pressure. There is frequently little if any sensation in them, even on considerable handling.

The following history represents well an average case of acne indurata in mild form :

Mrs. R—, aged 29, the mother of three healthy children, had generally enjoyed good health, and was anxious solely about the eruption which disfigured her face. She had been subject to a slight amount of acne since fifteen or sixteen years of age, worse during the menstrual epoch, and the lesions, which were small at first, had in late years formed indurated masses of various dimensions, up to that of a good-sized pea. The inflamed points were exceedingly indolent, often remaining for several weeks, seldom discharging unless opened, and generally left scars.

When first seen the cheeks and chin were thickly sprinkled with nodules of various sizes, with a few comedones and many cicatrices, some of the latter still reddened, many quite pale. The indurated masses were of a purplish color, and very sluggish, giving little or no pain on pressure, and exhibiting no pus until lanced. She was of a light complexion and hair, and the skin was of a thick, doughy character. The functions were found to be well performed in the main, the digestion was good, and the bowels regular ; but the menses were generally tardy and very abundant, and the sleep was greatly troubled with dreams and wakefulness. Under an alkaline and tonic treatment, with active local measures, the eruption ceased entirely, and the skin regained its perfect condition within six months ; but on several occasions during the succeeding three years the indurated masses tended to reappear whenever constipation occurred, or whenever she was particularly exhausted. Free incision was practiced a number of times with the very best results.

In certain cases the lesions of acne indurata are very extensive and abundant, so that a large part of the face may be covered with the eruption, the indolent masses often touching one another. Some of these very severe cases also prove exceedingly rebellious to treatment, it seeming impossible to make more than a temporary gain, owing to constitutional conditions and surrounding circumstances which operate adversely, as in the following case :

Mrs. S—, aged 30, was a rather delicate lady, with dark hair and eyes, the mother of two healthy children, aged five and two years. She had never enjoyed good health, although never having had any severe illness. Her digestion had been bad for many years, she being greatly afflicted with heartburn, following the use of almost every article of food. Some time previous she had been subject to diarrhoea, but of late years was very constipated ; the urine was very apt to be thick, and she constantly rose at night to pass water. Her menses were almost always delayed, were very scanty, and exceedingly painful, and she was always troubled with leucorrhœa. The cervix was reported to be large, with a slight ulceration, and the uterus was fixed. She would not consent to much gynecological treatment for the relief of her uterine difficulties, although she suffered greatly from them, with severe and almost constant pain in the back, even after very moderate walking.

Her eruption had lasted nearly eight years, beginning two years before marriage, developing first upon the left side of the chin. She had never been entirely free from

it, although the lesions had almost disappeared during the preceding summer while at a mineral spring ; but the subsequent attack had been the worst she had ever had. She was found to be in poor general condition, with constipated bowels, suffering from indigestion, with a moderately coated tongue and a capricious appetite. She had not restricted herself in diet, but ate much hot bread and cakes, and was very fond of sweets. The pulse was 88 and of fair strength.

On examination almost the whole face was found to be occupied with the eruption, composed of indurated, purplish-red masses of various sizes, with some smaller pustules, but no comedones. The nose was especially affected, and caused much distress. The total disfiguration of the face can hardly be expressed in words : the masses were some of them large and prominent and the entire face fiery red.

She was put upon a carefully restricted diet, moderate and gradually increasing exercise was enjoined, and a mild laxative was given with each meal ; later an alkali with bitter infusion was added. Locally an astringent lotion, with hot-water bathing, was prescribed, and the tubercles were freely lanced on several occasions, considerable blood escaping. The benefit resulting from these and other measures was very striking, and in a month her appearance was entirely altered, a large share of the eruption having disappeared.

Soon after the improvement she returned to her home in Tennessee and almost immediately the dyspepsia and other bad symptoms returned, and with it the face exhibited again a few hard papules, it having been entirely free from eruption, and with only slight stains from some of the former lesions. The eruption then continued to increase, and the lesions became larger until very considerable disfigurement again resulted. She then received much benefit from a mineral spring, but again on her return home the indigestion recurred and with it the eruption. Again the eruption was removed by treatment here, only to return again later as other symptoms relapsed. This alternation was noted yet another and a fourth time.

In this case there could be little doubt but that the acne was closely dependent upon the state of the digestive organs, which again appeared to be closely connected with the condition existing in and about the uterus. How far the dyspeptic state depended upon irritation reflected from the sexual organs cannot be stated, or how far the uterine engorgement was kept up by portal congestion cannot be fully determined ; but it can hardly be questioned that they acted and reacted upon each other. On repeated occasions it was observed that the dyspepsia and constipation preceded the symptoms pointing to the uterus, and on other occasions it was noted that exhaustion, as by long walking and standing, brought on digestive trouble, after great pain had been experienced in the pelvic region and in the back.

In some instances the lesions of acne indurata take more the form of cutaneous abscesses, which on puncturing give

exit to a considerable amount of sanious pus. Sometimes these abscesses are recognized exteriorly only by the elevation of the surface, often of the same color as the surrounding skin; more commonly the integument over them is of a reddish-purple color, often quite dark, and the disfigurement caused thereby may be very great. The following history represents an extreme case, it being rare that such large lesions are formed in this disease:

Miss T—, aged 22, had never been strong, and had been sick a good deal as a child. For some years she had had uterine trouble, with displacement and great ovarian neuralgia. She was habitually constipated, and the circulation was poor, with cold hands and feet, and the sleep not refreshing; she was subject to left hemicrania. For eight years she had had a moderate eruption of acne, especially about the chin, which would greatly improve when absent in the country. Five months previous to her visit the eruption had assumed a different condition coming in larger lesions, which had increased in size up to the time of her visit.

When first seen she was found to be in a very poor general condition; she had a pasty, strumous appearance, the tongue was coated, with its papillæ prominent and red, pulse 96 and weak, and the bowels then greatly constipated. The disease was largely confined to the region of the face below the line of the nose, except on the right cheek near the ear.

The eruption consisted of indurated masses, grouped thickly together, covering perhaps half of the affected surface. Most of them were not very large, many about the size of a small pea. Among and with these smaller lesions there were others much larger, in which distinct fluctuation could be felt. These were purplish in color, painless on pressure, and of varying sizes, from one-third even to three-quarters of an inch in their longest diameters. Most of them were not round, but oval, and one of them measured nearly an inch in length, with a diameter hardly one-third as great. All were so much elevated as to be plainly visible, even at some distance. As the more inflammatory lesions improved under treatment some of the indolent abscesses became rather more prominent, while others shrank away and disappeared without discharging their contents. Some of the larger cutaneous abscesses were aspirated with good effect.

The following case occurred in the youngest subject in whom I have met with the eruption, and at an age in which one would hardly have expected to meet with this form of lesion, almost all of the other patients having been very much older.

Miss U—, aged 13, a bright girl, moderately well developed, had always enjoyed fair health, with the exception of having nervous headaches up to six months before her visit. The bowels acted regularly every day, she never had indigestion, and the menses, which had begun a year previously, were regular and normal, lasting

five days, and without pain. The eruption had begun very slightly as acne simplex two years before her visit, upon the cheeks, forehead, and chin. It had remained and increased steadily in severity, in spite of almost continuous treatment from local physicians in the country.

The eruption was found to occupy the whole face—cheeks, forehead, and chin. The surface was largely covered with various lesions, papules, pustules, indurated tubercles, and several rather large masses which had broken down so as to contain a considerable amount of fluid. On the right cheek was one of these indolent abscesses, half an inch in long diameter, by one-third broad, purplish on the surface, flat, and painless, and showing distinct fluctuation just beneath a rather thin covering of tissue; on the left cheek were the remains of a similar lesion which had recently discharged pus. There were also other smaller abscesses, of similar cold nature. When opened these gave exit to a sanious, rather offensive pus, of a dirty brownish-yellow color. While she claimed to be in good health, she was evidently in a very debilitated condition; her pulse is recorded as 120 and weak, hands and feet were always cold and clammy, the menses were of a very light color, and the later progress of the case showed that her original condition was very far from normal.

Under vigorous treatment the abscesses had ceased, and even the redness had disappeared within six months, and but a trifling eruption of small papules and pustules recurred from time to time as she became exhausted by school duties. When last seen, three years from the date of the first observation, the face remained free from eruption, except a few small papular lesions and some greasiness of the skin; her health then was excellent.

The larger lesions in these cases correspond to the condition to which HARDY has given the name *scrofulide phlegmoneuse*, describing their appearance very clearly. But clinical observation shows them to be intimately associated with acne lesions, and there can be no question but that they arise from an extension of the inflammation originating from sebaceous disease; there seems, therefore, little propriety in describing them as scrofulous lesions, apart from any special pathological relations.

Occasionally the masses of eruption in acne indurata may be confined to some particular portion of the face, such as the nose or chin, as in the following cases:

Mr. V—, aged 20, had always enjoyed good health, and had been utterly careless in regard to dietary and hygienic matters, indulging largely in fried food, sweets, etc. He had more or less dyspepsia, and his tongue was furred. He had had comedones and occasional pustules of acne simplex for some time, and the skin had long had a greasy condition.

Two or three weeks before his visit, the end of the nose began to get red and inflamed, and when first seen there were several indurated masses, some of them quite soft, materially altering the shape and appearance of the part; the surface was very red. Regulation of the diet, an alkali between meals, evacuation of the contents of the ab-

scesses, hot water locally, and a wash of sulphur, ether and alcohol, reduced the part to a normal condition in a surprisingly short time.

Mr. X—, aged 38, a clerk, much confined to business, had had ordinary acne from eighteen to twenty years of age. It then left him and returned about ten years previous to his visit, and had remained since.

Upon the cheeks and forehead there was a moderately abundant crop of small papules and pustules of acne simplex, but on the chin the lesions were of a different character. Here the eruption presented larger masses of inflamed tissue, some being closely set together, giving much the appearance of an inflamed tinea sycosis. The tubercles were rounded, succulent, and embraced several hairs. Later, under the use of an iron tonic which disagreed with him, large masses also developed upon the cheeks; but as the disease yielded the lumps became smaller and smaller, becoming only the papular and pustular lesions of acne simplex.

Mrs. W—, aged 24, a delicate, very nervous lady, had, since a girl, suffered from acne, which at times was very annoying. She had not been in good health for a long time, owing largely to the dissipations of society. Her stomach was extremely delicate, her urine constantly threw down deposits, she was subject to diarrhoea in summer, and suffered from leucorrhoea very badly; this latter was said to arise from severe endometritis, for which she had been under treatment. She was very fond of champagne, and partook of it and other stimulants rather freely.

The eruption was largely confined to the chin, where it had remained for seven years with varying severity. It consisted of a number of tubercular masses, about the size of a small split pea, irregularly distributed, with one larger lesion on the left chin. They were all indolent, of a medium red color, rounded on top, and without any central suppurating point, or any comedo. The lesions were slow in forming and often remained many weeks. During two years, while under observation, it was noted that the lesions would recur on the chin as the health became lowered, or when she was particularly exhausted.

In some cases indurated acne depends largely, if not solely, on indulgence in alcoholics or beer, and not infrequently is quite incurable while they are taken, even in moderation, as in the following case:

Mr. Y—, aged 33, a lawyer, came under treatment for an eruption which almost unfitted him for the practice of his profession. He was of full habit, had light hair and eyes, and claimed that he had enjoyed fair health. For some time he had had pain in the region of the stomach before and after eating, passing wind by the mouth and the anus, and for a few weeks previous to his visit he had had occasional attacks of vomiting without known cause. Since boyhood he had had "flesh-worms and pimples."

When first seen the face was greatly disfigured by masses of red, inflammatory tubercles, some with suppurating points, which, with the intervening redness, covered almost the entire surface, giving it a very striking appearance; the skin was also very greasy and contained many large comedones. There were also many cicatrices of former lesions. He was cautioned in regard to diet, alcoholics were entirely interdicted, especially ale, which he was accustomed to take more or less freely, and a laxative and cooling treatment was employed, together with active local remedies. Under these measures the improvement was very rapid, and his face regained almost

a normal appearance, except the scars ; but with each indulgence in distilled or fermented liquors the congestion of the face, and later the tubercular masses, would always return.

Not infrequently the eruption of acne indurata is largely confined to the back, and in this situation it is very rebellious, often lasting for years, and leaving an amount of scarring, both as to the number and size of the cicatrices, which can hardly be appreciated from any description. The eruption in this situation may sometimes extend to and even below the hips. When these lesions occur in connection with other diseases in the same individual, care is necessary in differentiating the elements of the two eruptions ; these points are illustrated in the following case :

Mr. Z—, aged 32, came for the treatment of a large tubercular and ulcerating syphilitic eruption occupying the larger portion of the right external ear. This healed within a short time under mixed treatment, which he continued, with intermissions, for some time. While taking this he had more or less eruption from the iodide of potassium, to which he seemed rather unusually susceptible.

One year later he sought relief for an acne indurata, of severe character, which affected principally the back, but which was also present upon the chest, neck, and face. The back presented a remarkable appearance ; from the shoulders almost to the hips there were innumerable scars of preceding lesions, some round, most of them oval, some pigmented, many perfectly pale. Some of them were depressed, but most of them appeared a little elevated, and when they were pinched up it was found that there was no infiltration or hardness, but rather a soft, delicate scar tissue, evidently extending deep through the skin, which wrinkled up as the tissue was pinched about it. Scattered among these scars were numerous large pustules and indurated masses containing pus, and many large comedones. The same existed on the front of the chest to a lesser degree and also on the neck, and a few upon the face, which also had many scars of previous lesions. The lumps were mainly painless on pressure, of an indolent character, and of a purplish red ; most of them were somewhat oval in shape

His acne had lasted for many years, and although there was much improvement under the suspension of the syphilitic treatment and the employment of that for acne, the latter eruption recurred again and again in varying degrees during five years or so while under observation ; each time when he became careless in diet and living, or when constipated or debilitated, new lesions would appear.

In this instance the iodide of potassium taken for the syphilis undoubtedly aggravated the sebaceous disorder, but the latter was present before and after the symptoms of syphilis manifested themselves. In certain cases the

lesions will appear to be largely due to the administration of iodide or bromide of potassium, and yet present an appearance not to be distinguished from the eruption when not so caused, as in the following case :

Miss A. A—, aged 22, had always been rather sickly, having had chorea when young, and epileptic seizures, especially at night, since she was fifteen years of age. For some years she had taken bromide of potassium, but had been troubled with the acne for only three years. She was in poor general condition, bowels constipated, breath foul, tongue pale and moderately coated, pulse 88 and weak.

The entire face was largely covered with the scattered lesions of indurated acne ; many of them were small and painful, many were large and indolent, generally of a rather livid red color and rounded on top, the largest were about the size of half a large pea. The entire surface of the face was considerably reddened and much disfigured by the eruption, which remained persistently with the formation of new masses from time to time ; there were also comedones here and there.

There is rarely seen in acne indurata the frank suppurative process observed in acne simplex, and in a large share of the lesions no external manifestation of pus can be seen until after a considerable amount has formed. The process of pus formation is a thoroughly chronic or passive one, and generally there is very little heat in the parts, but sometimes this may be present to a considerable degree. These cold dermic abscesses are very apt to be seen about the submaxillary region.

The skin of patients with this form of eruption is generally thick and doughy ; comedones are apt to be abundant, and there is commonly more or less acne sebacea, giving to the skin a greasy, repulsive aspect.

In cases which have lasted any length of time there will always be more or less abundant scarring present, in consequence of the destruction of substance which takes place deep in the tissues.

Acne atrophica. In this connection may be described an eruption which, while partaking of the nature and appearance of sebaceous disease, has peculiarities which would make it almost another affection, although in many respects it belongs rightly as a variety of acne indurata.

It is an affection which is commonly seen in persons over twenty-five and under fifty years of age, and seems to be somewhat more frequent in men than in women. It is rather a rare form of eruption, and occurred but few times among the cases here analyzed.

It is characterized by the development of lesions about the size of a small split pea, slightly elevated above the skin, of a darkish red color, very indolent in character, and with little tendency to suppuration. The eruption is most common on the forehead, along the margin of the hair, and may sometimes be observed upon the hairy scalp itself (BULKLEY). The lesions are painless, and present no subjective symptoms; they are exceedingly chronic in their course, and, when severe, are followed by well-marked atrophy, leaving an indelible pit very much resembling that left by the tubercular syphilide. They are, however, seldom grouped together as in the syphilitic eruption, and there is little or no tendency to the formation of crusts upon them. The scarring seems to take place spontaneously from the absorption of tissue, which has been deposited in the skin by a process not unlike that observed in lupus; whence the name which has been applied to it, *lupoid acne*.

The following case, from among a number, illustrates well the character and course of the eruption:

Mr. A. B—, aged 45, a spare, rather nervous gentleman, stated that he had always enjoyed good health, with the exception of what he designated as "bilious headaches." He had six living children, all healthy, and with no eruptions. He presented no physical signs of disease, and his bodily functions appeared to be perfectly performed; the bowels acted freely, there was no digestive disturbance, but he had always found that rich food disagreed; the tongue was slightly coated and pale, pulse 66, sleep good and refreshing.

About ten years previous to his visit, the eruption had first appeared upon the forehead, just below the margin of the hair, and since that time he had never been free from some lesions, generally about a dozen or so points existing at the same time upon some portion of the face and neck. The character of the eruption had remained the same from first to last, and the earlier lesions resembled those then present and active; much of the forehead, the temples, the sides of the neck, and, to a slight extent, the cheeks were the seat of scars of previous points of disease, scores or even hundreds in number. These cicatrices were all of the same character—depressed, sharply cut,

all about a quarter of an inch in diameter, and inclined to be circular; the older ones were paler than the skin, later ones were more or less stained. The lesions developed rather quickly, and remained often for many weeks before resolution and absorption took place.

The eruption which was present and in active condition at the time of the first visit, consisted of between one and two dozen red slightly hard, inflammatory masses a quarter of an inch, more or less, in diameter, some of them presenting crusted summits, others pustular, and others, yet, apparently solid. These were all elevated a little, and had a moderately inflammatory halo; they were somewhat tender on pressure, and were apt to give annoyance by itching, and some of them presented torn summits. They were scattered principally on the forehead and temples, but some few existed in the scalp and side whiskers.

Although no corroborative history whatever could be obtained, the lesions so strongly suggested tubercular syphilis that he was placed upon a mixed treatment of mercury and iodide of potassium, with iron and bark. This was continued in increasing doses for six weeks, not only with no beneficial result, but with a considerable aggravation of the eruption. He was then given a dietary and alkaline treatment for acne, with moderate local measures, and the change in the eruption under this course was most marked and satisfactory. The lesions very shortly lost their inflammatory element and began to disappear, and in a few weeks there were left only scars, similar to those previously formed; when seen, one year afterward, it was recorded that the eruption had remained absent from all portions, only cicatrices being visible.

This eruption has been noted by some writers under the name *acne varioliformis*, a term which is appropriate in so far as relates to the scars, which often much resemble those left by small-pox. But this name has also frequently been applied, mainly by French writers, to molluscum contagiosum, which is quite a different affair, and which has been excluded from our consideration as not being a disease of the sebaceous glands; the eruption is therefore best known as *acne atrophica*. It has also been called *acne frontalis* (HEBRA).

In the absence of microscopical studies upon this eruption, it is impossible to state definitely its anatomical features; but clinically it belongs with the sebaceous diseases, and yields, as a rule, to treatment such as is applied in the inflammatory forms of acne. When it has disappeared under treatment, it is not very apt to return; but the cicatrices left are permanent in a greater or less degree of severity.

Acne cachecticorum. Most writers since Hebra, mention this as a well-defined form of acne, but the descriptions

given vary considerably in many particulars. Many of the cases of acne indurata just detailed answer to the accounts of acne cachecticorum given by some, while certain writers (DUHRING, HARDY) class some of the lesions as scrofuloderma, without recognizing any sebaceous element whatever. NEUMANN has given the fullest details of this eruption, as viewed by German writers, and his description is here mainly followed.

Acne cachecticorum appears on poorly nourished, debilitated, scrofulous, and scorbutic persons, in the form of red or bluish colored masses, or as pustules the size of a hemp-seed, a bean, or even up to that of a hazel-nut, containing only a little sero-purulent fluid. The pus dries into crusts, and after these are removed an ulceration is left whose base gives off a sero-purulent fluid, its periphery being surrounded with undermined, sometimes fistulous, openings. The more extensive the affection, the greater the pain caused by the ulcers. This form of acne appears chiefly on the breast, abdomen, inguinal region, on the back and buttocks, on the extremities, on the face, on the external ear, and on the hands, which latter appear thereby of a bluish-red color, and œdematously swollen. Sometimes the eruption is combined with lichen scrofulosorum. In connection with this eruption there appear also on the palm nodules and pustules, formed of circumscribed inflammatory masses in the tissue of the cutis. After the healing of the ulcerations scars remain, with more or less dark pigmentation. This form of eruption is almost without exception found to be associated with suppurating lymphatic glands and scrofulous ulcers, especially on the neck and in the axillæ. This eruption has very great resemblance to the pustular syphiloderm, but is distinguished by the considerable amount of pus, by the absence of other syphilitic phenomena, by the slow course, and by the condition of the edges of the ulcers. KAPOSI mentions see-

ing acne cachecticorum developed in a well-nourished and well-to-do man in consequence of mental depression.

The above description corresponds in a measure to the eruption to which the name *acne ulcerosa* has been given by certain Italian writers (GAMBERINI, GIOVANNINI). Many of the cases thus classed by some are plainly such as have been here described as acne indurata; other cases, corresponding more or less to the condition above described, have also come under my observation, but in the absence of microscopic proof I am disinclined to place them among sebaceous diseases, and am more disposed to agree with Duhring in regarding them as scrofuloderma, or more probably as originating in disorders of the lymphatics of the skin. In these cases, as mentioned by Neumann, there were lesions on the palms, where sebaceous glands do not exist.

Diagnosis.—The diagnosis of acne indurata is comparatively easy, as but few diseases present appearances much resembling those thus far described. From *acne simplex* it is differentiated by the greater size and indolence of the lesions, by the absence of the conical pustular summit, often surrounding a comedo in acne simplex, and by the mass of induration left after the evacuation of the contents. Some of the more inflammatory and sharply defined lesions of acne indurata could readily be confounded with a *tubercular syphiloderm*, but in the latter disease the eruption is generally more circumscribed, and the elements of it are grouped together in more or less of a circular form or in regular masses, and not scattered indifferently over the surface separately, as in acne indurata.

Acne atrophica, also, could very easily be mistaken for the small *tubercular syphiloderm*, as this latter is apt to appear along the margin of the hair, a favorite location for this form of acne. But it is differentiated from it by the history of the case, by its localization alone on the parts

mentioned, by the absence of the grouping, generally observed in late syphilitic eruptions, and by the absence of the crusting or ulceration, more commonly seen in syphilis. The characters which distinguish acne cachecticorum have been already mentioned.

It is hardly possible to mistake any of the lesions of acne indurata for *lupus vulgaris*, which presents soft, pulpy tubercles, generally grouped together, and covered with ulceration or slight scaling. Ordinary *furuncles* may sometimes be mistaken for acne indurata, but their acute course, inflammatory character, and pain, are sufficient to distinguish them. There is no other eruption which need be mentioned in this connection.

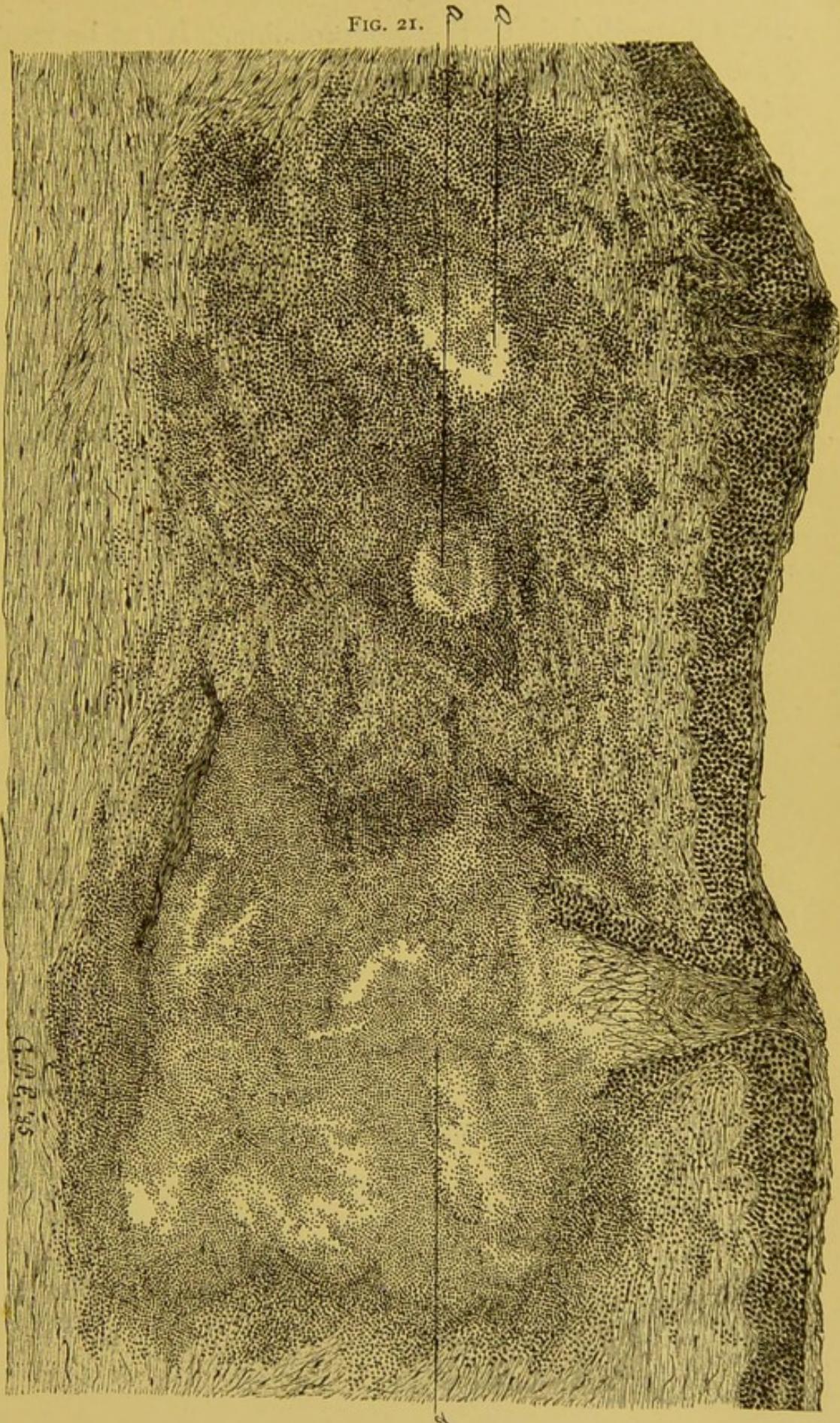
Pathology.—While the lesions of acne simplex have to do with a single, obstructed and diseased gland, in which the inflammation generally occurs on account of the obstruction to free secretion, the lesions of acne indurata appear to have their seat around several glands, which inflame, with the surrounding tissue, from causes other than such obstruction.

The masses of inflammation in acne indurata appear first as deep-seated infarctions, which slowly increase without, at first, exhibiting much external manifestation, and generally without giving rise to much, if any, sensation. Even when the mass has reached some size it often happens that no pus can be seen in the centre until pressure has been made upon the tumor, when a yellow point of skin may be discerned. If this is punctured, the amount of pus which escapes may be quite small in quantity and the lesion apparently not much diminished in size by its exit. After the pus and an amount of blood has escaped, a little watery fluid follows; but a solid mass is often left in the skin, which disappears slowly under further treatment. In lesions which have existed some time, the overlying skin becomes thinned, and rupture may take

place spontaneously or under very slight influences. After puncturing a nodule of some size, and expressing the contents, a gelatinous substance will often appear at the opening, which can be removed with the forceps in a stringy condition, representing the lining membrane of the cavity formed. If now the forceps be introduced into the opening, the remainder of the altered sebaceous sac can often be pulled from its situation with very little difficulty, generally in pieces, and without causing much pain; often these cavities will fill again and again until this is done, therein resembling those of *acne molluscum*.

The development of a tubercle of *acne indurata* is very slow, and presents none of the acute features of a papule or pustule of *acne simplex*. Days and even weeks may be consumed before it has run its course, either to suppuration and opening externally, or, the glandular body having been destroyed, the inflammation subsides and the pus formed undergoes degeneration and is absorbed. The amount of pus varies according to the length of time the process has lasted before it obtained exit, and is found mixed with more or less sebaceous matter and detritus. At times several contiguous glands are found included in the same tubercle, the interlying tissue being uniformly infiltrated. The changes occurring in this disease are exhibited well in Figure 21, drawn from a section of a most characteristic mass of *acne indurata*, excised from the cheek of a young man aged about twenty. HEBRA thinks that where comedones are not found, an analogous process has occurred in the hair follicle attached to the gland, which acts as the focus of irritation. NEUMANN and others regard the primary seat of the inflammation as being situated deep in the corium, the connective tissue being extensively implicated. It may be that this is due to simple extension of the inflammation; but BEHREND'S view that it is caused by the pressure exerted by the abnor-

FIG. 21.



Perpendicular section through a large tubercle of acne indurata excised from the cheek, showing several contiguous glands implicated in the inflammatory process. A, A, two glands somewhat obliquely cut across; B, large gland, with its cells destroyed and its cavity largely filled with inflammatory products; its duct and superior portion are seen to be still intact.

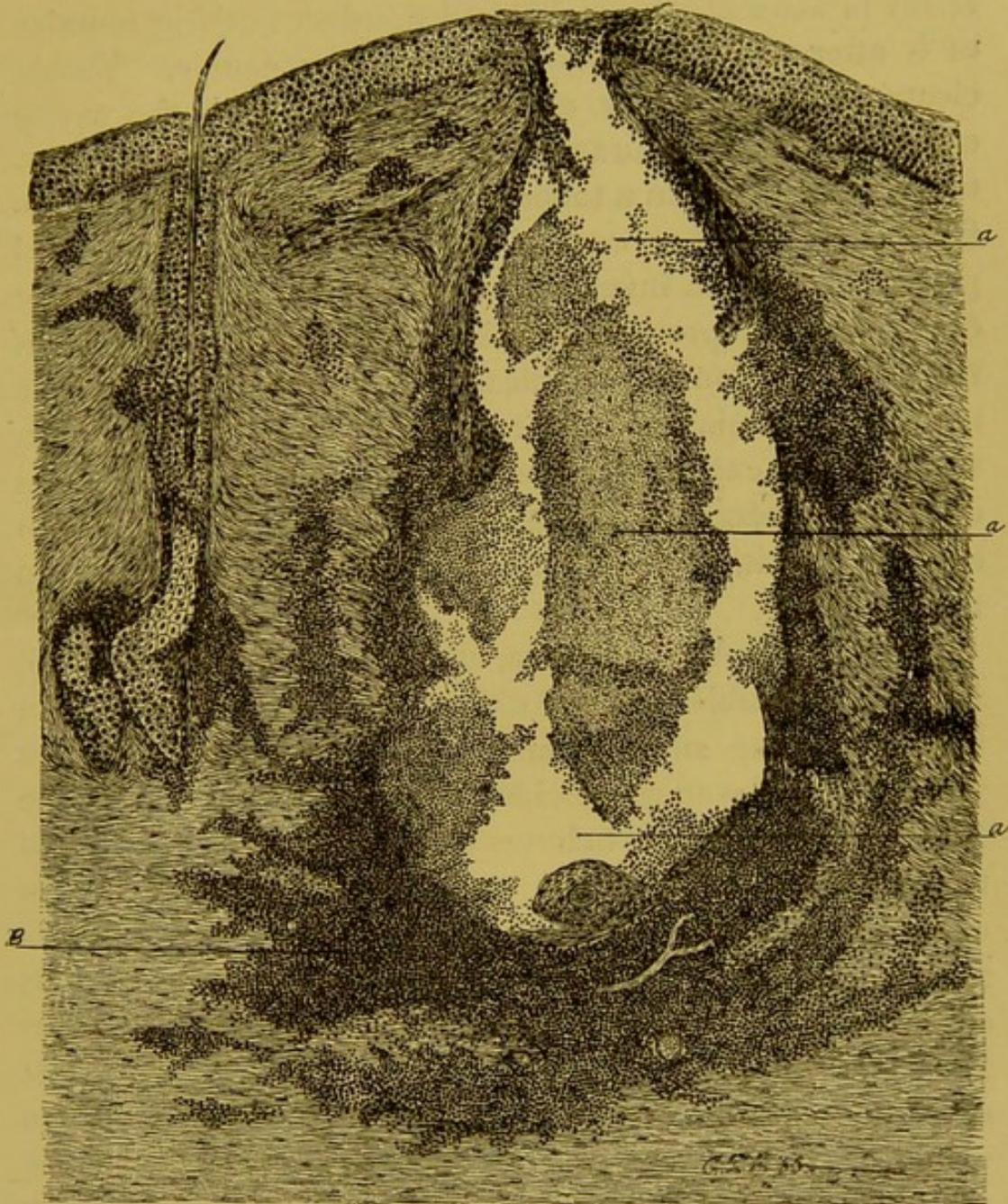
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mally distended tissue is more probable. It can be readily understood how this pressure can act as an irritant and light up the inflammatory process in a previously healthy gland, especially when a certain amount of irritability already exists in the skin, either through its malnutrition or perhaps through some deviation from its normal innervation. The duct of the gland in some tubercles of acne indurata will be found pervious on examination, and offering no obstacle to the excretion of the sebum, while in others it will be found filled with horny cells. These cells, appearing like epidermis, may extend into the body of the gland, sometimes ending abruptly in the cavity filled with the products of the inflammation (Fig. 21).

The true seat of the changes in acne indurata is found in the body and base of the gland and the surrounding connective tissue. The turgescence of the blood-vessels, the infiltration of the corium with leucocytes and small round cells, represent the usual picture seen in inflammation in general. But the extent of tissue involved is very striking when compared with the changes taking place in acne simplex, and as the tubercle proceeds to its full development the deviations become still more marked. They are, however, only quantitative and not qualitative, and can be referred entirely to the locality in which they occur and to the necessary destruction of tissue before the inflammatory action subsides. The body of the gland being attacked, its cells quickly break down and melt away, and are replaced by pus; the walls are destroyed, and there remains only a cavity filled with pus, together with more or less sebaceous matter and some blood, in the place where the glandular body was previously situated. The hair, divested of its sheaths, which have also melted away in the suppurative process, floats loosely in it. This cavity is bounded by ragged, infiltrated connective tissue, the infiltration being thickest along its borders and gradually

shading off in the tissue, as seen in Figure 22. A small piece of the gland wall may at times still be found, but

FIG. 22.



Perpendicular section through a large pustule of acne indurata excised from the cheek. A, A, A, cavity of the gland distended and partly filled with fatty debris and products of inflammation, some of the contents having escaped; B, inflammatory infiltration beneath and around the cavity.

as the suppuration progresses it will disappear entirely. If more than one gland is implicated in the process, the

changes are the same, only on a larger scale, and the amount of tissue destroyed is proportionately great.

Destruction of the gland and the hair follicle is the usual result in *acne indurata*; beyond the duct nothing remains of it after the inflammation has run its course. Visible cicatrization does not always result, though the cavity created by the suppuration is naturally filled up by cicatricial tissue. When a tubercle, however, has been uninterfered with and has opened externally, or when several glands have been involved and a large amount of tissue destroyed, a depressed cicatrix marks the former seat of the inflammation. This cicatrix for some time after its formation retains a dark-red color, from the hæmatin which has escaped into the tissue, but gradually loses its dark stain, becoming even slightly whiter than the skin surrounding it, owing to the absence of blood-vessels in the scar.

Etiology.—*Acne indurata*, as before stated, is observed, as a rule, in subjects much older than those presenting the lesions of *acne simplex*, although it is occasionally met with in quite young individuals, as may be seen in Table III. in Chapter III.; it belongs rather to the period between twenty-two and thirty-five years of age, when the strain of the burden of life begins to be most felt. *Acne indurata* appears to be much more common in females than in males; almost two-thirds of the cases here analyzed occurred in females. Marriage seems to have apparently little effect upon the disease: of 81 females in private practice, in whom it was recorded, 18 were married, and of 22 males, two were married. In a number of instances in both sexes it was observed to continue or recur after marriage equally as before, and was even observed to develop first after marriage in several instances.

Acne indurata is decidedly an eruption of the strumous state, and is commonly seen in those presenting more or

less the features belonging to it; although it is also observed continually in subjects presenting the acid or gouty condition most markedly. It is pre-eminently an eruption of debility, patients exhibiting it to any degree never being found in full vigor of life. These subjects always exhibit a marked lethargic system, characterized by sluggish circulation, cold hands and feet, frequent tendency to catarrhal affections, and very commonly constipation. In the cases here analyzed, out of 66 private cases exhibiting acne indurata, constipation was recorded in 37 instances. Dyspepsia and imperfect assimilation were noted in 34 individuals, while in almost every case there were recorded departures from health, either in the above-mentioned matters or others equally important.

Sexual derangements undoubtedly play a very considerable part in acne indurata. This is shown in part by the fact of the large preponderance of women, and also by the clinical history of the cases. Of 110 females, marked disturbances in the performance of the menstrual functions were recorded in 51 cases, and in 8 instances distinct uterine or ovarian disease was noted. The eruption of acne indurata is always observed to be much more marked just before or during the menstrual epoch, and was so recorded in 23 cases. It can hardly be suggested that the changes in the menstrual functions, occurring about the time of the menopause, have anything to do with the eruption of acne indurata, as is occasionally the case in rosaceous disease; for among all of the cases analyzed, there were no women who had reached even the age of forty, and in no instance was it recorded that the menopause had taken place, or seemed to be approaching. In males the eruption appeared to depend upon masturbation in a few instances, and it was occasionally observed that after seminal emissions fresh lesions would appear.

Prominent among the distinct, general causes producing

acne indurata, or at least determining fresh appearances of this lesion, is to be placed a sedentary habit, this being noted in a very large share of all the cases here recorded. The disinclination to take active exercise belongs, apparently, to the condition or habit of body which in itself tends to produce the eruption; and it may be continually observed that the eruption will be increased or redeveloped whenever this lethargic state is particularly indulged in.

Alcoholic stimulants may undoubtedly have a very great power in producing acne indurata or in aggravating that already existing, but in a very considerable number of the cases here analyzed these were never used, or at most but seldom. In regard to this matter, it does not seem to be so much the alcohol itself which produces the disease as it is the other elements contained in the milder distilled and fermented liquors. Ale and beer are particularly apt to produce the eruption of acne indurata, and champagne and the sweet wines may at any time cause the reappearance of the eruption in one subject thereto.

No definite local exciting causes can with certainty be determined in regard to the eruption of acne indurata. The tubercles and masses appear indifferently at any and all occasions, independent of local exciting causes. The deep infarctions seem to arise spontaneously, without any reference to the condition of the external integument. In some few of the cases it was recorded that cosmetics had been used previous to the development of the eruption; but in these instances it is always questionable whether the eruption were not already forming at the time when the cosmetics were used, and it is more than probable that their occurrence in a lesser form led to the use of the cosmetic. The eruption is always made very decidedly worse, however, by exposure to heat and cold, and also by all agencies which tend in any way to induce congestion of the part. Several of the very worst cases

among those here analyzed were found in individuals whose occupation required them to stoop continually or to be over hot fires, as mentioned in the chapter on General Etiology. The reaction arising from passing quickly from a cold to a heated atmosphere, as from out-doors to a warm room, will always be followed by an aggravation of the existing eruption, and sometimes by the development of new points. The eruption was not observed to be at all common in those whose occupation led them to a continuous out-door life, as is sometimes the case in acne rosacea. As minor elements, tending to the development and increase of the eruption, may be mentioned occupations requiring a bending of the head forward, as in much study, sewing and fancy-work of ladies, especially if it be conjoined with the approach of the face close to a strong artificial light or heat.

Treatment.—In acne indurata, more than in any other form of sebaceous disease, constitutional treatment is most important; and under constitutional treatment is included not only the element of internal medication, but the more important matters relating to diet, hygiene, and mode of life of the individual. Unless the strictest and most thorough and persevering attention is paid to these, all efforts at a cure will be but temporary, if indeed they effect any really decided result. As remarked before, many of these patients will be found to be extremely sedentary in their habits, and this must be overcome by every means possible, and active, vigorous exercise of the frame, producing a quickened blood circulation, is essential. The action of the entire skin of the body must also receive attention, and benefit may often be obtained by proper stimulation, as with alkaline baths (Formulæ 59, 60), and occasionally the Turkish bath will prove of service. This latter may at times increase the eruption for a while, but in the end it will aid in restoring the general

health of the system. Good general friction of the surface is also of service.

Attention must also be paid to the matter of fresh air and ventilation ; some of the most rebellious cases met with have been those whose occupation compelled them to remain in unsanitary quarters, where the supply of light and air was decidedly deficient. Any dampness of the surroundings also has a tendency to increase the eruption.

In the matter of diet, too great care cannot be exercised by those affected with acne indurata, as it will be repeatedly observed that the eruption is increased or reproduced by gross dietary errors. All pastry and rich food must be strictly avoided, as well also as that which is at all of a stimulating character. The diet should be generous and highly nourishing, with the exclusion, however, of all unnecessary and harmful articles. As before mentioned, the fermented alcoholic liquors are especially harmful in acne indurata, and the disease is absolutely incurable if these be indulged in to any extent. Light white wines are perhaps the least injurious if they be pure, and a very small amount of spirit, properly diluted, is less harmful than an equal equivalent of alcohol in any of the ordinary articles of drink ; but even this is most certainly prejudicial in a large share of the cases. Tea and coffee in great moderation are not necessarily harmful, but an excess of either is continually seen to be followed by an increase of the eruption.

The *internal treatment* of acne indurata is in a measure the same as that employed in other varieties of sebaceous disease, except that in this affection there is always an amount of debility which requires to be met, and there is often the necessity for the treatment of the strumous state which may exist to a greater or lesser degree. But in attempting to give remedies to help build up the system, care must be exercised that the emunctories act properly ; and in many of these cases of acne indurata it will seem

almost impossible at times to administer the proper tonics which seem to be indicated.

Iron will very frequently be not well borne by these subjects, and any powerful tonic will occasionally be followed by, at least, a temporary aggravation of the eruption. It is, therefore, often desirable in these cases to administer, at first, some of the more cooling alkaline remedies, especially such as affect the functions of digestion favorably; of these none is of more universal service than a mixture of acetate of potassium and dock-root given before each meal (Formula 11). When there is much functional disturbance of menstruation great benefit will be obtained by the addition to this mixture of the tincture of cypripedium in doses of ten to twenty minims. Many cases exhibiting a very congestive element are benefited by an acid mixture (Formulæ 7, 8), while in other cases with gastric acidity an alkali after meals (Formulæ 9, 12), will be found of the greatest service.

The sulphide of calcium is undoubtedly of very considerable service in acne indurata when rightly administered in proper cases. Its power in checking the suppurative process is undoubted, and beneficial results are continually seen to follow its use. It may be given in doses of from $\frac{1}{10}$ to $\frac{1}{4}$ of a grain every two or three hours during the entire day. The best mode of administering it is in the form of the gelatine-coated pills or granules, as otherwise, when exposed to the air, it loses its value and becomes converted into the inert sulphate of lime. Care should always be exercised that the pills are fresh and effective, which can readily be determined by crushing one in the mouth. It is often very well to administer this remedy in connection with other internal medication, the two being given quite independently of each other, the doses of calcium being taken six or eight times in the day,

at perfectly regular intervals, irrespective of the time of eating or of taking other medicine.

Very great care must be exercised in regard to the action of the bowels in patients with marked acne indurata. This excretion will often be found both scanty and imperfect in character, and great perseverance will often be required in securing the proper performance of this function. In many cases it is desirable to begin the treatment with a mild purge containing a little blue-mass (Formula 13), and in those who have a habitually constipated state, the effect of this may be followed up by a pill containing a laxative ingredient taken with each meal (Formulæ 14, 15). The mineral waters are not as desirable a means of effecting this end, although certain cases do excellently well with the daily use of Kissingen, taken in full doses on rising in the morning. When the bowels and kidneys and the skin act rightly, preparations of iron will always be of service in these cases (Formulæ 1, 2, 5, 6). It is often well to alternate their administration with that of one of the alkaline remedies previously mentioned.

Cod-liver oil is of value in a certain proportion of these cases, but not infrequently it is not well borne and aggravates the eruption; and it should be administered with caution. Glycerine alone or mingled with iron (Formula 3) is also of value. The preparations of malt have not proved as serviceable in my hands as was hoped that they would, but in some cases they may be used with advantage. The value of milk in the treatment of acne indurata can hardly be over-estimated, provided that it is given properly and the patient is able to take it. It is best administered in the manner detailed in the chapter on the Diet and Hygiene of Acne. It is often well to add fifteen to twenty drops of liquor potassæ to each tumblerful taken. It may be given, say, at eleven o'clock

in the morning, and at bed-time, in quantities such as can be borne. Cream is not especially desirable in these cases, as it is very frequently followed by digestive disorders.

After many of the acute symptoms have subsided, and when there is still a lax condition of the skin with want of tone, arsenic is of considerable service; but it cannot be relied on alone to cure any of the forms of sebaceous disease. It is, however, borne particularly well in the form of the liquor sodii arseniatis, given in doses even as high as ten drops three times a day, between meals, in half a goblet of water, or the liquor acidi arseniosi after eating.

Local Treatment.—As in the other forms of inflammatory acne, in the local treatment of acne indurata there are two ends to be accomplished: first, the overcoming of the inflammatory symptoms and the relief of the distended blood-vessels and glands; and, secondly, the restoration of tone to the part by proper stimulation. Much harm can be done by taking the second of these first, whereas by continuing too long on the first line of treatment the most beneficial results will not be obtained.

For the relief of the congestion and inflammation in acne indurata, we have as our greatest aid the employment of hot water. This is to be used not merely warm, but hot—as hot as can be borne short of scalding the parts; and it is very essential that the application should be made in exactly the following manner: Taking a basin of water, so hot as to give forth steam, a handkerchief is dipped into it and applied firmly to a portion of the face. It is held in this situation for some seconds, perhaps half a minute, until the heat has seemed to be dispelled, and it is then dipped again into the water and applied to another portion of the face. In this way the entire affected surface is gone over twice, the whole operation lasting not more than two or three minutes at the most. If the water is not sufficiently hot, or if the operation is too

greatly prolonged, an effect is produced exactly contrary to that desired, namely, a relaxation of the tissues and a continuance of the disease; whereas by sharp stimulation with hot water, together with subsequent proper treatment, a reaction is effected which results in the contraction of the blood-vessels, the absorption of effused matter, and great benefit to the eruption. After the part has been thus thoroughly soaked with hot water, it is lightly and quickly dried by simply pressing upon it another soft handkerchief. Some have advised applying the hot water only to the inflamed points by means of cloth tied over the end of a stick, pressed firmly upon each lesion. After this the affected parts are to be completely covered with a cooling and astringent lotion (Formulæ 24, 25), applied by pouring some of it into a saucer and sopping it thoroughly over the parts, allowing the powder contained therein to dry, and to adhere to the surface all night. In the morning the face is washed in the ordinary way, with cold water, and a small amount of the lotion is again applied, without the repetition of the hot-water soaking. Generally twice in the day is sufficient for the application of the lotion, but when the eruption is severe it may be used more freely. When the inflammation has in a measure subsided, more active astringents may be used in the form of a lotion (Formulæ 17, 19, 22), or in ointments (Formulæ 45, 47).

It will commonly be advisable, in connection with this treatment, to incise the nodules and pustules freely, as described under *acne simplex*; it will, however, be found necessary to cut much deeper in *acne indurata* than is required in the former eruption, and generally the ordinary thumb lancet or a small tenotomy knife will be found the most effective means for accomplishing this, the small *acne* lancet previously mentioned not making a sufficiently deep or large opening. After the

lancing operation the incision should be allowed to bleed very freely, and the bleeding may be encouraged by tepid water, which also serves to allay the irritation from the cuts, after which the suitable lotion may be freely applied. In some cases the curette may be used with advantage, as described under *acne simplex*; but generally the lesions are too deep seated and their surface too firm and hard to be reached by this means.

When the more acute conditions have passed away, and the masses are left rather in the form of solid infiltrations without pus, great benefit is derived from more active stimulation as obtained by the use of green soap or its preparations (Formulæ 33, 34), or by caustic potash in solution (Formula 35); for some reasons the latter is often preferable, because its solutions can be made of exact and definite strengths suitable to the particular case; fifteen grains of caustic potash in the ounce of water can readily be borne, although it will generally be followed by a considerable amount of burning and stimulation of the part. This is to be rubbed over the affected portions by means of a bit of muslin or even white flannel, if greater stimulation is desired; it is left a moment in contact with the face and subsequently, if the burning seems excessive, it can be washed off and a cooling lotion or ointment (Formulæ 24, 43), freely applied thereafter, and left upon the surface. Weaker solutions, of from five to ten grains to the ounce, may be employed without much caution, but those of fifteen grains or more to the ounce should always be carefully directed or applied by the physician. Another mode of stimulation recommended by many, and of undoubted service, in rebellious masses of indurated acne, is the touching of the summit of each mass with a drop of nitric acid or the acid nitrate of mercury, pure or diluted four or five times with water. This produces some cauterization,

and may sometimes be followed by a scar; the counter irritant effect is sometimes striking, in producing rapid absorption of the effused products. STELWAGON praises very highly the touching of each lesion every three or four days with pure carbolic acid.

In some instances the nodules of acne indurata prove extremely rebellious to absorption, and it is necessary to use other measures for their removal. In these instances an ointment containing iodine or mercury (Formulæ 48, 54, 55), may be thoroughly coated upon the part and left in contact over-night. French writers recommend the use of iodide of mercury in very great strength (Formula 53), carried even to the point of blistering the face. For this purpose we may also use a strong caustic preparation of sulphur (Formula 23), which is applied with caution at night and left on, even to the extent of removing the outer layers of the epidermis. Chrysophanic acid has also been well spoken of in connection with this eruption, but this should be used with very great care, as on the face it is liable to excite a not inconsiderable amount of dermatitis. The safest mode of application is in the form of a paint, in collodion (Formula 41), which may be applied to the individual spots, and left on over-night, or even a longer time. Some writers have strongly recommended the covering of each indurated nodule with bits of mercurial plaster every night.

Prognosis.—The prognosis of acne indurata may be said as a rule to be favorable; indeed, those cases which are the very worst at the outset frequently yield to proper and careful treatment the most thoroughly, and sometimes the most quickly. But, as may be judged from what has preceded, in order to effect this result the treatment must be radical and energetic, both in regard to constitutional measures and hygiene, and also in the matter of local treatment. It may, indeed, be said that the prognosis of acne indurata lies largely within the patient's own will;

for, with competent advice and intelligent, faithful and persistent treatment, the eruption is almost sure to disappear. Occasionally, however, the eruption is exceedingly rebellious; the duration of treatment is always to be reckoned by weeks rather than by days. It is also a very happy element in the prognosis of acne indurata that, when the skin has been restored to a normal condition, the eruption has comparatively little tendency to relapse, if the individual will but carefully exercise the rules relating to the management of the disease. It is far less apt to return under any circumstances than either acne simplex or acne rosacea.

III. ACNE ROSACEA. (Synonyms: *Gutta rosacea*; *Gutta rosea*; *Acne erythematos*; *Rosacea*; *Bacchia rosacea*: French—*Acné rosée*; *Couperose*: German—*Kupferrose*; *Kupferfinne*.)

Acne rosacea may be defined to be a congestive disease of the face, manifesting itself by redness, together with papular, pustular, or tubercular lesions of the sebaceous glands. Later elements of the disease are dilated capillaries, permanent redness from long-continued and oft-repeated congestion, and in certain cases a peri-vascular hypertrophy, sometimes causing much enlargement and disfiguration of the parts (*acne hypertrophica*).

Clinical description.—Acne rosacea is one of the most common forms of acne. Among the 1,500 cases of sebaceous disease here analyzed, this eruption was recorded 370 times, 109 times in males and 261 times in females; it was noted as existing alone at the time of observation upon 327 patients, and associated with other forms of sebaceous disease upon 43 individuals.

Many cases of this eruption differ so materially in appearance from the other forms of acne that some writers have been led to separate acne rosacea from the group of

sebaceous diseases, applying to it the term *rosacea* alone; WILSON groups it among eczematous affections, under the title, *gutta rosacea*. But close observation of the disease clinically, as well as its pathology and therapeutics, together with its frequent association with other forms of acne, all point strongly to its connection with the class of diseases under consideration, and confirm the judgment of those who have long regarded it as a form of acne.

This eruption is the most subject to variation of all the forms of acne. It may present all degrees of redness and inflammation, from a moderate flushing of the face after a very hearty meal or after the use of wines or spirituous liquors, to a greatly reddened face, exhibiting papules or pustules of small size, or even developing into the tubercular masses of *acne indurata*. When these papules are scratched or irritated, a little serous fluid exudes and dries into minute crusts, and the entire surface may sometimes present a slight amount of adherent scales, especially in cases which have lasted some time, or have been subjected to stimulating treatment.

Acne rosacea may be said to be mainly confined to the region included by two lines dropped from the malar prominences to the sides of the chin; although it is occasionally met with upon the forehead, and even upon the bald head. As a rule, the eruption is symmetrically developed on both sides of the face, but many exceptions to this are continually met with. The margin of the erythematous redness is never sharply defined, but fades imperceptibly into the surrounding tissue, and is of a congestive and inflammatory character, disappearing entirely upon pressure, but quickly returning when this is removed. Often much burning heat is experienced in the affected parts, and commonly more or less heat may be detected by the application of the hand or the thermometer; but in other instances, and especially upon the nose, the surface

may be even colder than normal. Occasionally there is considerable itching, and in some instances the patient will complain of a full, flushed feeling, even with some pain.

Acne rosacea has been usually spoken of as presenting three stages, and the number of the names which have been invented from time to time to express various features of the eruption is very great, as seen on pages 34 and 35. While the distinction between the three stages or degrees of acne rosacea is often not very clearly marked, and is not perhaps of great practical value, the eruption does present phases which may with advantage be considered under these separate heads. It is to be remembered, however, that every case of acne rosacea does not pass through these stages, but rather that the eruption may present itself in one or another of these three forms, which may, and not infrequently do, pass one into the other.

The *first stage* or degree of the eruption is characterized by more or less diffuse redness of the part affected, usually first the nose or cheeks. This is more in the form of a passive hyperæmia than of an inflammatory disorder: the surface often seems cold to the touch, the circulation is sluggish, and the color returns slowly after pressure. This redness may be permanent or may vary with certain conditions; it is very liable to be increased by changes of temperature, and is always observed to be more marked after taking hot or stimulating food and drink, and is also apt to be increased in females in connection with the menstrual epoch. It may occasionally disappear entirely, without treatment, but it more frequently remains stationary or increases for months or years; it can also develop very rapidly, and pass on to the condition next to be described. There is commonly some amount of oily seborrhœa associated with this eruption, as was seen in the cases of acne sebacea oleosa of the face detailed in the previous chapter. In this first stage or condition of acne

rosacea the surface is evenly reddened, and presents few if any of the separate papules or pustules which will be described in connection with the next variety. The following cases exhibit the features of this eruption as it affects the nose alone, or the cheeks :

Mrs. A. C—, aged 34 years, had always been very strong, as regards physical endurance, but for many years had had great tendency to sluggish liver action, which she had often relieved by blue mass. For the year previous to her visit she had been running down, and losing flesh ; she had always been subject to headache. During this past year she had been having at times considerable redness of the nose, especially at the end, occasionally with more or less soreness.

When first seen the end of the nose was the seat of an erythematous redness disappearing on pressure, extending well up on to its body ; the organ seemed large, and the surface was covered with dilated sebaceous follicles, and a more or less oily secretion. It was then not nearly as badly affected as it had been at times, when it caused her very great annoyance. She was found to have a sluggish digestion, with some gastric oppression and a bad taste in the mouth, the urine was at times cloudy, and when examined later was found to contain urates and uric acid in abundance ; her sleep was troubled with dreams, and she woke tired. The action of the bowels was reported to be regular, but during subsequent treatment she was found to have great tendency to constipation.

Mr. A. D—, aged 54, for two years had noticed that the cheeks became unnaturally red, especially in the spring and fall, and latterly the eruption had become more permanent and had given some annoyance by a little tenderness on pressure in certain points.

On examination both malar prominences were seen to be the seat of an erythematous redness over an area of about two inches, with a certain number of superficial dilated veins over the surface. No papules or pustules were discernible, but there was some slight unevenness of the surface, and at one or two points the part was a little tender when touched. He appeared to be in good health, but had had inflammation of the liver three years previously, and was constipated, depending on Carlsbad salts ; his urine also at times gave him much annoyance.

Mr. A. E—, aged 35, had always led a very sedentary life ; he had lived plainly because of indigestion, which had at times troubled him greatly with oppression and flatulence. The bowels acted very irregularly, and he was subject to headache.

For ten years he had been annoyed with redness of the nose and the frequent greasiness, together with the enlarged and patulous openings of the sebaceous glands, and when seen this condition existed to a considerable degree. He could always know when the trouble was to be increased by a throbbing sensation in the nose on fast walking. This red condition of the nose yielded very slowly to treatment, and was found to vary greatly with the condition of his general health and that of the intestinal excretion, which at times was very imperfect. He often complained of pain in the right iliac fossa, and on percussion considerable accumulations were occasionally found.

In cases such as those just detailed imperfect liver

action appears to be an element of great importance of causation, and any treatment which fails to recognize this will fail of great benefit to the case. LORRY remarked over a hundred years ago, "Nasus sæpe rubet a suppressis hemorrhoidibus."

These cases of erythematous acne rosacea are quite common, but do not come under medical observation and treatment nearly as often as the form of eruption now to be described, which is commonly spoken of as the *second stage* or degree of the disease; in very many cases, however, no history is given of the existence of the first stage. The most common form in which to meet with the eruption is where the surface affected is not only reddened but presents more or less of a papular condition, with occasional small pustules. The area thus affected may vary considerably, and occasionally almost the entire face is covered with the eruption, as in the following case:

Mrs. A. F—, aged 42, had been troubled for seven years with the eruption for which she sought relief. She had been married sixteen years, and had three children, the youngest of whom, aged four, had eczema of the face and hands. During her entire married life she had been subject to much nervous strain and anxiety, and had never enjoyed good health. The bowels were habitually constipated; the menses usually appeared on time, but were very scanty, and she was excessively nervous before each monthly period.

When first seen the entire face was largely covered with the eruption, which occupied the cheeks, chin, forehead, and nose. The surface was very greatly reddened, and over the cheeks there were a few scattered papules; on the chin they were in greater numbers and small. On the forehead there was also a slight papular condition scattered over a reddened surface, and the nose presented an even redness. The condition of the eruption was always worse at the time of menstruation, and was also very greatly aggravated one year previous to her visit, from ordinary vaccination.

This case at first proved exceedingly rebellious to treatment, all ordinary remedies seemed to aggravate her nervous state, which was intense at times. But finally she improved in every way, and five months after her first visit there was hardly a trace of the eruption except a very moderate number of inflammatory papules grouped upon the chin, with a little surrounding redness. A year and a half later, after neglecting treatment and being run down by a surgical operation the eruption re-appeared with some severity upon the cheeks and the chin.

The amount of eruption upon this case was excessive, and it is rare to find so large an area covered; more

commonly the lesions are confined mainly to the central area of the face, as in the next case :

Mrs. A. G—, aged 38, had never been in very good health, but always tired easily and often suffered from general debility. The eruption had begun only two or three years previous to her visit, and it was thought to have been brought on by overwork in moving, etc. She had three healthy children, the youngest aged nine years, and out of seven in her own family, only one sister had an eruption, and that on her chin.

When first seen the entire middle portion of the face, including the chin, nose, and a small area on either side of the nose, was the seat of a diffuse redness, pretty thickly set with small, acuminated, inflammatory papules. The whole surface burned considerably, and there was at times some itching. The eruption was always worse during and after menstruation, also when tired, and after taking sweets. She was found to be habitually constipated, but the digestion proceeded fairly if she was careful in her diet. Her urine was scanty and contained oxalate of lime, and there was often frequent and urgent micturition. The improvement in this case under laxative and alkaline treatment, with local measures, was very striking, and in one month she returned to her home in the West with her face perfectly free from the former eruption, only a little staining being left.

Sometimes the eruption of acne rosacea will appear very soon after some depressing cause, as a severe sickness, and will remain until removed by treatment.

Mr. A. H—, aged 39, had generally enjoyed good health, but being a banker he had led a sedentary life. Eighteen months previous to his first visit he had had a large carbuncle on the back of his neck, and about a month later the eruption of acne rosacea appeared on the face, together with a succession of small boils on his head and neck. The eruption had remained on the face since, and had been much aggravated since leaving his home in Denver and coming east to the sea-shore. His eyes began also to be inflamed then, and had remained affected.

When first seen the entire middle of the face and cheeks, and slightly the middle of the forehead, were the seat of a red, congestive condition of skin, studded with papules and a few pustules, large and small. The eyes were congested and almost useless. No cause could be found for the eruption in any derangement of function ; the bowels were regular, appetite and digestion good, the sleep was normal and refreshing, and the only tangible feature was an unusual weakness of the pulse, which stood at 68. Under tonic treatment, with a little alkali, and an astringent lotion, the eruption had almost vanished within two weeks ; he then left the city, and by later accounts it was learned that the improvement was continued and permanent.

While this form of eruption is more commonly seen in those about middle life, it is not infrequently observed even as early as twenty years of age, and occasionally in quite old subjects. The following history relates to the oldest patient on whom I have ever observed the eruption :

Mr. A. I—, aged 78, had had general erysipelas three years previous to coming under treatment, and the eruption for which he sought relief appeared very shortly thereafter. It had been worse than at the time of his visit, always, however, presenting the same general character of separate red points or spots, sometimes slightly pustular, with erythematous redness about them. These would dry up and disappear, and new spots form from time to time, he not having been free from some eruption for three years.

When first seen the forehead and upper part of the face and nose were the seat of a patchy redness, with papules surrounded with a halo, and occasional, minute pustules; there was also considerable general redness of the nose, with many dilated capillaries. He stated that he had always enjoyed good health, with good digestion and sleep, and he appeared the picture of health, and was very well preserved for his years. He had used wine moderately, and brandy every night, but had taken none for three months. He failed to improve under an alkaline treatment, and a few weeks later presented a very much greater amount of eruption, exhibiting a number of minute pustular points, both on the forehead, cheeks and nose, and a little later he had a considerable number upon the bald scalp. He was then put on a mixture of magnesia and iron, with a lotion of sulphur and camphor, and the improvement was very marked and rapid. Three months later he called, perfectly free from all traces of eruption, as he had been for a month or so.

Five years later, when he was eighty-three years old, he again called, having been well until a short time previous. For the preceding two months he had had a return of the eruption on the nose and cheeks, and latterly it had appeared on the forehead and bald scalp. He had lost appetite for the year previous, and had been taking lager beer every afternoon and whiskey at night. His face and scalp were again the seat of redness surrounding minute papules and pustules, in some places almost confluent, as on the malar prominences; the nose also was the seat of considerable redness, some hypertrophy and one or two larger inflamed masses, tender on pressure. Again the eruption yielded promptly, and remained absent until very recently, when he returned (at almost eighty-four years of age) with a typical acne rosacea, presenting redness, papules, and small pustules. He had been taking milk-punch quite freely for depression and weakness. At the time of writing the eruption has again largely vanished.

When the eruption has existed for a long time the repeated and prolonged congestion of the part gives rise to a certain infiltration of the tissues, the mouths of the glands become dilated, and the capillaries of the part become enlarged and apparent on the surface, and the condition is spoken of as the *third stage* of acne rosacea.

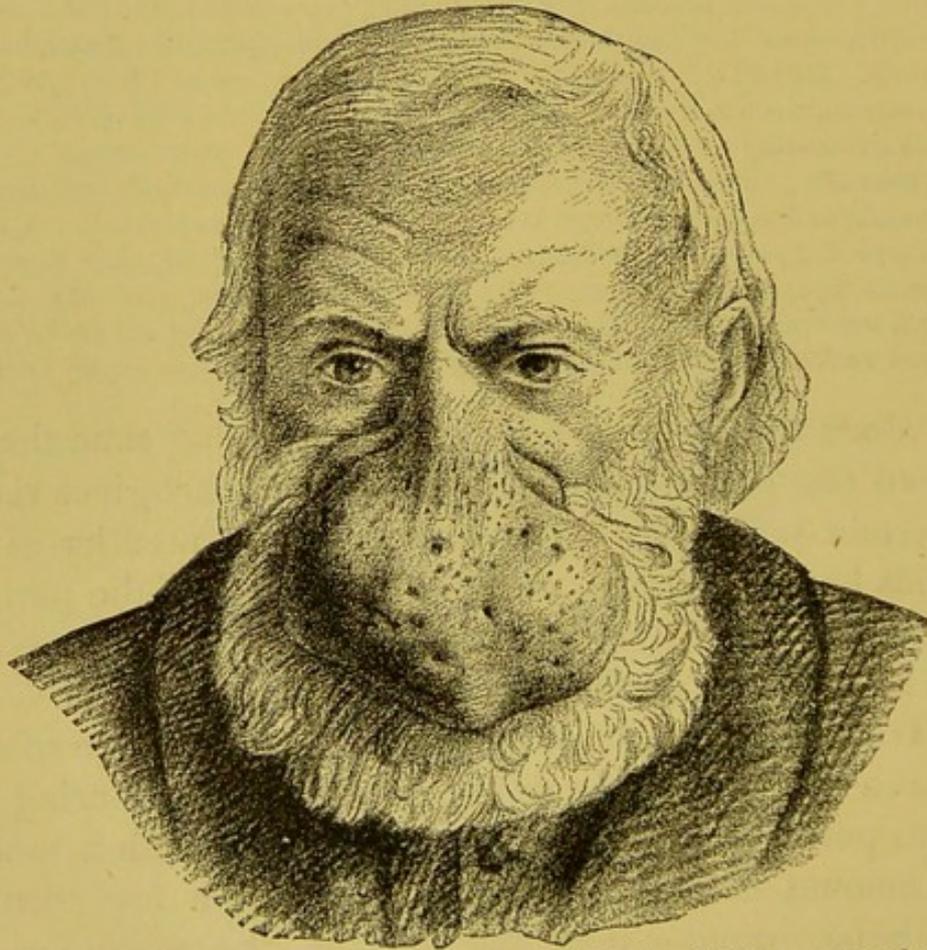
The appearances presented by this third stage of acne rosacea vary greatly in different subjects and during different periods of its existence. Beginning with a moderate amount of permanent redness, with a few tortuous capillaries running over the surface, the condition increases, the blood-vessels becoming larger and more nu-

merous, the tissue more and more thickened, the openings of the glands more apparent, and the total deformity more or less marked according to the extent and severity of the changes which have taken place. The redness is now seen to be of a rather purplish color, in place of the more livid hue belonging to the active stage, and the passive hyperæmia which is now present usually gives a cool sensation to the touch, instead of the heat and burning often attending the second stage.

The results of these changes are most apparent upon the nose, and the increase of tissue in this location may sometimes proceed to an enormous extent, in very rare instances even to the production of a very great deformity (*acne hypertrophica*; *rhinophyma*). This enlargement

FIG. 23

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Enormously hypertrophied nose (*acne hypertrophica*), exhibiting enlarged and gaping sebaceous follicles (MISSET).

has been known to reach the size of a small closed fist (*pfund nase*), and in certain very rare cases the organ has hung down over the lip, producing a remarkable deformity (Figure 23). Sometimes the enlarged nose is lobulated, with considerable fissures between the masses, in other cases, again, the surface is uneven, presenting nodules of varying size. From the gaping follicles may often be squeezed a considerable amount of milky or creamy sebaceous matter, which re-forms as often as it is removed by pressure.

Such extreme cases as here represented are, however, very rare, but in a greater or less degree the condition of acne hypertrophica may be met with almost daily in the streets. The nose becomes moderately enlarged, feels soft and fatty, has a sluggish circulation, and is subject to becoming greatly reddened under certain conditions. The following cases represent a more than ordinary degree of severity of this condition :

Dr. A. J—, aged 52, had been subject to acne for twenty years, and ten years previous to his visit he had observed a commencing enlargement of the nose ; this had increased to the time of observation.

When first seen the nose was at least three times its ordinary size, and had become decidedly pendulous, hanging over the upper lip, and to a slight extent over the mouth. The surface of the nose was of a dull red color and felt cool, the orifices of the glands were prominently seen, and from them could be expressed some milky fluid.

He had become more or less accustomed to the deformity and was mainly anxious about certain patches of ulceration which had occurred in connection with it. For four months an ulcerating point had existed on the left ala, which at the time of observation was circular and about half an inch in diameter, and had begun to itch considerably ; this had a crust upon it, and when this was removed the surface beneath was seen to be smooth and depressed, and bled easily. On the right ala there was an excrescence about the size of a walnut, and just above this there was a point of ulceration beginning.

Mr. A. K—, aged 46, had been subject to acne since 15 years of age, beginning with the punctate, papular and pustular forms ; it had continued in one condition or another until the time of his visit. He had always noticed the appearance or increase of the eruption whenever constipated, and even up to the time of observation he noted that when " the liver became torpid " it showed upon the nose and face. A single glass of beer flushed the face and made the nose worse. He had observed the gradual enlargement of the nose for twenty years, the increase being much greater during the ten years preceding his visit. The enlarged nose had been variously treated abroad ;

it had been cut and scraped, deep incisions had been made, together with injections of ergotine, caustics, etc., but without any marked benefit.

When seen the end of the nose was enlarged to double the normal size, was of a purplish color, and gave a soft, succulent, cool sensation on handling; the surface was somewhat greasy, with but few enlarged follicles and some, but not many, enlarged veins. He had never received any systematic treatment looking toward the checking of the internal conditions, and was found to present very marked evidences of faulty digestion.

The extent to which the process can proceed can hardly be stated. In some of the cases reported it has been much greater than has been here indicated, but these are indeed exceedingly rare occurrences. In many the enlargement is only such as to excite attention without producing any deformity which would warrant active surgical interference. Women seem to be very much less subject to the third stage of acne rosacea than men, certainly it is exceedingly uncommon to meet with cases where any amount of enlargement of the nose has taken place.

Diagnosis.—Acne rosacea may be confounded with the other forms of inflammatory *acne*, with *erythematous eczema*, *lupus erythematosus*, a superficial *tubercular syphilide*, *erythema* of the face, and possibly with certain cases of *psoriasis* occurring on the face.

It is not uncommon to find more or less of erythematous redness associated with acne simplex and acne indurata. This may at times be artificial, and therefore have no connection with the eruption now under consideration; but occasionally the rosaceous element is more or less marked in connection with these other varieties of acne, and should be recognized as such. It is distinguished, however, as an eruption from these other two forms of acne by a well-marked and persistent congestive element, with the formation of small, often shot-like, papules or pustules, possibly with very slight crusting or scaling upon the surface.

Certain cases of *erythematous* and *papular eczema* about the middle portion of the face often resemble acne rosacea so closely that it is not a little difficult often to determine

the true nature of the disease at once. In both we have an erythematous redness disappearing under pressure and returning quickly; in both we may have more or less of thickening; in both there may be papules sprinkled over the surface; in both there is a tendency to slight crusting or scaling. But the surface of a patch of acne rosacea is, as a rule, far more oily than erythematous eczema of the face, which latter always presents a peculiar, hard, dry, rather leathery feel. In acne rosacea there can generally be found a more or less minute pustulation, or the history of such; there is also an absence, certainly to a very large degree, of the intense itching which forms such an invariable element in erythematous eczema about the face. Erythematous eczema is far more apt to be developed about the mouth and lips and in the region next to the *alæ nasi*, parts which are usually spared in acne rosacea, which commonly attacks the chin, sides of the cheek, and the nose itself. Erythematous eczema is far more likely to increase and spread than is the lesion of acne rosacea, and, moreover, it seldom varies as does acne rosacea, under different circumstances of heat and cold, diet and mode of life, and with the menstrual changes.

It is hardly possible, if a little care is exercised, to confound *lupus erythematosus* with acne rosacea, although at the very beginning of the former disease, when there is simply a congestive patch with moderate scaling and a slight gaping of the follicles, a mistake could be made. When well developed, *lupus erythematosus* generally presents sharp and definite outlines, a more or less raised surface, with some little scaling which is quite firmly adherent; on the under surface of these crusty scales minute plugs are seen projecting, which have been drawn from the open sebaceous follicles. It is well to remember that *lupus erythematosus* was originally described by HEBRA under the title *seborrhœa congestiva*. The redness of *lupus*

erythematosus is of a more dusky hue than that of acne rosacea, it does not disappear so completely under pressure, and there is the absence upon the patch of lupus erythematosus of the minute papules and pustules belonging to the rosaceous disease. The eruption of lupus erythematosus is a much more pronounced and definite one than that of acne rosacea, and does not vary like the latter with the condition of the patient and the surroundings.

Some of the more superficial tubercular eruptions in *syphilis* are often mistaken for acne rosacea, especially when the patient is under the effect of treatment, and the eruption takes a more diffused form. A well-characterized syphilitic eruption presents very different features from any that are ever observed in acne rosacea, but sometimes upon the chin and also upon the cheeks and nose the syphilitic infiltration is very much diffused, and a considerable patch of reddened surface may be presented, and sometimes upon this we may have small elevations which can be readily mistaken for the papules or pustules of acne rosacea. But the eruption of syphilis in this stage is almost never symmetrical; there is also more or less of a tendency in it to assume well-defined and definite, circular and horse-shoe shaped forms. There is likewise in the syphilitic eruption the absence of the tingling, heat, and slight itching which often occur in acne rosacea, and it does not vary, as does the latter, with the state of health and surroundings of the patient. Still, in rare cases not a little care must often be exercised to establish the diagnosis between the two with perfect certainty.

Erythema of the face disassociated from sebaceous disease is comparatively rare, although more or less transient redness is not uncommon in those subjected to changes of temperature, and some individuals when flushing exhibit redness very much more decidedly in one portion of the face than in another. But the eruption of erythema seldom as-

sumes any appearance which could be mistaken for acne rosacea if due care is exercised. There is the absence of the papules and slight thickening which is found in the latter, which is also a more definitely marked and permanent eruption than erythema. It is sometimes difficult, however, to decide at once whether a redness should be classed as erythema, or be recognized as acne rosacea in the first degree.

Occasionally *psoriasis* will attack the face and may present an appearance which might suggest acne rosacea; but this is very rare. When this occurs the eruption is always present on other portions of the body, exhibiting its own features, and the lesion on the face will be found, on careful examination, to present the same characteristics, being composed of separate patches or plaques, circular in form and exhibiting their peculiar scaling.

The term "*chronic erysipelas*" is often applied to cases of acne rosacea, and also to erythematous eczema and erythema of the face, and is mentioned in this connection in order that the error may be avoided; it is sufficient here to call attention to the fact that erysipelas is an acute, inflammatory, infectious disease, and does not exist in a chronic form; although, recurring erysipelas of the face is not an infrequent affection, but need never be confounded with the eruption under consideration. Its acute onset, the rose-colored flush belonging to it, the slight œdema, the burning heat, and the general systemic symptoms, commonly present to a greater or lesser degree, are all quite sufficient to distinguish this eruption from acne rosacea.

It is always well to bear in mind in the diagnosis of this and all other diseases of the skin, that it is not at all impossible for the individual to have several distinct eruptions at the same time, even affecting the same portion of the body; thus, as we have seen in acne, all of the lesions of

the sebaceous glands are frequently associated at one time or may follow one another in the same individual. Erythematous eczema is not rarely accompanied by more or less acne rosacea, and the patients with this latter eruption may develop the lesions of syphilis or other disease while the former still exists.

Pathology.—We have seen that acne simplex depends largely upon a plugged condition of the sebaceous follicles, the presence of the hardened or altered plug of sebum acting as a foreign body and exciting inflammation. In acne indurata the deep-seated lesions do not appear to depend upon this cause, but arise idiopathically as a localized inflammation of a particular gland or group of glands with the surrounding tissue. In acne rosacea we have yet another condition, which is different from either of these. It is characterized mainly by the occurrence of an abnormal amount of blood in the vessels of the skin, as well as in those surrounding the sebaceous glands. The true cause of this congestion and consequent stasis is as yet unknown, but undoubtedly it has very close relations with nervous reflex action, often having its origin in organs very remote.

In some cases this congestion and stasis appear to be the main element of the disease, and papules and pustules rarely appear, if at all; and this condition may remain for an indefinite period without much change, except in its increase from time to time by the causes which have been mentioned, or its diminution with the altered condition of the patient. Sooner or later, however, the capillary disturbance results in more or less definite and localized foci of inflammation, and there appear small papules or pustules, conical on their summits, scattered over the reddened surface, possibly with a little desquamation; these represent sebaceous glands which have undergone inflammation; still later hypertrophy of tissue occurs.

The changes which take place in acne rosacea con-

sist, therefore, of congestion, dilatation, and new formation of blood-vessels, hypertrophy of connective tissue, and inflammation and suppuration of the sebaceous follicles.

To understand these changes rightly, the anatomy of the skin should be borne in mind, and especially as far as relates to its circulation. There will be found two layers of blood-vessels in the corium, a deep one near the subcutaneous areolar tissue, and a superficial one, situated below the papillæ. These two layers are connected by branches arising from the deeper one, which, ascending perpendicularly, may be said to form the upper or superficial layer. It should also be remembered that the arterial supply of blood is somewhat greater than can be readily carried away by the veins, though these latter are very abundant (LUSCHKA, SÖMMERING). This last-mentioned fact has been especially insisted upon by those who regard *acne rosacea* as distinctly congestive in its origin. There is no doubt that congestion does play an important part in the process, but in all probability some change in the coats of the vessels precedes and favors the development of this condition. HANS HEBRA ascribes it to an extensive lowering of the tone of the walls of the vessels, which then suffer from paresis. As the process further develops absolute paralysis ensues.

SCHWIMMER prefers to regard the process as depending upon nutritive changes, and though allowing that at its inception the disease may be dependent entirely upon a neurosis of the vessels, yet he considers it in its further development as a trophoneurosis. AUSPITZ regards *acne rosacea* as caused by a general vaso-motor disturbance, but declares that we know nothing in regard to the real nature of this vaso-motor disorder.

Comparatively few data have been published in regard to the pathological changes found in *acne rosacea*, most writers limiting themselves to the consideration of its

clinical features. ALIBERT reports an examination made by a pupil, in which hyperæmia was localized radiating from a central point of inflammation, while in some localities this central point had broken down, forming a pustular cavity, such as has been already described in acne simplex and indurata. G. SIMON examined the nose of a drunkard which was covered with moderately prominent nodules of acne rosacea. The masses, which were during life of a dark-red color and very prominent, showed very slight redness and but little elevation after death. The thickening consisted of fully developed connective tissue, and the sebaceous glands were greatly enlarged and filled with hardened sebum. He considers that the hypertrophy of connective tissue and vascular increase is secondary to the enlarged and inflamed sebaceous glands. HEBRA added nothing to our pathological knowledge of this condition, but recognized the hypertrophic element, and, although considering the disease clinically in connection with acne simplex, he still held somewhat to the position taken in 1845, when he placed the disease in the class of neo-plasmata (see page 25). NEUMANN and KAPOSI only repeat the views of others.

In a case of hypertrophic acne operated on by WAGNER, the following changes were reported by PIFFARD. The mass weighed nearly an ounce, and appeared to be a pure hypertrophy of the dermal connective tissue. The horny layer was very thin, and the rete Malpighii was very thick, with mostly large and well-formed cells, but in some places the nuclei were shrunken. The papillæ were enlarged in length and breadth, and contained many round and fusiform cells. The sebaceous glands were not much altered, some were normal, others undergoing degenerative changes. HANS HEBRA has lately written fully on the hypertrophic stage of acne, under the name *rhinophyma*, and claims that it should be regarded as an in-

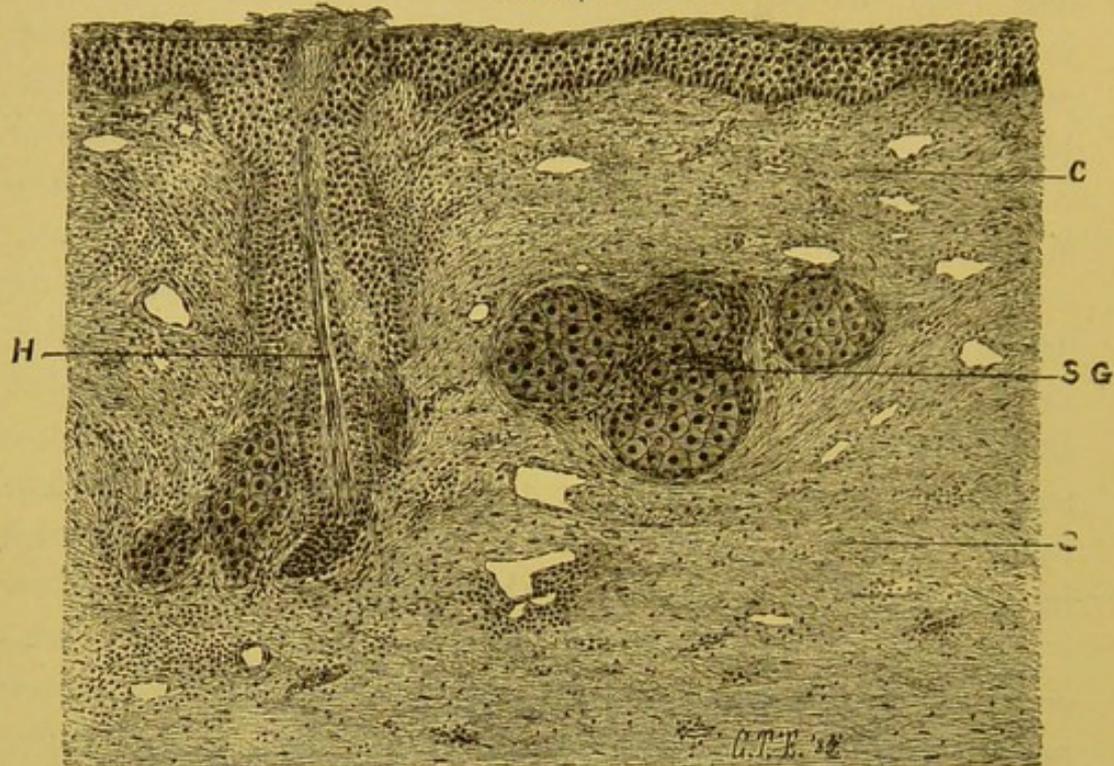
dependent affection, and should be separated from acne rosacea. But his report of the microscopic condition found in his case shows that the sebaceous glands were exceedingly numerous and large, and formed a very prominent element in the pathological condition present. He believes, however, that this hypertrophic condition of the sebaceous glands is secondary to the connective tissue hypertrophy, which by its development occludes and cuts off portions of sebaceous glands, which then go on secreting and thus produce a retention of sebum, which in turn acts as an irritant, stimulating further hypertrophy. BIESIADECKI also found distention and hypertrophy of the sebaceous glands, together with enlargement and new formation of blood-vessels both in the superficial layer and in the branches rising from the corium.

In speaking of the pathological anatomy of acne rosacea, it is necessary to treat of each grade of the disease separately, as they each present conditions and changes which differ both qualitatively and quantitatively. In the first grade, we find only the deep layers of vessels congested, dilated, and varicose. As the process develops, the congestion extends to the net-work of vessels surrounding the sebaceous follicles, and this probably causes the seborrhœa oleosa, which is found accompanying the first stage of acne rosacea. The glands themselves, however, show no structural change, and only here and there are found a few round cells, and slight evidences of infiltration.

The second degree or grade of acne rosacea shows a greater advance in the development of the process. The congestion and dilatation have implicated the superficial layer of vessels and its papillary branches. These are dilated and varicose, new vessels are formed, and a section examined under the microscope shows the tissue traversed by a large number of blood-vessels. They are thin-walled, their lumina very large, and they are distributed

generally throughout the corium (Figure 24); this latter is slightly hypertrophied. Small celled infiltration is found

FIG. 24.



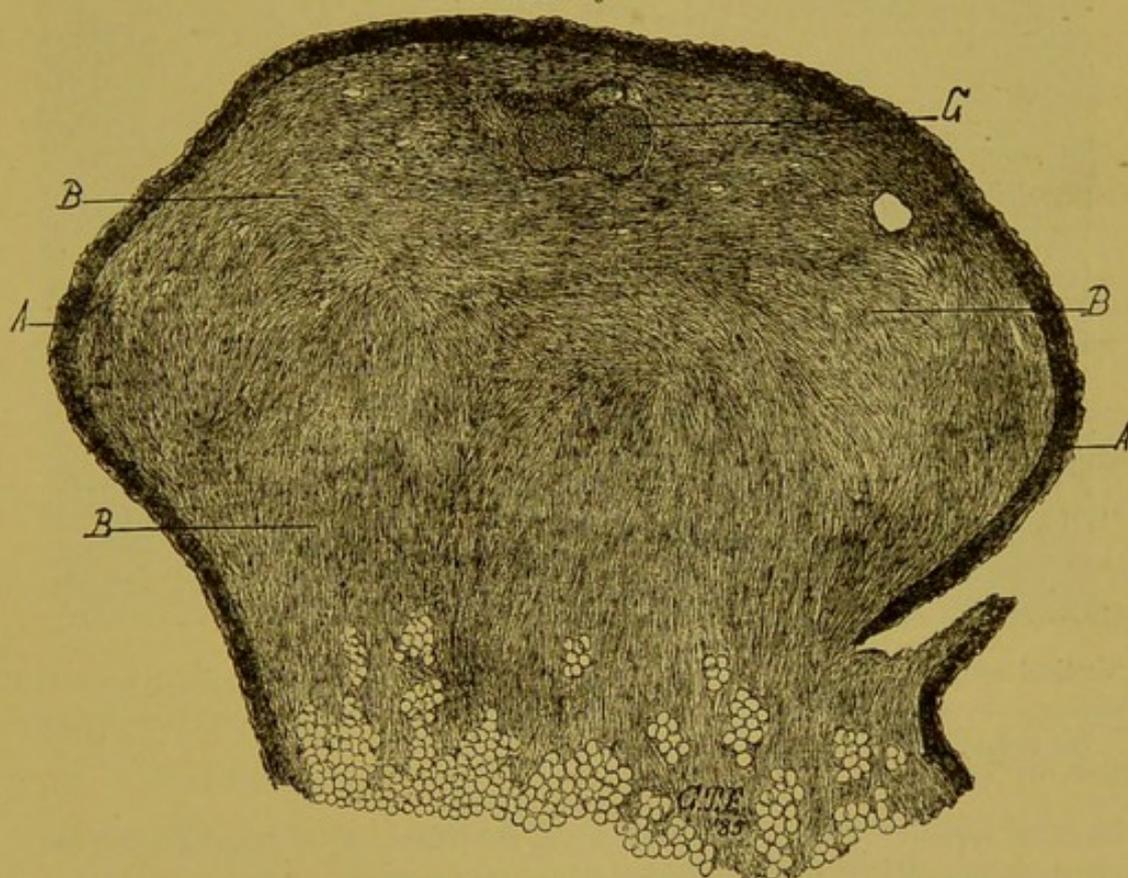
Vertical section through the tip of the nose in acne rosacea: H, lanugo hair with two glands; S, G, enlarged sebaceous gland; C, corium hypertrophied and very vascular, with many large, thin-walled blood-vessels. Rete and epidermis normal.

more or less around the blood-vessels and follicles. The sebaceous glands are slightly enlarged, and it is in this stage that occurs in them those changes which have already been described under acne simplex and indurata. The pathological histology of the papules and pustules occurring in this stage of acne rosacea differs in no way from the descriptions already given, with the exception of the absence of the comedo element obstructing the duct of the glands.

The third stage of the eruption, which really marks a period when the results of the disease have become permanent, and the condition has passed from that of congestion and inflammatory exudation to one of organization, exhibits various degrees and conditions, both in different cases and at different periods of its progress.

In addition to the changes already described as characterizing the first two degrees, and which are still present in this last stage of the disease, there arises an enormous hypertrophy of the elements of the tissues of the skin of the nose, but especially of the connective tissue, and the consequent formation of fleshy excrescences (ROKITANSKY). The structure of one of these masses is well shown in Figure 25, where the entire tumor is seen to be composed of closely woven connective-tissue fibres,

FIG. 25.

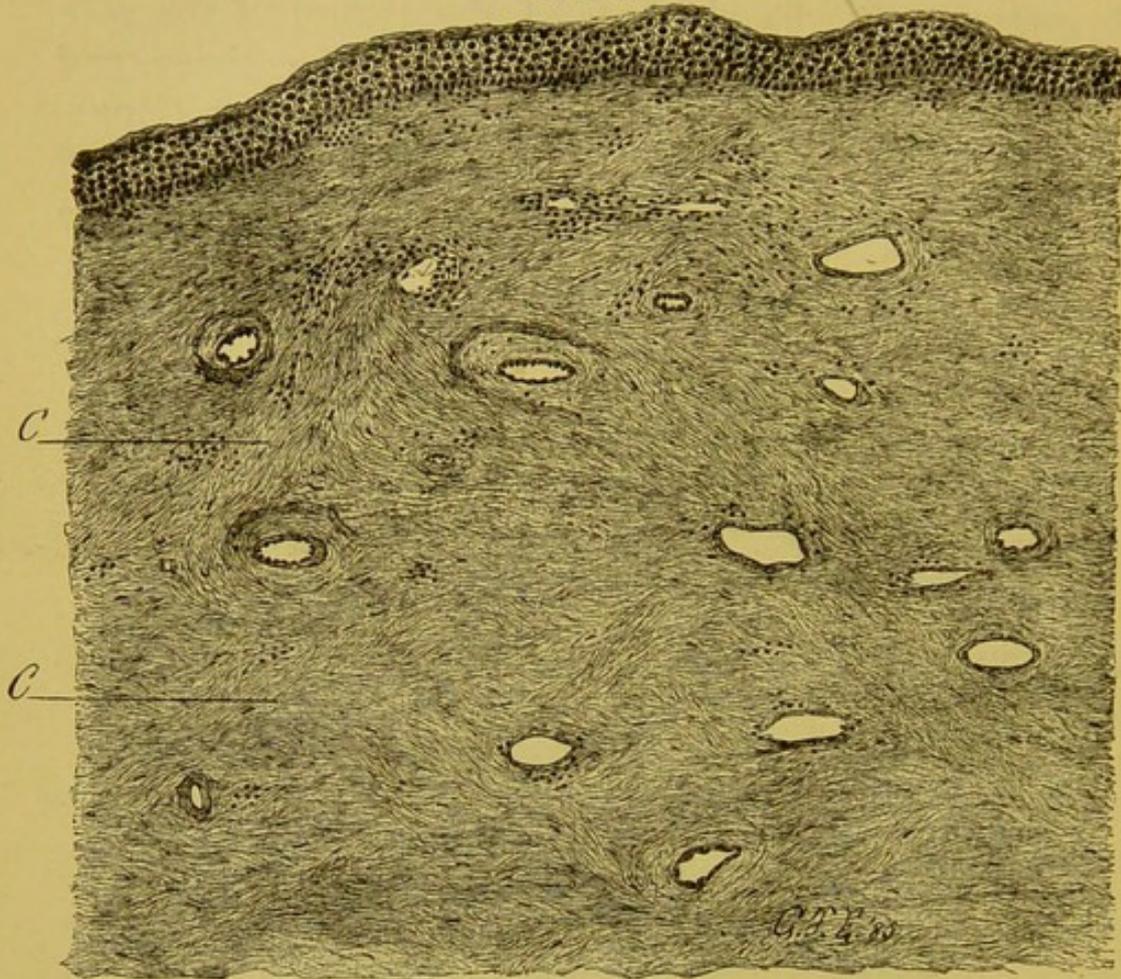


Vertical section through an entire tumor of the nose in acne rosacea hypertrophica (Rhinophyma): A, rete Malpighii and epidermis; B, connective tissue; G, sebaceous gland.

embracing relatively large blood-vessels; the rete and epidermis are unchanged, and in this specimen there appears but a single sebaceous gland, not greatly enlarged. A portion of this tissue is presented still more highly magnified, in Figure 26, where the blood-vessels are seen to be

dilated and to consist of arteries with hypertrophied coats, and dilated veins. It cannot yet be established with cer-

FIG. 26.



Vertical section through a portion of the circumference of a tumor of the nose in acne rosacea hypertrophica (Rhinophyma): C, C, connective tissue constituting the tumor, which is rich in blood-vessels.

tainty whether there is any new formation of blood-vessels in this condition, or whether there is only an hypertrophy of those previously existing. There is more or less small cell infiltration also seen in this tissue, together with many embryonic cells.

Etiology.—It is often very difficult to arrive at a definite decision with regard to the exact causation of acne rosacea in any particular case. Although the study and analysis of the cases here presented shows many elements whose

bearing upon the eruption are very striking and decided, no single cause can be asserted with positiveness, nor, indeed, can any group of disordered conditions ever be regarded as necessarily followed by acne rosacea.

The eruption appears to be much more common in women than in men; among the cases here analyzed there were 261 females and but 109 males. This apparent difference, however, in the relative number cannot be taken as an actual indication of relative frequency of the disease in the two sexes, inasmuch as females are much more solicitous about their appearance and naturally give more attention to such an eruption than do those of the other sex.

Age has not a little to do with the occurrence of the eruption. Thus in Table IV., Chapter III., it is seen that under 20 years of age the disease was noted but 14 times; between 20 and 25 there were 51 cases, after which the number increases, the maximum being reached between the ages of 30 and 35, when there were 66 cases noted; 238 out of the 370 cases occurred between the ages of 25 and 45.

Heredity is sometimes spoken of as an element operating antagonistic to the cure of acne rosacea. Undoubtedly this might be a factor of importance if it existed to any great degree; but in the study of these cases I have been able to find very little if any proof looking toward an hereditary element, and I have not been able to discover it to be any barrier to the cure of the eruption. In the few cases where it seemed to exist they were not peculiarly rebellious, and in other cases which proved stubborn, there was no history obtainable of the eruption being hereditary.

In both sexes constipation was found to be a very frequent accompaniment of the eruption, and in a number of instances the face lesions disappeared under the treatment directed against this alone. Frequently, also, it was noted

that the eruption increased or returned when a constipated habit of bowels occurred. Digestive disorders of various kinds, often of a most persistent and rebellious character, are continually found in those exhibiting acne rosacea; and it will be noted continually that the condition of the face depends very closely upon the manner in which these functions are performed. The urine in these cases not infrequently exhibits the results of imperfect alimentation, and deposits of the urates and oxalates are of very common occurrence. Albumen or sugar was very rarely found in the urine of these cases suffering from acne rosacea.

The gouty or acid state of the system is that most commonly found in sufferers from acne rosacea, which is comparatively seldom seen in scrofulous subjects. The active phenomena of gout, such as joint inflammations, are rarely met with, but the more obscure and less prominent symptoms of the lithæmic state occur in a not inconsiderable portion of those presenting acne rosacea; there will also frequently be more or less fugitive muscular and joint pains. Circulatory disturbances are of common occurrence in subjects with this eruption. Not only palpitation of the heart, occurring as a symptom of digestive disorder, but irregular action without such causation, and also disturbances in the brain circulation, manifested by giddiness and flushing; also cold hands and feet are most common conditions in those affected with this form of acne.

In females the eruption of acne rosacea is seen to be closely related to the mode of performance of the sexual functions, and almost all cases will be found to be aggravated both after and near the time of the menses, and especially by any disturbance of this function. In 132 cases of acne rosacea in females in which this matter was noted, the menses were claimed to be normal in but 65 cases, while in 57 there was habitual derangement, and in 10 cases this happened occasionally. In comparatively few

of the cases can actual disease of the uterus be discovered, although in some of the most rebellious instances of acne rosacea ulceration of the cervix was present and had persisted for some length of time. In several patients the organ was more or less bound by old pelvic cellulitis, and in a small proportion of cases flexions and versions were recorded. Ovarian irritation and congestion was recognized in a number of instances, but in many patients the menstrual disorders which were complained of were found mainly to be functional in character, largely dependent upon engorgement of the liver and abdominal organs. In many of these cases of long standing menstrual disorder, the relief to this feature, which was afforded by the constitutional treatment directed for the benefit of the face eruption, was very striking.

Diet and hygiene frequently play a very important part in connection with the etiology of acne rosacea. The effect of spirituous liquors upon the face is well recognized, as is instanced by the popular terms, "brandy nose," "rum blossom," "wine nose," and the like, and their effect may be noted continually in those who are subject to the eruption. Not only does liquor in excess produce an aggravation in the eruption, but in many instances the smallest amount of alcohol in any form will be immediately followed by the subjective symptoms of burning and flushing, and more or less increase of the eruption. While the stronger liquors, such as brandy, whiskey, and rum are popularly credited with this effect, the fermented liquors are certainly fully as effective in producing the eruption. Ale, beer, champagne, and even Rhine wines have been seen to cause this form of acne again and again after its removal. In a considerable proportion of the cases of acne rosacea, however, it will be found that alcoholics have not been previously taken at all, in any form. Tobacco has more or less effect in augmenting the eruption, and smoking may

operate disadvantageously in two ways: first, by lowering the tone of the vascular system, and, second, by the direct irritant effect of the smoke coming in contact with the inflamed face. The eruption of acne rosacea is also constantly seen to be closely dependent upon the food eaten. Some patients will state that soup taken in any quantity always causes an aggravation of the disease. The richer foods, fried articles, sweets, and any substance capable of causing indigestion or imperfect assimilation, will almost surely be followed by an aggravation of acne rosacea.

As in the cases of acne indurata, occupation may often exercise a very considerable influence upon this eruption. As is well known it is commonly seen in those who are exposed to sudden changes in the atmosphere, as in cabmen, and also in those whose occupation requires them to be in close proximity to a fire, or to stoop much of the time.

In regard to the nervous relations which are more or less evident clinically in all cases of acne rosacea, and which have been asserted by many to be of great importance, sufficient data are by no means determined to enable a positive statement to be made in either direction. It certainly does seem probable, in many instances, that the alteration in the blood-vessels of the face is wholly of a reflex character, and that the functional or other disturbances within the abdominal cavity, which have been mentioned, may and do excite, by reflex action, a capillary derangement in the face. Whether all the changes observed in acne rosacea can be thus explained remains for future and further investigation to determine. It is quite possible that the relief afforded to the face congestion by internal remedies may be entirely explained by the removal of the causes which act as reflex excitants.

In some cases it will appear very difficult to determine

the etiological factors of acne rosacea, and considerable investigation of each case will often be necessary in order to fix upon elements which will afford indications for treatment. But it is always desirable and necessary to search very particularly for causes, and in the end it will generally be found that patients with acne rosacea are not in perfect health, but exhibit some symptoms which can form a basis for intelligent treatment.

Treatment.—The treatment of acne rosacea varies very considerably with the patient, the cause, and with the condition and stage of the eruption. Constitutional and local measures are both required, and diet and hygiene play an important part in its treatment, as was found to be the case in the other varieties of acne. In a considerable proportion of the cases of acne rosacea it will be found that the individual is either rather full in habit, or has indulged more or less excessively in the pleasures of the table. In a certain number, however, it will be noted that from one cause or another derangement of the digestive organs has occurred, and but comparatively little food can be taken with comfort; this is more common in females than in males.

The directions in regard to diet, therefore, must vary considerably with the individual. In almost every instance, alcoholic and fermented liquors must be entirely excluded, and also rich articles of diet consisting of pastry, fried articles, rich dishes, gravies, and the like. The diet should be plain, simple, and nutritious, and unnecessary articles more or less avoided. Tea and coffee will often be found to flush the face, and many patients can never take them; but, as a rule, unless they cause distress, either or both may be taken once a day. Much liquid with meals always acts prejudicially, and this remark applies equally to soup and to liquids drank; chocolate and milk are also prejudicial, and iced water should be particularly restricted.

PLENCK recognized the excessive use of water as a cause of acne, making a separate class of *gutta rosea hydropotarium*; he also makes the curious remark, "Plures curavi suadendo, ut vinum bibere incipient." Hot water may often be taken half an hour before eating, with much advantage. In dyspeptic cases no little difficulty may be met with in regulating a proper dietary; but care and patience must be exercised if at all permanent results are expected. An excess of sweet substances will invariably be found to make these cases worse, and candy especially should be entirely interdicted. Proper exercise, and yet without exposure to strong wind or great cold or heat, should always be taken, and in certain cases it is necessary to investigate the matter of habitation, of fresh air, and of all elements which may lead to a lowered state of vitality.

The majority of cases of acne rosacea will be benefited from the first by the internal administration of alkalies, the treatment of this condition being very similar to that already described under the head of acne indurata. The acetate of potassium taken half an hour before meals (Formula 11) will be found of the greatest service. When constipation exists, a little cascara extract, ten to thirty drops, may be added to each dose; and when there is dysmenorrhœa, the addition of tincture of cypridium in doses of from ten to twenty drops in this mixture, proves very serviceable. In instances where there is a direct and marked stomach acidity the alkali often agrees much better when taken after meals (Formulæ 9, 12). In cases marked by a great tendency to flushing of the face and head, an acid medication gives more relief (Formulæ 7, 8). Iron is generally not at all well borne by patients with acne rosacea, although sometimes in the mixture of the sulphates, (Formula 5) it will be found of value. There is, however, almost always in these cases a tendency to liver and abdominal engorgement, and if iron is indicated by anæmia

present, very great care must be taken with regard to the action of the bowels. For this purpose it is well from time to time to give a sharply acting purge (Formula 13), repeated from every five to seven days.

Great care must be exercised in regard to the matter of constipation in acne rosacea, for it will frequently be observed that as often as this condition returns the eruption will appear upon the face. For habitual use the pill of aloes and iron (Formula 15), as already mentioned, can be depended upon, if it be properly managed. These pills should be given regularly and systematically, for a considerable period of time; if the constipation is marked they may be taken as many as two or three after each meal, and when, at the end of a few days, their action will be found to be somewhat excessive, the dose is slowly reduced. It is rather desirable not to allow any looseness to be produced by them; but as soon as the bowels act in a regular and normal manner, it is well to diminish the number gradually. If the constipation should return at any time the highest dose should be immediately resorted to again and the same diminution followed. My experience has been decidedly against the value of mineral waters as a laxative in acne rosacea. Enemata, also, by no means suffice to secure the action of the bowels demanded in this affection, for it is not the lower bowel alone which requires to be thus reached; the difficulty consisting rather in a sluggish action of the entire abdominal organs, and the mere removal of accumulated fæces by injection can never suffice to remedy the existing trouble.

In certain cases of acne rosacea, after the inflammatory element has somewhat subsided, the very greatest benefit will sometimes follow the administration of cod-liver oil, although it is somewhat difficult to have this remedy well digested by these patients. Arsenic seems to have comparatively little effect upon the eruption, although HUNT

claims that it alone, if persisted in, in sufficient doses, can cure the eruption ; late in the disease it is often of service combined with other remedies. Ergot occasionally will prove of the most signal service in this eruption, where it seems to depend rather upon a relaxed state of the capillary system than upon any direct reflex congestive condition. It may be given alone and freely, but generally will need the assistance of other remedies either at the same time or alternately. Sulphide of calcium has very little if any effect in controlling acne rosacea, although when pustules form any considerable portion of the eruption it can aid in their removal.

In the later stages of acne rosacea, when dilatation of the blood-vessels and hypertrophy of the tissues have taken place, but little can be hoped from internal treatment ; although even in these cases ergot has some little effect in reducing the condition. But even in this stage it is important to attend to the elements already mentioned, and frequently to give more or less active treatment looking toward the diminution of congestion, inasmuch as its continuance and increase can further augment the permanent condition which is developing.

The *local treatment* of acne rosacea is very important, although its results are in the main but local, and often more or less transitory. But it is essential not only to do the right thing but to avoid the wrong ; and some little judgment will often be necessary to determine the degree of soothing measures required, and the amount of stimulating treatment which can be borne with advantage. The early management of the eruption is much the same as that required for the other inflammatory forms of acne. Soothing and slightly astringent applications are called for in the early, congestive stage, and at this period few applications can give greater comfort and relief than the lotion of calamine and zinc already referred to (Formula 24) ; this

is applied very freely at night, by pouring it into a saucer and sopping it thoroughly upon the face with a bit of muslin. It should also be lightly applied at other times, and a slight amount of it left on the face during most of the twenty-four hours.

Hot water, used as described under *acne indurata*, will often be of great benefit in this eruption, although in the milder cases it is generally not called for. In some patients, however, it will seem not to agree, and will produce more or less of burning, and sometimes be followed by quite a little desquamation.

If the burning and heat in the face is not excessive, one of the lotions containing sulphur (Formulæ 17, 18, 19, 20), will be well borne, and will be followed by a diminution of the eruption. Occasionally these may prove a little too drying, and a soothing lotion (Formulæ 24, 25) may be used in conjunction with them, or alternately. Ointments, as a rule, are not well borne in these cases, although if there is much dryness of the skin they will sometimes prove of value (Formulæ 43, 45, 46).

After the more acute symptoms have subsided, and there is left an indolent, congestive condition of the part, perhaps with the formation of occasional papules, stimulation is called for, and can be employed either by means of the green soap, carefully rubbed on, or by some of its preparations, or by lotions of caustic potash (Formulæ 33, 35). The latter agent is, perhaps, the most desirable, because of the readiness with which the strength of the application can be adjusted. Ten grains of caustic potash to the ounce of water is readily borne by most skins, and very striking benefit will often result from a brisk friction of the surface for a few minutes with such a solution at night, followed by the application of diachylon or other soothing ointment (Formulæ 43, 44), until morning. Sometimes a weaker preparation, such as five grains to the ounce, will

be sufficient, and in rare instances stronger solutions than that first mentioned can be employed, but always with caution. It is rarely well to follow up this stimulating treatment for more than a few nights in succession, say from three to five, when the parts may be given a rest under a soothing treatment (Formulæ 24, 25).

When a later stage of acne rosacea has been reached, and there is dilatation of the capillaries and increased formation of connective tissue, all such local treatment is of comparatively little value, except as it may prevent further increase of the disease, and more radical measures are now necessary for the removal of the deformity. When the dilated capillaries are large and tortuous they may be permanently removed by a very simple surgical procedure. This consists in carefully slitting each dilated capillary with a sharp knife, and then by means of a sharp-pointed stick of nitrate of silver the vessel is cauterized along its entire length to the point where it disappears in the tissue below. By this means the lumen of the vessel is entirely obliterated, and its re-growth is impossible. A number of blood-vessels may be thus treated at each sitting; a little cotton is applied to the part after the operation, which soon falls off, leaving a slightly depressed linear scar, which subsequently becomes entirely effaced. Cases presenting disfiguring blood-vessels of considerable size, ramifying over the surface, may be thus reduced to a normal condition in very few operations. The process is a little painful, but is readily borne without an anæsthetic. A strong solution of iron, such as the liquor ferri subsulphatis, may be applied after the incisions, instead of the nitrate of silver, with good effect. This plan is more certain and effective than that of a simple free incision of the blood-vessels, as has been recommended, or than the multiple puncture and scarification, which have also been advised. Electrolysis has been recommended for this purpose (HARD-

AWAY), and is performed by means of introducing a fine needle, attached to the negative pole of the galvanic battery, thrust deeply enough to enter the dilated vessel. The positive electrode is placed at an indifferent point, as in the hand of the patient, and the current completed after the insertion of the needle; this has also been used by others with success. The use of the Faradic current has also been recommended (CHEADLE), but this is weak and superficial in its action compared to the operations just mentioned.

When the hypertrophy has gone on to a considerable extent, the deformity can be remedied successfully by means of a surgical operation (WAGNER, H. HEBRA). This consists in removing the enlarged portions and performing such rhinoplastic operations as are necessary.

Prognosis.—The prognosis of acne rosacea varies considerably with the case, and also very largely with the opportunities which are offered for treatment. In those individuals who exhibit gouty acidity, with more or less of debility, the eruption is, as a rule, quite manageable, except in the case of women where there are obstinate uterine complications. In older subjects, where the disease has lasted some length of time, and the habit of body has become gross, and a lax condition of the blood-vessels has ensued, the eruption is more difficult of removal. It is almost impossible to cure acne rosacea permanently unless the patient is willing to abide strictly by the rules given by the medical adviser; for it will constantly be observed that transgressions in the matter of eating and drinking will be followed by relapses. Acne rosacea has no tendency whatever to get well spontaneously, and unless the disease is actively and radically treated it tends to continue for years, with exacerbations depending upon the condition of the patient; and each increase of the eruption may be followed by more or less deposit of new connective tissue, tending to produce the hypertrophic condition described.

CHAPTER VII.

DIET AND HYGIENE OF ACNE.

As has been abundantly demonstrated in the preceding chapters, Acne in all its forms is so intimately connected with the general health and condition of the patient, that, in order to accomplish its cure in the most rapid and permanent manner, very careful consideration must be given to the investigation and management of each case. Every case is to be studied separately upon its own merits, for hardly any two patients with acne will present precisely the same features, and rarely will two cases require precisely the same treatment from beginning to end. Every element relating to the general health or condition of the patient may have a bearing, more or less direct and positive, upon the eruption which it is sought to relieve; and a failure to recognize and treat any element which can thus influence the eruption may render that case incurable.

It is to be well borne in mind that lesions of the sebaceous glands occur from many causes. These eruptions do not depend upon an actual morbid agency entering from without, as in the case of infectious diseases, but represent a faulty action of the part and a lowered general vitality, while the direct exciting cause may be a local irritant, a disordered blood state, or a nervous element, perhaps reflected from a deranged organ far distant. It is to be remembered, also, that there is no one specific for acne, nor any one remedy which will be of value in every case, or even in the same case at different times and under different conditions. There is perhaps no single well-recognized disease which requires such a variety of treatment,

and, withal, such careful investigation of the individual as that now under consideration. The aim, therefore, of general and constitutional treatment is to so modify the nutrition of the patient that the functions of the sebaceous glands shall be properly performed; to this end the alimentation of the system must proceed perfectly, and assimilation and secretion must be properly carried out.

To accomplish this, considerable attention should be paid to the matter of the diet and hygiene by the physician. It is not sufficient to give these patients general and indefinite directions with regard to these matters, for many thus affected are often found to be grossly ignorant even of the simplest elements pertaining thereto. Some of these topics have been already referred to in the preceding chapters, but in order that the subject may be clearly and definitely put into practical shape, these will now be considered more fully in detail.

The causative elements in acne are in some respects similar to those producing eczema; not only do acne and eczema often occur in the same individual, as has been previously mentioned, but clinically the patients are found to present much the same phenomena in regard to digestion and their general physical state. While, therefore, the matter here given relates to the diet and hygiene of acne, some portions of it will be found not unlike that presented in my work on Eczema.

The subject of the proper diet in health and disease is one which is but poorly understood by the majority of persons, and it will continually be found that gross errors are committed on the one hand, while, on the other, the attempt is made, generally without success, to limit the disease by diminishing the nourishment taken. But diet, properly understood, does not signify a starving process, whereby the nutrition and tone of the system are to be lowered or the supply of nutritive matter is to be diminished, but it

represents rather the science of so apportioning the elements which go to make up the human frame that perfect health shall follow, while the functions of the system are properly performed. There is no question whatever that proper diet is of the greatest importance in the management of acne. Not only should articles which experience has proved to be injurious be avoided, but other articles which are often wrongly abstained from are to be taken, in order to form a total of healthy life. Defective assimilation and disassimilation are beyond doubt important factors in the production and continuance of acne, as has been abundantly shown in previous chapters. These factors are to be remedied not by medicine alone, but by the regulation of every element which enters into the nutrition of the body; given perfect nutrition and acne often ceases to appear, although some of the results of the disease may remain, requiring aid for their removal. Perfect nutrition cannot be obtained by drugs alone, if the supply from whence the tissues are formed is in itself faulty.

Good health and good judgment are undoubtedly reliable guides in the majority of instances for the regulation of the diet, but, unfortunately, every one does not possess one or both of these, and the surroundings of modern society will often greatly influence individual caprice in one way or another. The patient with acne has, in the vast majority of instances, committed errors of diet and is still committing such, which, if they do not render the disease incurable, certainly retard its removal. There is no doubt that the gouty patient may induce or aggravate his disease by the pleasures of the table or by his mode of life. There is no doubt that many strumous and rachitic persons have become so by their diet and course of living. There is no doubt, again, that the neurotic patient has given occasion to his condition, to a very large degree, by his habits and surroundings. Acne is related, more or less, to these

three states; and in the strictest investigation of the diet, hygiene and conditions of life, and in the proper regulation of the same, will be found the surest road to perfect and complete freedom from this eruption.

In previous chapters it has been mentioned that sweets act prejudicially in acne. The clinical observation is continually made by patients that each over-indulgence in sweet substances will be again and again followed by the new development of the elements of acne. It is essential, therefore, to avoid candy entirely, and also such rich and purely sweet articles as honey, syrup, pound-for-pound sweetmeats, and the like; ice-cream generally proves more or less injurious. A reasonable amount of sugar in tea and coffee is not deleterious, nor a little sweetening taken otherwise with the food.

It is commonly supposed that butter and fatty substances are harmful to subjects afflicted with acne. This, however, is not the case; and very frequently the eruption will be more benefited by increasing the oily portion of the food, as by the addition of cod-liver oil, than by any other single means. Butter taken pure, as spread on bread, and the like, is by no means injurious, and may be indulged in as the taste inclines. Pure fat, as the fat of fresh meats, beef, mutton, etc., is also to be encouraged, unless these manifestly disagree with the stomach; and oft-times under the alkaline treatment suitable for acne they will be found to be digested as never before. But, on the other hand, fatty substances cooked in combination with other articles are often very prejudicial in these cases. This is most markedly seen in those instances where animal or vegetable matter is fried in fat; fried oysters and fried egg-plant are, perhaps, the most typical which could be mentioned out of the many articles which are liable to be taken. The nearer the approach to these, the more harmful is the substance. With such fried things must also be excluded

griddle-cakes and all hot breads, or bread less than twenty-four hours old. Pastry, also, in all forms, is exceedingly injurious, and the use of even the smallest amount of it will sometimes be attended by an outburst of acne.

Certain other articles of food are also found to be very commonly followed by the appearance of the lesions of acne, when they are indulged in to any extent, and often, indeed, the smallest amount of them suffices to produce the eruption. Such are nuts of all kinds, cheese of the richer varieties, chocolate in excess, bananas, and some of the more indigestible vegetables, as sweet potatoes and cabbage. Salted meat and fish are also to be restricted in these subjects, but fresh fish and shell-fish have no effect in producing the eruption, and are rather beneficial. Oat-meal is not infrequently found to aggravate an eruption of acne, and must often be replaced by crushed wheat, hominy, etc.

Tea and coffee are often thought to be injurious in acne and are avoided, but in at least half of the cases they may be taken in moderation without disadvantage. When, however, they seem to act prejudicially, as coffee will often be found to disagree and tea to be followed by heart-burn, they must of course be restricted; but, as a rule, it is far preferable to take a small amount of either or both of these once a day, in not too great strength, than it is to take a large amount of iced-water, which is often made to take their place at the meal. On investigating cases of acne, it is sometimes surprising to discover the amount of iced-water which is drunk by some patients thus affected, frequently, as they recognize, to their very great detriment, causing the eruption to recur again and again. In order to avoid the drinking of water with the meals, it is often desirable to administer hot water half an hour or an hour before eating. This should be taken quite as hot as tea is ever drunk, and in quantity sufficient so that the thirst at meals can be readily controlled, and all iced-water

avoided. It is well to have even a pint of water prepared, the patient taking as much as is reasonably possible.

Many individuals who have refrained from tea and coffee with the idea of benefiting an eruption of acne will attempt to drink milk largely with the meals as a substitute. This is not at all desirable, and often will be found to act most prejudicially on the eruption. Few adults can take milk in conjunction with other food without producing, sooner or later, the state of system known as biliousness; and it is better to entirely cut off milk as a drink at the meals, during the treatment of these cases, or, indeed, permanently. But milk is frequently a very valuable adjuvant in the treatment of acne, as has been before mentioned, when it is rightly administered, and it may be very desirable to have patients take it more or less freely during treatment. Many patients affected with sebaceous disease are found, as has been shown, to be in a state of lowered vitality, and the addition of the milk is often of the greatest advantage in restoring the proper strength to the system.

But it is exceedingly important that the milk should be taken in exactly the proper manner, and if this is accomplished many individuals who before had been unable to use this article, will find that it is borne not only without injury, but even with great benefit. When milk is drank with the meals it is at once curdled by the gastric juice present, and, mixing with other food, forms a more or less compact mass somewhat difficult of digestion; many individuals will recognize the fact that a glass of milk thus taken will often be followed by a headache, or some uncomfortable feelings, sooner or later, and may even cause the appearance of fresh acne lesions. After the digestion is finished, however, and the stomach has become neutral or alkaline during the period of repose (BEAUMONT, DALTON), the milk, having a slightly alkaline reaction, may, I believe, be

absorbed directly without undergoing the process of curdling and stomach digestion.

I am aware that the suggestion of a direct absorption of milk without coagulation is not a recognized fact in digestion, if indeed it has ever been previously suggested; all writers on physiology speak only of its coagulation and subsequent digestion, even in the presence of an alkali (HERMANN, HAMMARSTEN); but, as EWALD remarks, "closer investigations are still needed respecting these very important conditions." That milk can be absorbed from the stomach directly, like other fluids, without ordinary digestion is probable, for reasons which appear physiologically and clinically. Physiologically milk is already in as perfect a condition for absorption as could be desired; its fatty particles are in the finest state of division, about the same as is observed in chyle, and its slight alkalinity favors its direct entrance into the blood. It is to be remembered that milk has been repeatedly introduced into a vein in the operation of transfusion (JENNINGS), and it is believed that it may in like manner enter the blood directly from the stomach without the necessity of further preparation by digestion. Clinically the evidence in favor of this direct absorption of milk is found in the rapidity with which its beneficial and slightly stimulant effects are experienced, in some instances almost immediately after it is drunk, as here recommended; and also in the fact, that those who have heretofore been unable to use milk at meals, find that when the digestion is not taxed with it, they are able to drink it with great freedom and benefit between meals. In order, however, to secure this absorption without digestion, care must be exercised in several matters, otherwise the milk becoming even in part curdled, the entire process of digestion has to be gone through with, and the benefit therefrom is in part lost.

Milk should not be taken, certainly, less than three,

or possibly, even four or more hours after a hearty meal, and generally not sooner than an hour before the approaching meal. It is often desirable in these cases to fix a definite hour at which a goblet of milk shall be drunk, say, at eleven in the morning, four in the afternoon, and at bed-time, or at such times as shall accomplish the end desired. The milk should not be too cold, but preferably of a temperature approaching that of the room, or even warmer; it is frequently desirable to give it warm at bed-time, but not having been boiled. It should be drunk alone, and under no condition should even the smallest particle of food or anything else be taken into the stomach within half an hour or an hour before or after the milk. Even a small portion of bread or cracker can entirely overcome much of the good resulting from the milk, by inducing stomach acidity, which then, curdling the milk, delays its immediate absorption. The addition of spirit of any kind, or even egg, to the milk, acts in like manner and is strenuously to be avoided. If there is a tendency to stomach acidity it is often well to add a trifle of soda or liquor potassæ or magnesia to the milk, or to take a little in water a quarter or half an hour before drinking the milk. It has been stated that an alkali taken into the stomach before eating increases the quantity of the gastric juice; but in the condition under consideration, where there is hyper-acidity long after eating, I believe that, in the quantity which is usually taken, it acts to neutralize the acid already present, indeed, that it in reality only aids in completing the digestion of the preceding meal. Clinically the fact remains that if the alkali is thus taken the milk can be drunk with impunity, when without it headache or other disturbance may be produced.

As has been stated in previous chapters, alcoholic drinks are injurious in all the varieties of sebaceous disease, and unless strong reasons exist to the contrary, they should

be absolutely interdicted to patients suffering from these disorders. Rarely will it be necessary to prescribe them for any tonic effect, as this may be produced more safely and more surely by proper medication and diet. Not only are distilled spirits injurious in acne, but the fermented liquors also are fully as harmful, and often appear to be far more energetic in producing the disease. Few patients are found who indulge in the distilled liquors alone, and it is difficult to determine their exact share in the production of these lesions; but the eruption is often seen to occur in those who never use anything stronger than the fermented beverages, and many patients will say that fresh eruption has followed each indulgence in the latter. The relative harmfulness of some of the more prominent fermented articles of drink liable to be taken may be indicated by the following list, the worst being placed first: Strong ales and porter, champagne, port, madeira, light ales and beer, cider, sherry, burgundy, claret, and the lighter white wines. In regard to the daily use of small quantities of claret or white wine with the meals, it may be stated that with some patients this will act as a bar to the perfect cure of the eruption; and it is not always possible to determine beforehand in which cases this will occur. When they are persisted in it is always best to direct that a much smaller quantity be drunk than had previously been taken; it is quite as well to have this taken pure, but slightly diluted, for when mingled with water too great a quantity of fluid is apt to be indulged in and harm thus produced.

Meat should not be taken in excess by acne patients with the idea of giving strength; for it is frequently found that these patients do better when a moderate amount of meat is taken, not more than twice daily. Pork and veal should be interdicted, also the richer portions of poultry, stuffing, gravy, and the like. Nor is starchy food to be taken in excess by these patients, for oftentimes it will be

found that an acidity is developed by an excess of this class of aliment, which aggravates the existing eruption, and causes the development of new lesions.

Some minor matters will occasionally require the attention of the physician, otherwise they will act prejudicially to the cure of acne ; such are rapid eating and imperfect mastication, together with haste and mental anxiety or great fatigue at meal-time, etc. In obstinate cases a very little error in life may make much difference in the ultimate success of the treatment of this eruption.

But in the management of these cases some little care will often be required, lest the matter of dieting be carried too far ; for it will occasionally be found that patients have received one direction from one physician, others from a second or third, and a suggestion or two from a friend, so that from one or another cause it will eventuate that the diet is very greatly restricted, and so much attention is given to it that a morbid state of the system has been produced. In these cases it is sometimes desirable to direct that the individual discard all previous instruction upon the subject and forget entirely the matter of diet, and for a while indulge reasonably in all of the food ordinarily presented. Then attention may be given to the subject, and articles which are known to be injurious may be interdicted, together with such as have been found by experience of the individual to be followed by fresh eruption. In this way the diet of each particular case is to be determined and arranged in such a manner that perfect nutrition shall result.

Hygiene and matters relating to the mode of life must also be taken into consideration in obstinate cases of acne. It has been previously stated that many individuals with this eruption are found to present a very lethargic state of existence, and to lead very inactive lives. Some little effort will often be required to stimulate them from this

torpid state, and to induce them to take sufficient exercise to insure activity of the system. It is not sufficient for the physician to counsel that plenty of exercise be taken, but the matter should be inquired into, and the rules given should be enforced. Judgment will, of course, be necessary in order to avoid extremes of fatigue; but there will be far more danger of too little exercise in the open air than too great an amount being taken by these patients.

Free bathing, inducing healthy activity of the skin, is also desirable, and should be followed by thorough friction, to induce active capillary circulation. But my experience has shown that daily cold bathing is not desirable for many, and in repeated instances great benefit to the general health and to the eruption has followed the discontinuance of this habit.

Many patients will take Turkish and Russian, and often even sulphur baths, with the idea of purifying the system, and ridding it from the eruption of acne. While the former are of service in a certain small proportion of cases, this kind of bathing taken indifferently is not only useless in benefiting the eruption, but is often found to be very harmful. In those whose skin reacts kindly under the Turkish dry-air bath, this may often be taken once in a week or two; but not with the idea that thereby any impurities which cause the eruption can be removed. The bath can only act by stimulating the skin to perform its functions more vigorously and more normally, and by removing from the surface a certain amount of effete animal matter. Alkaline baths also act in the same manner, and are not infrequently of considerable service to acne patients. While local steam baths are sometimes of advantage when applied to the face affected with acne, softening the skin and the plugs contained in the follicles and stimulating absorption, the general Russian or steam bath has not been found to be of equal service, and is seldom to be recommended.

in this complaint. Sulphur and the mercurial baths are never called for, and are frequently very injurious.

Mineral springs are often thought to be of much service in acne, and many patients at one time and another visit different ones with the hope of obtaining benefit therefrom. In many instances the results are favorable, in many more they are negative or even injurious. Some share of the gain in these cases must undoubtedly be accredited to the change of scene and surroundings, which, as we have seen, will often influence the eruption very favorably; some share of it comes also, undoubtedly, from the effect of the mineral water employed. It is often difficult to determine with certainty the relative amount to be attributed to each element.

It may, however, be stated that the value of special mineral springs is very much over-estimated both by the laity and by many physicians, for rarely do we find that the person is greatly benefited or permanently freed from acne by any of the mineral waters which from time to time have been recommended for this complaint. But it is, nevertheless, often desirable to have acne patients visit these resorts of healing, when reasonably convenient, during the summer months, to add their beneficial influence to that obtained from medication at other times. The indications for their use are very similar to those relating to eczema, no very definite conclusions, which are reliable, being obtainable as to the particular spring which promises most for any one class of cases; the springs which are serviceable in eczema seem to be about equally valuable in cases of acne presenting the same general and constitutional symptoms. For a fuller discussion of the subject the reader is referred to my work on Eczema.

In conclusion, it will be seen that in order to obtain the best results in acne, it is essential for the physician to treat

the entire economy and to study the patient rather than the disease. While occasional cases will occur in which a simple local measure will be followed by the entire disappearance of the eruption, and sometimes even by its permanent removal, multitudes of cases will continually be found where these measures have proved inutile, or at least of but temporary advantage. While acne, therefore, is, to a certain extent, a local disease, that is, an affection involving at the time of its existence only the sebaceous glands, it is still found to have multitudinous relations with other conditions of the system, and to depend for its existence very largely upon the manner in which other organs perform their functions. To treat it successfully, therefore, will often require the highest and best effort both on the part of the patient, and education and discretion on the part of the physician.

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CHAPTER VIII.

THERAPEUTICS OF ACNE.

THE therapeutics of acne present a wide range of possibility, and at times reach deep and far into general medicine; no single remedy, internal or external, can cure the eruption or prevent its reappearance. As may be judged from what has preceded, individual cases may require much study in order to determine the line of treatment necessary to be pursued. No amount of prepared prescriptions, therefore, can supply the place of patient investigation and thought, and failure instead of success will often follow the employment of remedies or combinations of remedies, however highly recommended, unless care be exercised in suiting them to, or varying them for, the particular patient under treatment. In presenting the prescriptions recorded in this chapter, therefore, it is not intended that they shall be taken as fixed and definite formulæ, but they are given rather as suggestive of combinations which may be made with advantage in the treatment of the cases under consideration. In many, if not in most instances, they require to be varied to suit the case in hand.

MIXTURES.

1. *Mistura ferri et cinchonæ.*

| | | |
|--|-------------|--|
| ℞. Ferri et ammonii citratis, ʒj..... | 3 88 | |
| Potassii citratis, ʒij..... | 7 77 | |
| Liquoris potassii arsenitis, ʒjss..... | 5 60 | |
| Tincturæ nucis vomicæ, ʒij..... | 7 50 | |
| Tincturæ cinchonæ compositæ, ʒj—ʒij. | 30 00—90 00 | |
| Aquæ, ad ʒiv.....ad | 120 00 | |
| M. S. Teaspoonful, in water, after eating. | | |

2. *Mistura ferro-arsenicalis.*

| | | | |
|--|--------|--|------|
| ℞. Ferri et potassii tartratis, ℥ j..... | 3 88 | | |
| Liquoris potassæ, ℥ ij..... | 7 50 | | |
| Liquoris potassii arsenitis, ℥ j—℥ ij..... | 3 75— | | 7 50 |
| Vini ferri dulcis (Malaga), ad ℥ iv.....ad | 120 00 | | |

M. S. Teaspoonful, in water, after eating.

3. *Mistura ferri et glycerini.*

| | |
|---|--------|
| ℞. Ferri et quininae citratis, ℥ jss..... | 5 82 |
| Glycerini, ℥ iv..... | 120 00 |

M. S. One or more teaspoonfuls, in water, after eating.

4. *Mistura hydrargyri et ferri.*

| | | |
|--|--------|------|
| ℞. Hydrargyri bichloridi, gr. i—iij..... | 0 06— | 0 19 |
| Ferri et ammonii citratis, ℥ j..... | 3 88 | |
| Tincturæ nucis vomicæ, ℥ ij..... | 7 50 | |
| Tincturæ cinchonæ comp., ℥ ij..... | 60 00 | |
| Aquæ, ad ℥ iv.....ad | 120 00 | |

M. S. Teaspoonful, in water, after eating.

5. *Mistura magnesiæ et ferri.*

| | | | |
|---|--------|-------|-------|
| ℞. Magnesii sulphatis, ℥ ss—℥ jss..... | 15 50— | 46 60 | |
| Ferri sulphatis, ℥ j..... | 3 88 | | |
| Acidi sulphurici diluti, ℥ ij—℥ iv..... | 7 50— | | 15 00 |
| Syrupi zingiberis, ℥ j..... | 30 00 | | |
| Aquæ, ad ℥ iv.....ad | 120 00 | | |

M. S. Teaspoonful, in water, through a tube, after eating.

6. *Mistura ferri et phosphori.*

| | | |
|----------------------------------|----------|--|
| ℞. Tincturæ ferri chloridi,..... | | |
| Acidi phosphorici diluti,..... | | |
| Syrupi limonis, aa ℥ j..... | aa 30 00 | |

M. S. Teaspoonful, in water, through a tube, after eating.

7. *Mistura acidi hydrochlorici.*

| | |
|---|----------|
| ℞. Acidi hydrochlorici diluti, ℥ j..... | 30 00 |
| Lactopeptin, ℥ iv..... | 15 50 |
| Syrupi zingiberis,..... | |
| Aquæ, aa ℥ j..... | aa 30 00 |

M. S. Teaspoonful, in water, through a tube, after eating.

8. *Mistura acidi nitrici.*

- | | | | | | | |
|----|-----------------------------------|-----|----|---|---|----|
| R. | Acidi nitrici, ℥ j—℥ ij | 3 | 75 | — | 7 | 50 |
| | Syrupi zingiberis, ℥ j | 30 | 00 | | | |
| | Aquæ, ad ℥ iv ad | 120 | 00 | | | |
- M. S. Teaspoonful in water, through a tube, after eating.

9. *Mistura potassii et quassiæ.*

- | | | | | | | |
|----|---------------------------------------|-----|----|---|----|----|
| R. | Potassii acetatis, ℥ iv—℥ j | 15 | 50 | — | 31 | 00 |
| | Tincturæ nucis vomicæ, ℥ ij | 7 | 50 | | | |
| | Infusi quassiæ, ℥ iv | 120 | 00 | | | |
- M. S. Teaspoonful, in water, after eating.

10. *Mistura potassii et cinchonæ.*

- | | | | | | | |
|----|---|-----|----|---|----|----|
| R. | Potassii citratis, ℥ iv—℥ j | 15 | 50 | — | 31 | 00 |
| | Tincturæ nucis vomicæ, ℥ ij—℥ iv | 7 | 50 | — | 15 | 00 |
| | Tincturæ cinchonæ comp., ad ℥ iv ad | 120 | 00 | | | |
- M. S. Teaspoonful, in water, after eating.

11. *Mistura rumicis composita.*

- | | | | | | | |
|----|---|-----|----|---|----|----|
| R. | Potassii acetatis, ℥ ss—℥ j | 15 | 50 | — | 31 | 00 |
| | Tincturæ nucis vomicæ, ℥ ij | 7 | 50 | | | |
| | Extracti rumicis fluidi, ℥ iv | 120 | 00 | | | |
- M. S. Teaspoonful, in water, half an hour before eating.

12. *Mistura rhei composita.*

- | | | | | | | |
|----|--|-----|----|---|----|----|
| R. | Liquoris sodii arseniatis, ℥ j—℥ iij | 3 | 75 | — | 11 | 25 |
| | Pulveris rhei, ℥ ss—℥ ij | 1 | 94 | — | 7 | 77 |
| | Sodii bicarbonatis, ℥ ij | 7 | 77 | | | |
| | Aquæ menthæ piperitæ, ad ℥ iv ad | 120 | 00 | | | |
- M. S. Teaspoonful, in water, after eating.

PILLS.

13. *Pilulæ hydrargyri, colocynthidis et ipecac.*

- | | | | | | | |
|----|---|----|---|----|--|--|
| R. | Extracti colocynthidis comp., | | | | | |
| | Massæ hydrargyri, aa gr. x | aa | 0 | 65 | | |
| | Pulveris ipecacuanhæ, gr. ij | | 0 | 13 | | |
- M. et in pilulas no. iv divide.
S. Take two at night, and two on the second night after.

14. *Pilulæ rhei et sodii.*

- ℞. Pulveris rhei,.....
 Sodii bicarbonatis, *aa* ʒ ss— ʒ j.....*aa* 1 | 94 — 3 | 88
 Pulveris ipecacuanhæ, gr. x..... 65
- M. et in pilulas no. xxx divide.
 S. Take one after each meal.

15. *Pilulæ aloes et ferri.*

- ℞. Ferri sulphatis exsiccati, ʒ ss..... 1 | 94
 Pulveris aloes purificatæ, ʒ j..... 1 | 29
 Pulveris aromatici, ʒ j..... 3 | 88
 Confectionis rosæ, ʒ j..... 1 | 29
- M. et in pilulas no. xl divide.
 S. Take one or more after each meal, and diminish the dose and its frequency as rapidly as possible.

16. *Pilulæ ferri et potassii.*

- ℞. Ferri sulphatis exsiccati,.....
 Potassii tartratis,.....
 Potassii carbonatis, *aa* ʒ j..... *aa* 3 | 88
- M. et in pil. no. lx divide (argent).
 S. Take one after meals and increase the dose slowly until three pills are taken after each meal.

LOTIONS.

Much care should be exercised in preparing lotions that the ingredients should be thoroughly and perfectly mixed, both in their preparation and employment. Where there are insoluble mineral substances these should first be reduced to the finest possible powder and rubbed up with a little glycerine and then be incorporated into the lotion. It is to be borne in mind, however, that glycerine is not always well borne by every skin, and it is often necessary to supply its place by some other demulcent.

In applying lotions, it is generally best, after shaking, to pour some into a saucer, and apply by means of a bit of old linen, sopping it well upon the part affected.

17. *Lotio sulphuris.*

| | | |
|----|--|------------|
| R. | Sulphuris præcipitati, ʒ ss— ʒ ij..... | 1 94— 7 77 |
| | Glycerini, ʒ iv..... | 15 00 |
| | Aquæ rosæ, ʒ iijss..... | 105 00 |
| | M. et ft. lotio. | |

18. *Lotio sulphuris camphorata.*

| | | |
|----|--|---------------|
| R. | Sulphuris præcipitati, ʒ ij— ʒ iv..... | 7 77— 15 50 |
| | Spiritus camphoræ, ʒ ij..... | 7 50 |
| | Glycerini, ʒ ij— ʒ iv..... | • 7 50— 15 00 |
| | Liquoris calcis, ad ʒ iv..... | ad 120 00 |
| | M. et ft. lotio. | |

19. *Lotio alba.*

| | | |
|----|--|---------|
| R. | Potassæ sulphuratæ,..... | |
| | Zinci sulphatis, aa ʒ j..... | aa 3 88 |
| | Aquæ rosæ, ʒ iv..... | 120 00 |
| | Dissolve each of the ingredients in one half the water and mix. | |
| | A drachm or two of glycerine may be added if this lotion is too drying or roughens the skin. | |

20. *Lotio sulphuris composita.*

| | | |
|----|---------------------------------|--------|
| R. | Sulphuris præcipitati, ʒ j..... | 3 88 |
| | Ætheris fortioris, ʒ iv..... | 15 00 |
| | Alcohol diluti, ʒ iijss..... | 105 00 |
| | M. et ft. lotio. | |

21. *Lotio sulphuris et camphoræ (Kummerfeld).*

| | | |
|----|----------------------------------|----------|
| R. | Sulphuris præcipitati, ʒ iv..... | 15 50 |
| | Pulveris camphoræ, ʒ j..... | 1 29 |
| | Pulveris tragacanthæ, ʒ ij..... | 2 58 |
| | Liquoris calcis,..... | |
| | Aquæ rosæ, aa ʒ ij..... | aa 60 00 |
| | M. et ft. lotio. | |

22. *Lotio sulphuris et saponis.*

| | | |
|----|--|-------|
| R. | Sulphuris præcipitati, ʒ iv..... | 15 50 |
| | Tincturæ saponis viridis (1—1), ʒ x..... | 37 50 |
| | Glycerini, ʒ vj..... | 22 50 |
| | Alcohol diluti, ʒ j..... | 30 00 |
| | M. et ft. lotio. | |

S. Rub well on the part three or four nights in succession, then omit its use for a few nights; cover the surface lightly with a little zinc ointment each morning.

23. *Lotio sulphuris fortior (Vlemingx).*

| | | |
|-----------------------------------|-----|----|
| R. Calcis, ℥ iv. | 15 | 50 |
| Sulphuris sublimati, ℥ j. | 31 | 00 |
| Aquæ destillatæ, ℥ x. | 300 | 00 |

Boil together, with constant stirring, until the mixture measures six fluid ounces (180 c. c.); then filter.

S. Use diluted.

24. *Lotio calaminæ et zinci.*

| | | | |
|--|-----|-------|----|
| R. Pulveris calaminæ preparatæ, ℥ j. | 3 | 88 | |
| Zinci oxidi, ℥ ij. | 7 | 77 | |
| Glycerini, ℥ ij—℥ iv. | 7 | 50—15 | 00 |
| Liquoris calcis, ℥ iij—℥ j. | 11 | 25—30 | 00 |
| Aquæ aurantii florum, ad ℥ iv. ad | 120 | 00 | |

M. et ft. lotio.

25. *Lotio boracis et camphoræ.*

| | | |
|------------------------------------|-----|----|
| R. Spiritus camphoræ, ℥ j. | 3 | 75 |
| Sodii boratis, ℥ ij. | 7 | 77 |
| Glycerini, ℥ iij. | 11 | 25 |
| Aquæ rosæ, ℥ iijss. | 105 | 00 |

M. et ft. lotio.

26. *Lotio sodii hyposulphitis (Startin).*

| | | | |
|---|-----|------|----|
| R. Sodii hyposulphitis, ℥ j—℥ ij. | 3 | 88—7 | 77 |
| Alumini sulphatis, ℥ j—℥ ij. | 3 | 88—7 | 77 |
| Spiritus odorati, ℥ ss. | 15 | 00 | |
| Aquæ rosæ, ℥ viiss. | 225 | 00 | |

M. et ft. lotio.

27. *Lotio hydrargyri bichloridi.*

| | | | |
|--|----|------|----|
| R. Hydrargyri bichloridi, gr. ij.—gr. x. | 0 | 13—0 | 65 |
| Alcohol diluti, | | | |
| Aquæ rosæ, aa ℥ ij. aa | 60 | 00 | |

M. et ft. lotio.

28. *Lotio hydrargyri et ammonii.*

| | | | |
|---|----|------|----|
| R. Hydrargyri bichloridi, gr. j—gr. vj. | 0 | 06—0 | 36 |
| Ammonii chloridi, ℥ ss. | 1 | 94 | |
| Spiritus odorati, | | | |
| Aquæ rosæ, aa ℥ ij. aa | 60 | 00 | |

M. et ft. lotio.

29. *Lotio ammonii composita.*

| | | | |
|--|-----|------|----|
| R. Hydrargyri bichloridi, gr. v—gr. x. | 0 | 32—0 | 64 |
| Ammonii chloridi, ℥ j—℥ ij. | 3 | 88—7 | 77 |
| Alcohol diluti, ℥ iv. | 120 | 00 | |

M. et ft. lotio.

S. To be used diluted if too stimulating.

30. *Lotio hydrargyri composita.*

| | | |
|----|--------------------------------------|----------|
| R. | Hydrargyri bichloridi, gr. viij..... | 52 |
| | Pulveris sodii boratis, ʒ ij..... | 777 |
| | Acidi acetici diluti, ʒ ij..... | 750 |
| | Alcohol diluti, ʒ ij..... | 6000 |
| | Aquæ rosæ, ad ʒ iv..... | ad 12000 |

M. et ft. lotio.

S. Use diluted with water if too stimulating.

31. *Lotio hydrargyri et amygdalæ.*

| | | |
|----|--|----------|
| R. | Hydrargyri bichloridi, gr. ss—gr. x..... | 003—064 |
| | Tincturæ benzoini, ʒ ss—ʒ ij..... | 190—750 |
| | Misturæ amygdalæ, ad ʒ iv..... | ad 12000 |

M. et ft. lotio.

32. *Lotio rosmarini composita.*

| | | |
|----|-----------------------------|-------|
| R. | Olei limonis, ʒ j..... | 375 |
| | Olei rosmarini, ʒ ss..... | 188 |
| | Alcohol diluti, ʒ viij..... | 24000 |

M. et ft. lotio.

S. To be used diluted with rose- or orange-flower water if too stimulating.

33. *Lotio saponis alcoholica.*

[Spiritus saponis kalinus (Hebra).]

| | | |
|----|------------------------------|-------|
| R. | Saponis viridis, ʒ iv..... | 12000 |
| | Alcohol diluti, ʒ ij..... | 6000 |
| | M., cola et adde | |
| | Spiritus lavandulæ, ʒ j..... | 375 |

M. et ft. lotio.

S. Use diluted if too irritating on non-hairy parts. Use also for shampoo for the scalp.

34. *Lotio saponis.*

| | | |
|----|------------------------------|------|
| R. | Saponis viridis, ʒ ij..... | 6000 |
| | Aquæ bullientis, ʒ ij..... | 6000 |
| | M., cola et adde | |
| | Spiritus lavandulæ, ʒ j..... | 375 |

M. S. Use for shampoo.

35. *Lotio potassæ causticæ.*

| | | |
|----|----------------------------|---------|
| R. | Potassæ, gr. v—gr. xx..... | 032—128 |
| | Aquæ rosæ, ʒ j..... | 3000 |

M. et ft. lotio.

36. *Lotio plumbi et olei ricini.*

| | | | |
|--------------------------------|--------|---|-------|
| ℞. Plumbi acetatis, gr. x..... | 0 65 | | |
| Olei ricini, ℥ ij—℥ iv..... | 7 50 | — | 15 00 |
| Olei bergamii, ℥ ss..... | 1 88 | | |
| Alcohol diluti, ad ℥ iv.....ad | 120 00 | | |

M. et ft. lotio.
S. For the scalp.

37. *Lotio capsici et ammoniæ.*

| | | | |
|--------------------------------|--------|---|-------|
| ℞. Tincturæ capsici, ℥ iv..... | 15 00 | | |
| Aquæ ammoniæ, ℥ ij—℥ iv..... | 7 50 | — | 15 00 |
| Glycerini, ℥ ij—℥ vj..... | 7 50 | — | 22 50 |
| Aquæ rosæ, ad ℥ iv.....ad | 120 00 | | |

M. et ft. lotio.
S. For the scalp.

38. *Lotio cantharidis et capsici.*

| | | | |
|---|--------|---|-------|
| ℞. Tincturæ cantharidis, ℥ ij—℥ vj..... | 7 50 | — | 22 50 |
| Tincturæ capsici, ℥ ij—℥ vj..... | 7 50 | — | 22 50 |
| Tincturæ nucis vomicæ, ℥ iv..... | 15 00 | | |
| Olei ricini, ℥ ij—℥ iv..... | 7 50 | — | 15 00 |
| Olei lavandulæ, ℥ ss..... | 1 88 | | |
| Alcohol diluti, ad ℥ iv.....ad | 120 00 | | |

M. et ft. lotio.
S. For the scalp.

39. *Lotio quininæ et zinci.*

| | | | |
|----------------------------------|--------|--|--|
| ℞. Quininæ sulphatis, ℥ j..... | 1 29 | | |
| Zinci sulphatis, gr. x..... | 65 | | |
| Tincturæ cantharidis, ℥ iij..... | 11 25 | | |
| Alcohol,..... | | | |
| Glycerini, aa ℥ iv.....aa | 15 00 | | |
| Spiritus myrciæ, ad ℥ vj.....ad | 180 00 | | |

M. et ft. lotio.
S. For the scalp.

40. *Lotio veratri composita.*

| | | | |
|-------------------------------------|--------|--|--|
| ℞. Acidi salicylici, ℥ iss..... | 5 82 | | |
| Acidi carbolicæ, ℥ ss..... | 1 94 | | |
| Tincturæ veratri viridis, ℥ ss..... | 1 88 | | |
| Olei aurantii florum, gtt. x..... | 63 | | |
| Spiritus odorati, ℥ j..... | 30 00 | | |
| Alcohol diluti, ad ℥ viij.....ad | 240 00 | | |

M. et ft. lotio.
S. Rub on scalp with a brush.

41. *Pigmentum chrysarobini.*

| | | | |
|---------------------------------|-------|---|------|
| ℞. Chrysarobini, ʒ ss— ʒ j..... | 1 94 | — | 3 88 |
| Collodii flex., ʒ j..... | 30 00 | | |

M. S. Apply with care, by means of a camels' hair brush.

OINTMENTS.

Too much care cannot be exercised in regard to the preparation and employment of ointments, in order to secure the best results from their use. Very great pains should be taken to have all solid substances in the finest possible powder, and it is often best to have them rubbed up with a trifle of glycerine or oil before they are mixed with the excipient. It is also important to guard against the least rancidity in the ointment, which may render it very irritating and even more than counterbalance any good effects from the medicament contained. In the employment of ointments they should be applied in sufficient amount to thoroughly cover the affected surface, and left in contact as long and as continuously as possible, without too much washing. Upon the scalp some little care and attention will be required, in order to secure that it comes in contact with the affected skin and is not applied to the hairs.

42. *Unguentum acidi tannici.*

| | | | |
|--|-------|---|------|
| ℞. Acidi carbolici, gr. iij—gr. x..... | 0 19 | — | 0 65 |
| Acidi tannici, ʒ ss— ʒ j..... | 1 94 | — | 3 88 |
| Unguenti aquæ rosæ, ʒ j..... | 31 00 | | |

M, et ft. unguentum.

43. *Unguentum calaminæ.*

| | | | |
|--|-------|--|--|
| ℞. Pulveris calaminæ preparatæ, ʒ j..... | 1 29 | | |
| Zinci oxidi, ʒ ss..... | 1 94 | | |
| Spiritus camphoræ, ʒ ss..... | 1 88 | | |
| Unguenti aquæ rosæ, ʒ j..... | 31 00 | | |

M. et ft. unguentum.

44. *Unguentum zinci oxidi.*

| | |
|-------------------------------|-------|
| ℞. Zinci oxidi, ʒ ss. | 1 94 |
| Unguenti aquæ rosæ, ʒ j. | 31 00 |
| M. et ft. unguentum. | |

45. *Unguentum sulphuris præcipitati.*

| | |
|--|------------|
| ℞. Sulphuris præcipitati, ʒ ss—ʒ iij. | 1 94—11 66 |
| Glycerini, ʒ j. | 3 75 |
| Unguenti aquæ rosæ, ʒ j. | 31 00 |
| M. et ft. unguentum. | |

46. *Unguentum sulphuris compositum (Anderson).*

| | |
|---|-----------|
| ℞. Sulphuris hypochloridi, ʒ j—ʒ ij. | 3 88—7 77 |
| Unguenti rumicis, ʒ j. | 31 00 |
| M. et ft. unguentum. | |

The rumex ointment is prepared by incorporating with heat, one part of fluid extract of rumex with two parts of rose ointment, stiffened with wax and spermaceti to the consistency of a soft ointment.

47. *Unguentum sulphuris hypochloridi (Wilson).*

| | |
|---------------------------------------|-------|
| ℞. Sulphuris hypochloridi, ʒ ij. | 7 77 |
| Potassii carbonatis, gr. x. | 0 65 |
| Olei amygdalæ amaræ, gtt. iv. | 0 25 |
| Adipis benzoinati, ʒ j. | 31 00 |
| M. et ft. unguentum. | |

48. *Unguentum sulphuris iodidi.*

| | |
|--------------------------------------|-----------|
| ℞. Sulphuris iodidi, gr. v—ʒ j. | 0 32—3 88 |
| Unguenti aquæ rosæ, ʒ j. | 31 00 |
| M. et ft. unguentum. | |

49. *Pasta sulphuris (Zeissl).*

| | |
|--|----------|
| ℞. Sulphuris præcipitati, | |
| Glycerini, | |
| Potassii carbonatis, | |
| Alcohol diluti, aa ʒ j. | aa 30 00 |
| M. S. Rub well on face, leave on over-night. | |
| A stimulating application in chronic cases. | |

50. *Unguentum hydrargyri et bismuthi.*

| | | | |
|----|---|----|----|
| R. | Bismuthi subnitratis, ℥j..... | 3 | 88 |
| | Unguenti hydrargyri oxidi rubri, ℥ss..... | 1 | 94 |
| | Unguenti hydrargyri ammoniati, ℥ij..... | 7 | 77 |
| | Unguenti aquæ rosæ, ℥vj..... | 23 | 32 |
| | M. et ft. unguentum. | | |

51. *Unguentum hydrargyri compositum.*

| | | | |
|----|---|-------|----|
| R. | Unguenti hydrargyri oxidi rubri, ℥ss..... | 1 | 94 |
| | Unguenti hydrargyri ammoniati, ℥j..... | 3 | 88 |
| | Balsami Peruviani, gr. x..... | 0 | 65 |
| | Unguenti aquæ rosæ, ad ℥j..... | ad 31 | 00 |
| | M. et ft. unguentum. | | |

52. *Unguentum hydrargyri nitratis.*

| | | | | |
|----|---|----|-------|----|
| R. | Unguenti hydrargyri nitratis, ℥j—℥iij.. | 3 | 88—11 | 66 |
| | Unguenti aquæ rosæ, ℥vj..... | 23 | 32 | |
| | Olei limonis, gtt. viij..... | 0 | 51 | |
| | M. et ft. unguentum. | | | |

53. *Unguentum hydrargyri iodidi.*

| | | | | |
|----|---|----|------|----|
| R. | Hydrargyri iodidi viridis, gr. ij—℥ss.... | 0 | 13—1 | 94 |
| | (vel Hydrargyri iodo-chloridi) | | | |
| | Unguenti aquæ rosæ, ℥i..... | 31 | 00 | |
| | M. et ft. unguentum. | | | |
| | S. Use with great care. | | | |

54. *Unguentum iodi compositum.*

| | | | | |
|----|-----------------------------|----|------|----|
| R. | Plumbi iodidi, ℥ss—℥j..... | 1 | 94—3 | 88 |
| | Ammonii iodidi, ℥j—℥ss..... | 1 | 29—1 | 94 |
| | Unguenti aquæ rosæ, ℥j..... | 31 | 00 | |
| | M. et ft. unguentum. | | | |

55. *Unguentum hydrargyri et iodi.*

| | | | | |
|----|------------------------------------|-------|----|--|
| R. | Unguenti hydrargyri,..... | | | |
| | Unguenti iodi, aa ℥ss..... | aa 15 | 50 | |
| | M. et ft. unguentum. | | | |
| | S. A very stimulating application. | | | |

56. *Unguentum stimulans.*

- ℞. Pulveris cantharidis, ʒvj. 23|32
 Adipis, ʒij. 93|00
 M. Macerate with gentle heat for twenty-four hours, and strain.
 S. To be used much diluted, as in Formula 57.

57. *Unguentum trichogenosum* (Wilson).

- ℞. Unguenti stimulantis, (For. 56), ʒj—ʒij. 3|88—11|66
 Olei theobromæ, ʒij. 7|77
 Butyri jasmini, ʒss. 15|50
 Adipis odorati, ad ʒij. ad 62|00
 M. et ft. unguentum.
 S. Rub well into scalp night and morning.

58. *Unguentum olei cadini.*

- ℞. Olei cadini, ʒj—ʒij. 3|75—7|50
 Unguenti aquæ rosæ, ʒj. 31|00
 M. et ft. unguentum.

59. *Unguentum acidi carbolici.*

- ℞. Acidi carbolici, ʒj—ʒij. 1|29—3|88
 Petrolati (vel Glyceriti amyli), ʒiv. 124|00
 M. et ft. unguentum.
 S. Use freely after bath.

60. *Balneum potassii et sodii.*

- ℞. Potassii carbonatis, ʒiv. 124|00
 Sodii carbonatis, ʒij. 93|00
 Sodii boratis, ʒij. 62|00
 M. S. Use one such powder for a 30 gallon bath, with half a pound of starch.

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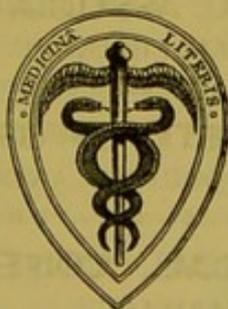
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