narrow sharp chisel a triangular section of the nasal bones, with the base down, is removed from the median line, and as much of the upper border of the septum as is necessary to obtain a corrected line of the bridge. The nasal bones are then fractured medialward, using a broadnosed hemostat. The above procedure accomplishes two things—the hump of the nose is removed, and the bridge is narrowed, avoiding the undesirable flattening and broadening of the bridge obtained by the rasping operation and which is especially noticeable with an already broad nose. Moreover, the operation is accomplished in a thoroughly surgical manner, as all work is under the operator's eye and, most important of all, the danger of infection is minimized, as the nasal cavity is not entered at all. This avoids the necessity of packing, which is most uncomfortable to the patient and is attended with some danger, as it may favor a sinusitis. The resulting scar at the base of the columella is practically negligible.

A suggestion regarding cartilage for transplant which some of you may have folowed, but which will bear repetition, is to bury the spare cartilage in the subcutaneous tissue of the abdominal wall. It remains there unchanged and obviates the painful reoperation for obtaining a new piece, if by any chance the first graft should fail.

For maintaining the alignment of a laterally dislocated bridge after correction, I prefer to use a cap splint on the upper incisors with a strong, springy wire extending outward and then upward and terminating in a flattened vulcanite pad. The amount and direction of the pressure applied can be accurately controlled and can be easily and quickly changed. The apparatus is light and comfortable and, in my experience, is superior to a plaster mold or an ordinary metal splint, from the standpoint of both the patient and surgeon.

Doctor de River (closing)—The technique used by Pierce I think is very good. A similar technique, I believe, has been described by Major Gillies of England, and more recently by J. D. Lewis of Minneapolis in a recent number of the "Annals of Otology, Rhinology and Laryngology." The burying of cartilage in the abdominal wall in cases where there may be future use for the cartilage is advisable and is a custom that I have followed many times. Mellinger mentions the fact that he always makes a cast of the face before operating; this, too, has been a routine procedure that I follow in all cases. I endeavor to make a replica of the entire face before attempting any operative procedure; this enables me to study the case from all angles. On completion of the operation a recast is made.

As to the choice of anesthesia I have not considered this question of great importance, perhaps because I have done such a large number of cases under local anesthesia and feel that I can secure perfect anesthesia by the local method with a minimum of shock and risk to the patient. I quite agree with Mellinger regarding the withdrawal of the graft after it has been introduced; the avoidance of the practice lessens the chance of carrying infection back into a sterile field. Forceps should unquestionably always be used when handling a graft. Too much cannot be said regarding the avoidance of digital manipulation of the graft.

Conclusion—In all cases surgical judgment, coupled with an artistic temperament and an anatomical familiarity with the parts to be corrected, is the sine qua non of success. Whether using grafting bone, cartilage, or using celluloid as a supporting bridge, as suggested by some operators, matters not, provided the operator possesses the skill and patience required of all undertaking this type of surgery, for when the curtain falls at the grand finale the success of the performance is judged by one word, and that is—results.

INFLUENCE OF PILLOW HABITS ON THE DEVELOPMENT OF THE UPPER JAW*

By HARVEY STALLARD, D. D. S., San Diego.

INTRODUCTION

A common facial deformation, due principally to pillow habits, is marked by a narrow upper jaw, a large mandible, a contracted palate, a narrow nose, and a deflected nasal septum. Since the dental arches and jaws form a great part of the face, this type of deformity has been designated by dentists as "narrowed upper jaw," "Gothic arch," "V-shaped" or "church roof" palate, etc. Faces having such oral features are referred to as "dished," "bell," or "urn" faces. When the deformity is confined to one side, the cheek is flattened or depressed, making the face seem twisted or "lop-jawed." The compression of one maxilla makes the jaws appear to close crosswise, hence the malocclusion is called a cross-bite.

OCCURRENCE OF THESE DEFORMITIES

"Dished" and "twisted" faces are often associated with impeded speech and disturbed nasal respiration so that they were probably noticed by observers of early times. However, earlier descriptions of oral or facial deformations have been so brief and indefinite that it is impossible to determine whether ancient writers refer to these two types of prognathism. Their greatest frequency has been in the colder parts of the north temperate zone, occurring more often among those of English descent. They are found among Italians, Brazilians, Australians, Chinese, Filipinos, Russians, and to a more limited extent, perhaps, in all other civilized peoples.

THEORIES OF THEIR CAUSES

Idiocy and Heredity—The first medical writers to discuss causes of these two malformations believed they were symptoms of idiocy (Downs: 1871; Ireland: 1874). This assumption was combated by Kingsley (1879), who after examining many idiots of different nationalities, said that idiots had no more irregularities of teeth than any other class, and concluded that their oral deformities were due to family traits.

Such malformations have been attributed to heredity because they are often traceable back in families and in members of the same household may be strikingly similar. The most popular doctrine taught is that, through mixing of many races, a child would inherit large teeth from one parent and small jaws from another, or a small palate from one and a large mandible from the other. Another belief, once regarded as the most scientific, was that contracted palates and jaws result from disturbed innervation, neurosis, and evolutionary reversions (Talbot: 1903; Ballenger: 1911).

Rickets, Trauma, Mouth-breathing, and Endocrine Disturbances Suggested—Rickets has been suggested as a cause by many writers (Bosworth: 1889; Ballenger: 1911), but it was early denied by Shaus (1887). Bosworth believes many contracted palates were due to mouth-breathing, which, he imagined, was caused by partly occluded nostrils resulting

* Read before the San Diego County Medical Society, May 22, 1923.

from inflammation following accidental trauma. Wallace, enlarging upon the influence of mouth-breathing and poor mastication, stated that constant mouth-breathing allows the tongue to lie in the floor of the mouth, away from the palate, so that its lateral influence is less than that of the cheeks; this, he claimed, atrophies the upper jaw and overdevelops the lower, so that with poor mastication and infrequent closure, the upper teeth and their alveolar processes developed downward unrestrictedly, resulting in long teeth and the high, narrow palate. Recently, disturbed endocrine organs have been held responsible for oral deformities.

Mechanical Explanations of Their Development—Farrar (1888) believed a cross-bite was due to one of the following causes: (1) incorrect antagonism of teeth, (2) a too short ramus of the mandible on one side, and (3) a faulty location of the glenoid fossa. Angle (1911) attributed the beginning of these deformations to the child sucking the cheeks habitually, but the development (1907) to the perverted forces transmitted through the teeth.

Pillowing on the Face in Infancy Suggested—Marshall (1913), reporting correction of a badly deflected nose, so often characterizing "twisted faces," suggests pillowing on one side of the face in infancy as a cause. Case (1921) attributes development of cross-bites to infants lying and nursing too much on one side of the face.

The writer's attention was called to cross-bites in 1918 by John C. McGuire, D. D. S., who suggested that they were caused by pillowing always on the same side in infancy. In 1920 Angle suggested as the cause the child's habit of pillowing its cheek on a hand. The same year Spencer Atkinson, D. D. S., reported a case in which he had observed this method of pillowing to be a causal factor.

INVESTIGATION OF PILLOW HABITS

Location of the Work—This account is based upon studies of several hundred subjects of Southern California which were found in schools, preschool clinics, industries, hospitals, homes, asylums, streets, private practices of Los Angeles and San Diego.

Method of Investigating—At first the writer relied on what the patients said about their method of pillowing. Among the first patients examined was one having a much contracted palate. His mother said he always slept on his abdomen, keeping his fists under the pillow with the knuckles upward and resting his cheeks alternately on the mounds made in the pillow. On each side, the arrangement of his upper teeth showed the imprint of his knuckles. Other patients having cross-bites admitted pillowing their cheeks most of the night on a hand or arm. When a parent did not discover the habit, a visit was paid the child's bedside. The most convincing evidence was obtained by studying sleeping children. Subjects having nearly normal jaws do not have these pillow habits.

General Evidence—The main fact to interest the writer in these two types of malformations was their frequent return to former conditions even when treated by the best of orthodontists. Corrective treatment is often prolonged by the orthodontist working unaware of the habit; when it is discontinued treatment is rapid. No matter how well treated and mechanically retained, the teeth will return to their former alignment if the habit is not stopped, but where it is broken the treatment is successful.

It is possible to identify these malocclusions by the contour of the faces, to diagnose pillowing habits by the arrangement of the teeth, and to predict the kind of deformity by knowing the habitual malposition of the face during sleep.

Origin of Wrong Pillow Habits—Many histories show that a child, when compelled to lie for a long time on one side, on account of an abscess, injury or burn on the other side of the body, will vary his position to obtain rest and will occasionally put the hand between the cheek and pillow. Some began the habit during long attacks of pneumonia and pleurisy. The habit is sometimes associated with sucking of thumbs or fingers. A patient having a bilaterally constricted palate started the habit after becoming bedfast through infantile paralysis. A woman suffering in early childhood from conjunctivitis, procured most comfort during the day by burying the forehead and eyes in a large pillow; by resting the cheeks on her hands, she prevented smoothering, but started the habit.

Its beginning cannot always be traced to an illness, abscess, burn, or injury, or even to a change in bedding or position of the bed. Some attribute its commencement to face-pillowing initiated by parent or nurse. The following shows how open to suggestion a child is: One day a child was shown some photographs of children pillowing their faces on their hands; she was impressed and began the habit, which her mother stopped only by determined efforts.

It is impossible to find a constant relation between the effects of these habits and rachitis and, conversely, evidence that rachitic children are predisposed to such habits. When they appear in members of a family, those affected have similar pillow habits. It seems reasonable that the habit is handed down by instruction or imitation, rather than through heredity.

Observations on the Development of the Habit—Some infants who habitually sleep on their bellies have shown marked effects of pillowing on the hands. Older children and many adults, among them several dentists, with more pronounced malformations, observed while asleep, were found pillowing on their hands or arms. The most typical V-shaped palate found was in a physician who sleeps on the abdomen, resting his cheeks alternately upon mounds in the pillow made by his arms, one of which he keeps under the pillow at a time. When he was a child a dentist tried to expand his upper jaw by transverse jackscrews, but so much pain was caused at night that treatment was abandoned. Men of 65 or more having cross-bites were found pillowing on one side as in infancy. These habits originate early in life amid many different conditions, continue often through adolescence and into advanced age; in only a few did the habit start after the twelfth year.

The Inertia and Nature of the Habit—Many

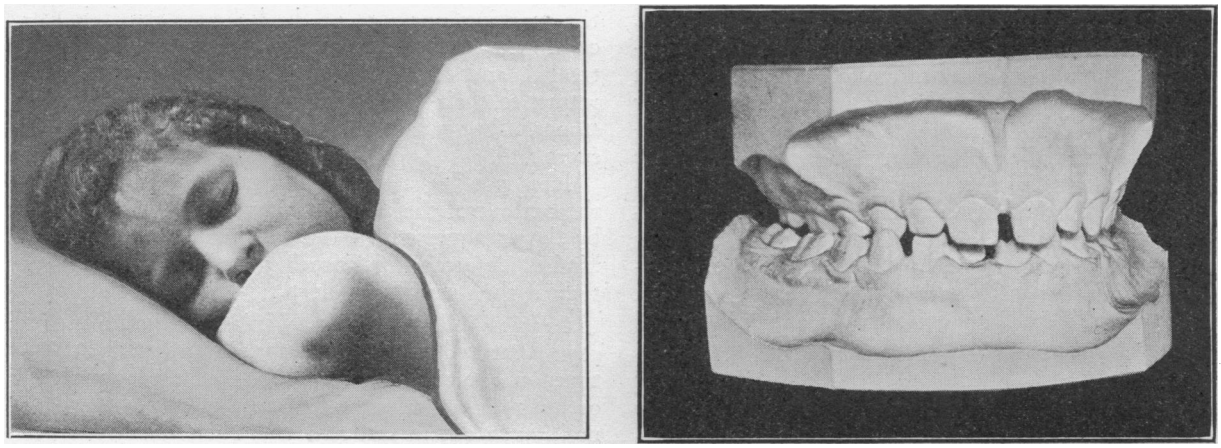

Figure 1--A typical cross-bite, unilateral constriction of the upper jaw.

times while studying sleeping children the writer tried to make them rest directly on the pillow, but no matter how sound asleep, they resist change and replace the hand to its habitual position. When told, while awake but unaware that they are being experimented upon, to lie first on one side and then on the other, their habitual pillowing habits dominate. Patients lying on the normal side, when told to turn over quickly, usually select the habitual pillowing method, automatically placing beneath the deformed cheek the preferred arm or hand. Comfort for these patients is obtained by indulging the habit; on requiring discontinuance of the habit, discomfort and a few sleepless nights will be experienced before they become adapted to new positions. Since pillowing is comfortable and habitual, it has great inertia.

Amount of Force and Length of Time It Acts—Children are in bed fully half of their lives; if they lie on their faces much, development of the jaws will be repressed. Any small constant external force will in time produce damaging imbalance in such a complicated organ as the mouth. But we have here a force, derived from the weight of the head, acting on the plastic bones of childhood throughout the greater part of each twenty-four hours, and, as case histories show, many children suffering from these deformations have been confined to bed for longer periods during which the force has continued for a greater time. It is well known that a letter-carrier's spine becomes deformed by carrying bundles constantly on the same shoulder. Similarly, facial depressions may be developed by pillowing the face habitually upon hard objects.

Normal Breathing and Vigorous Mastication Insufficient—If a normal breather pillows alternately on his right and left arms, he may have both dental arches narrowed, or if infants rest habitually on just pillows, their deciduous dental arches will be narrowed and their permanent anterior teeth will be rotated and "bunched." Parents have been known to give their children hard foods, remove their tonsils and adenoids, taking every precaution to avoid malocclusion except preventing face-pillowing, yet their children have narrowed dental arches and crowded anterior teeth, due principally to pillow habits.

When teeth are fully erupted and interdigitate normally, the tongue, filling the mouth cavity, presses outward on them, the alveolar processes and the palate, while the lips and cheeks bind the structures on the outside, preventing too great expansion. If the mouth be closed most of the time, or during swallowing, so that the opposing cusps interlock, the muscles of mastication and the hyoid muscles keep the lower jaw in position, indirectly protecting the upper dental arch against pillowing. While pillow habits damage the normal arrangement of teeth,

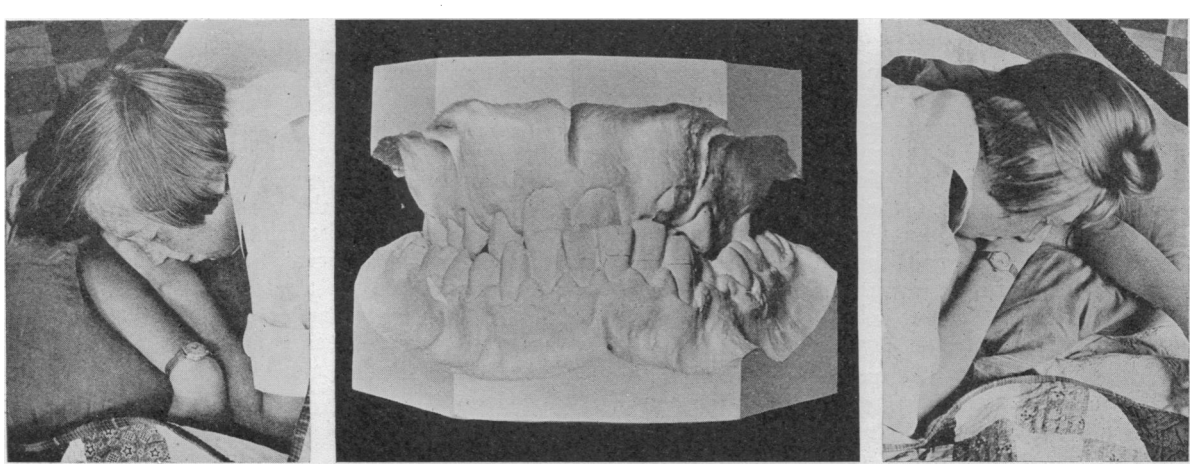

Figure 2—A typical bilaterally constricted upper jaw, a Gothic arch.

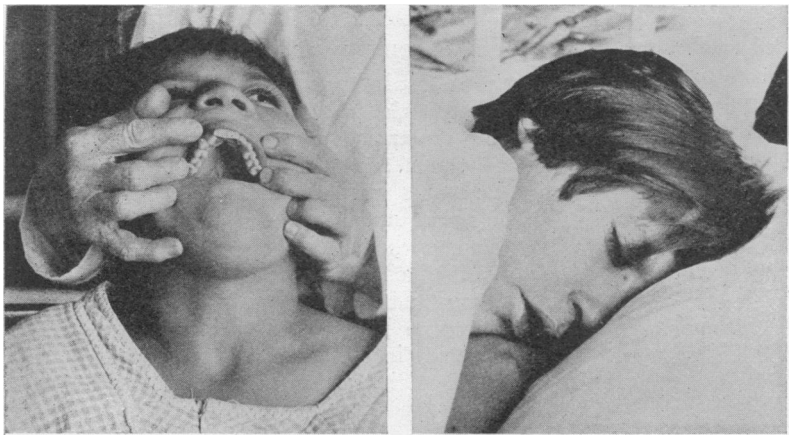

Figure 3—Effect of pillow force on the upper incisors.

even when breathing and swallowing are normal, greatest damage is done to a mouth-breather before the age of six, since worn, deciduous teeth, by not locking firmly, afford the jaws very little intermaxillary bracing.

Relation of Mouth-breathing to the Deformities —Masticatory forces are responsible for the main development of the face; if not suspended for long intermissions by mouth-breathing they protect the face from being indented. The unexhausted boxer keeps his jaws firmly clenched, for it requires only a slight jar on a depressed jaw to cause discomfort or to stave in upper teeth when the mouth is open. Breathing through the mouth at nights, so common among children of congested cities, suspends the protection afforded the upper jaw by occlusion; if during sleep the head's weight presses the cheek upon a hand, the alveolar process will be deformed. In mouth-breathers, the mandible moves to one side in pillowing, but the upper jaw being immovable and unsupported by any muscle cannot escape the pressure. Children having this habit often do not close their teeth in swallowing, but tuck their tongues out between the front teeth to effect air-tight closure necessary for deglutition. In this the tongue cannot maintain the normal width of the upper jaw, and even where there is no perversion of tongue forces, the palate is contracted by the pressure.

Variety of Wrong Pillowing Habits. — There are numerous varieties of wrong pillowing habits. Perhaps the most common is illustrated in Figure 1, where the wrists and forearm are placed between pillow and cheek. This habit presses in all the upper teeth from the canine back, producing the typical cross-bite. When the hand alone is employed, the malocclusion is limited to fewer teeth, principally molars and bicuspids. In rare cases the child may suck the thumb or finger of one hand and rest its face on the back of the other, which produces constriction of the upper jaw on one side and an arrangement of incisors to accommodate the thumb. Figure 2 shows a child who lies on the abdomen and pillows on the back of one hand and an arm; when she turns over she assumes a similar position; the arrangement of the teeth shows the effect on the upper jaw. A child may lie on the abdomen, keeping one hand on top and the other underneath the pillow, with the cheek on the one above, and on turning over exchanges hands. In such a case one side is usually favored. In simple oral deformities where the hands are kept under the pillow or where the pillow is rolled, both dental arches are narrowed as in Figure 3. Figure 4 shows the effect of a pillow habit on the arrangement of incisors. Thus, the hands may be kept under the pillow or under the cheek or one in each place. The variations in breathing habits, together with those in pillowing, make the descriptions, classifications, and diagnoses of sleeping postures complicated.

CONCLUSIONS

The writer would like to emphasize from a dental standpoint the sound advice given by careful pediatricians, namely, that infants invariably rest more contented on the cool, straight hair mattress than on or in a hot depressed, ill-ventilated feather bed and pillow, and that constant turning is conducive to the highest cranial symmetry. So far as

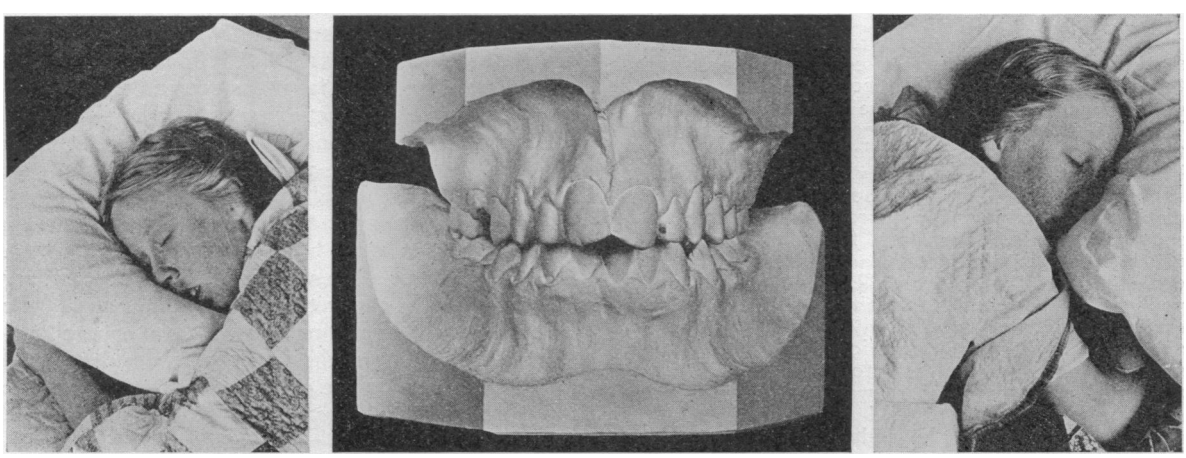

Figure 4—The upper jaw is more pointed and narrow than the lower, the child uses two pillows, breathes through the mouth and while lying on the stomach turns from side to side.

the denture is concerned, various postures can be safely assumed if pressure is not applied to the face, if breathing is normal and both hands and arms are kept away from the head. It is best to make a child lie straight, first on one side, then on the other, pillowing on the cranium, health permitting. The highest oral symmetry may be obtained by the baby resting part time on the back, then on the sides, and seldom on the face, in the absence of pillow or its substitutes. Pillow habits originate in many different impulses and amid many different conditions of child life. Whatever habit is acquired in infancy is apt to be continued indefinitely and be reflected in the various upright postures. Any sort of facial pillowing is to be discouraged, for it is responsible for at least 20 per cent of oral deformations, the most marked malocclusion being the result of pillowing on parts of the upper extremities.

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DISCUSSION

Robert G. Sharp (Watts Building, San Diego)—Notwithstanding the fact that careful pediatricians habitually advise mothers to bed their infants on cool, straight hair mattresses without pillows, it behooves not only these careful pediatricians, but all medical men who give advice to young mothers to carefully read and make use of the investigations and conclusions set forth in this paper. I heard Stallard give his original paper on this subject and have followed his work with interest and enjoyment. There is no question but what this is a very much worthwhile piece of research. Doctor Stallard's investigations have extended over a long enough period of time, and he has considered enough cases to make his conclusions of real scientific value. These conclusions with a modified terminology should be so impressed upon every mother before pillowing habits are formed, that she will see to it that there takes place no facial deformations in her offspring. While there is no doubt but what other factors enter into the productions of facial deformations, the writer has emphasized not only one of the important ones, but what is more to the point, one which lies entirely within our control.

Of particular interest is the truly scientific spirit in which Stallard has pursued his researches. Far into the night has he stolen upon his unsuspecting victims and observed them all unaware in their natural habitats.

Arteriosclerosis in Thyroid Deficiency—Arthur M. Fishberg, New York (Journal A. M. A., February 9, 1924), asserts that various anatomic, experimental and clinical findings point to loss of the thyroid secretion having among its consequences injury to the vascular system. This connection seems to be definitely demonstrated in the case reported by him. The patient presented two seemingly discrete symptom complexes, an anatomic equivalent for each being found at the necropsy: (1) A hypertensive syndrome with a diastolic blood pressure of 135, cardiac hypertrophy and cerebral hemorrhage; corresponding to this there was found at the necropsy generalized arteriosclerosis and beginning primary contraction of the kidneys. (2) Sudden onset of adiposity of a peculiar distribution with retardation of skeletal and more particularly genital development, as well as abnormal distribution of hair. These phenomena point unequivocally to an endocrine disturbance, and at necropsy there was found a very extensive atrophy of the thyroid gland, with no other evident anomalies of the endocrine organs. In this case not only were the larger vessels atheromatous, as in the ordinary senile arteriosclerosis, but also the arterioles in the various organs were thickened.

TOXIC DERMATOSES

By O. V. SCHROETER, M. D., Los Angeles.

The term toxic dermatoses would embrace all lesions of the skin caused by toxic matter. I shall confine my remarks to but a certain group of these affections which are of an endogenous nature. In such the changes in the skin are, therefore, but imprints on that outpost of the organism, the cutis, of a turbulence within the same. These manifestations are really as much an affliction, yea more so, of the whole organism than of the skin itself. These dermatoses are the pictures on the skin produced by toxic substances in the blood, the result of pathology in the terminal circulation which finally gives up to the light of day an evidence of the organism's reaction.

As with surgery, much that now finds place in dermatology by virtue of pre-eminent symptomatology and location, as well as by virtue of our ignorance of the finer changes in the highest realm of pathological chemistry and anatomy, will, with a later day become a part of mother medicine herself. We must remove what we cannot cure. Urticaria is but a symptom, as is asthma, as is purpura, as are the exanthemata. The latter, too, are toxic dermatoses, but belong more to clinical medicine.

The group I desire to consider here is one of very great interest. There are two or three ways of grouping its members. A simple and practical way is by that of degree.

The Urticarias—This is the mildest dermic toxic manifestation. Its characteristics are familiar to all of you. There is a classic entity called the wheal—a pinkish or pinkish-white, irregular, more or less hard, elevation with the subjective symptom of itching and the marks of skin insult by scratching. There is no inflammation in the complete sense. Suddenly there has come into the terminal circulation a toxic material which has caused an angioneurotic condition. Recent investigation goes to show that, contrary to former belief, the capillaries have the ability to contract, become smaller on high internal pressure and take on various abnormal shapes, uneven dilation and contraction in angioneurotic conditions. This ability to contract is now found to be by virtue of fine branching muscle cells which encircle the tube and which, on contraction, tend to close the lumen; these are the Rouget cells. Formerly, capillary contractility was explained in terms of endothelial swelling. It is found the Rouget cells receive fibres from the sympathetic—stimulation causing contraction, and section—dilation. Dilator fibres run along the posterior route which explains, by reflex, the phenomena of herpes zoster.

The histo-pathology of urticaria is simple. I quote from Ehrmann: "The histologic examination of a wheal gives as the basis of the process an edema. The lymph vessels are widened. The fine fibrillary striping of the connective tissue disappears. The tiny vessels of the superficial plexus appear contracted, and those of the lower plexus widened and filled with blood. The epidermis is normal and the interspinal spaces show no widening."

There we have it—an anaphylactic reaction acting on the sympathetic innervation of the terminal vascular system causing localized dermic edemic