Facies characteristic of disease

Harry S. Beckwith

University of Nebraska Medical Center
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Harry S. Beckwith

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PREFACE

There should in any undertaking be some sort of a reason as to why a certain work is developed, and in addition to the necessary custom of senior students to write a thesis on some subject pertaining to medicine in its many divisions and subdivisions, there was the urge to write on the subject of "The Face"—characteristic facies. This subject was suggested while walking through the medical ward and viewing several quite characteristic facies within a few feet of each other.

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"Let him see who has eyes to see; but still if the light by being brought too close to the eyes produces phrensy, he may burn himself by endeavoring to extinguish the torch of truth." (Lavator)

The art of observation, of reading the character, the state of mind and general condition of one's body has been one of the most important skills which one who is a student of human nature and the diseases of mankind can wish to attain. In ancient times the student of medicine had not all the aids to diagnosis which make medicine so much more of exact science than formerly; and in those times a man's senses were taxed to the utmost. As a result of keen observation Hippocrates describes this as the appearance which a patient has when death is pending—the "Hippocrates Facies": "A sharp nose, hollow eyes, collapsed temples, the ears cold, contracted and the lobes turned out; the skin about the forehead being rough distended and parched; the color of the whole face being brown, black, livid, or lead-colored." The study of
the face has been described by Thomas Laycock (19) as that method by which one endeavored to describe the kind of disease one had to treat, and the nature, course and therapeutic indication, from the appearance of the patient. He said that any person of ordinary intelligence could tell whether a person is well or ill and to what extent. Not unfrequently the appearance of the patient is more diagnostic than his feelings. This is the case in few grave conditions in which the portion of the nervous system which subserves to the feeling of bodily well-being--euphoria--is morbidly modified as to function. And, while in like manner, the countenance and gestures of the patient will indicate in the course of disease whether there is aggravation or remission of the morbid state; or whether death or recovery will result. Facies Hippocratica is a well known group of changes of this kind when death is imminent.

Every practitoner must be a physiognomist in general. There are various kinds of art available to his use. Laycock (19) said, "There is nothing of science in Lavator's work, that is, there are no plans deduced from observation and research--no laws of development of physiognomy." Gall, (19) recognized this defect in Lavator's system and raised it to cranioscopy,
or the art of describing a man's character and tendency by the form of his skull as well as by his corporeal characteristics in general. Both these also tried to discriminate temperance. Cheiromancy (19) prefers to arrange the physiognomical knowledge by studying of lines and wrinkles of the hands. The more modern quackery of graphiology has superseded cheiromancy—it deduces the character from the style of the hand-writing. None of these have ever proved satisfactory. In reading through the work of Lavator (17)-(18) one can find a great deal of truth as well as a number unfounded statements. He made note of the face that the moral life particularly reveals itself in the lines, marks and transitions of his countenance. His moral power and desires, his irritability, sympathy, and antipathy; his facilities of attracting or repelling the objects that surround him; these are all summed up in and painted upon his countenance when at rest. When any passion is called into action such passion is depicted by the muscles and these motions are accompanied by a strong palpitation of the heart. If the countenance be tranquil it also denotes tranquility in the region of the heart and breast. The foregoing statement contains a great deal of truth whereas the following statement maybe said to have no
ground whatsoever. The intellectual life or power of understanding and mind make itself most apparent in the circumference and form of the solid parts of the head, especially the forehead though they will discover themselves to an attentive and accurate eye in every point and part of the human body, by the con-geniality and harmony of the various parts.

If we observe mankind from the most essential courtier to the lowest of the vulgar, and listen to the remarks they make on each other, we shall be astonished to find how many of them that are entirely physiognomic (17).

Physiognomy, whether understood in its most extensive or confined signification, is the origin of all human decisions, efforts, actions, expectations, fears, and hopes; of all pleasing and unpleasing sensations, which are occasioned by external objects. From the cradle to the grave in all conditions and ages through all nations, from Adam to the last existing man, from the worm we tread on to the sublime of philosophers, physiognomy is the origin of all we do and suffer. (18)

Lavator makes the interesting statement in regard to the hypocrite in asking, "Why does the hypocrite assume the appearance of an honest man, but because
that he is convinced,—though not perhaps from any systematic reflection that all eyes are acquainted with the characteristic mark of honesty?" (18)

Observation of the contour of the face in facial expression should be cultivated so that in all ordinary contacts such a study is almost subconscious. (11) A careful scrutiny of the face, of which, however the patient is unconscious, observing the manner in which the patient's story is told, the character of his speech and all his facial expressions, all help in diagnosis. (16)

So much can be learned by the physician from the expression and general appearance of a patient's face, of the carriage and shape of his head. In the consulting room or at the bedside the physician should attempt to arrange his chair in such a way that the light falls upon the face of his patient, while his own face is not in the shadow, and this is important not only in that the face of a patient can be well seen, but also because it prevents the patient from making a too close scrutiny of the physician's face with the object of detecting encouragement, lack of sympathy, or alarm (16).

The study of the face in health and disease while it can not replace careful systematic examination of
the body as a whole, may in many cases direct the experienced observer's attention to the likely field in which to find data for his diagnosis. Observation and experience alone can teach the student to detect all the features of a face. Photographs and drawings can only illustrate the coarse and obvious defects which are present when the face is at rest or when some particular movement is being sustained. The more subtle abnormality of expression, the play of the emotions and response of the features to intelligence, are often fleeting and too mobile to allow reproduction on paper and something so intangible as to defy any effort to describe them. Even if the pen of a skilled artist could succeed in portraying the passive vacant aspect of a chronic alcoholic, which must necessarily fail to depict the traitorous tremor which hovers about the corners of his mouth when he opens it to proclaim his temperance, the shifty eyes of the drug-taker, the fatuous placidity of the patient when he feels insular sclerosis, the anxious look born of abdominal disease, the explosive suddenness with which the victim of double hemiplegia burst into laughter or tears, are only a few of the many familiar and striking lessons of the face which must
be seen in real life if they are to be learned and utilized. On the other hand, there are facies the illustrations and description of which may serve to impress their more important features on the minds of those to whom they are not familiar. These will be described further on. (13)

Expressions of countenance alter so rapidly and are so infinitely complicated that they are more difficult to analyze than to comprehend. By means of constantly changing facial expressions a person can look joyous or sad, wise or stupid, frank or secretive, placid or passionate, keen or indifferent, serious or frivolous, confident or timid, hopeful or depressed.

However deceitful a man may be in speech he may yet reveal his innermost thought by an unguarded glance a frown or a smile; an analyst should, therefore, make a careful study of transient expressions of countenance that he may be able to discover whether words uttered are truths or falsehoods. At trials in court, juries frequently base their decisions more upon the constantly changing facial expressions of prisoners than upon their words, for while lying with the lips is a simple matter, systematic dissimulation of countenance under examination is difficult.
Too much reliance, however, must not be placed upon pathognomical indications, for the traits thus revealed are only those which happen to be displayed momentarily by a person and may not be conspicuous of basic traits of character. Usually, however, such signs when skillfully interpreted can be trusted.

It is excellent analytical practice to attend theatrical performances and study the ever changing expressions upon the faces of actors in their interpretations of tragedies and comedies.

Schopenhauer says, "The face of a man expresses exactly what he is, and if he deceives us, it is not his fault but ours." (20)

There is when one stops to think about it nothing more strange in trying to read disease from facial expression, than there is in reading disease in the parallelings and siftings of psychic vagaries, or in reading disease in the testtube. Probably the same brain cells are at work in the physicians head trying to help him solve the problem in each of the three different ways of making a diagnosis. (26)

No doubt in any ones mind that for him who has learned to read it, the face of man is like an open book (8). Clinicians have placed so much value upon it that in some instances a diagnosis is based upon it.
But like much information that free observation brings to the physician it is difficult for him to define just what it is that he has seen. Strangely enough too, the most carefully trained doctors, in respect to correlation between facial aspect and disease have used essentially the arts of the physiognomists and phrenologists. These supposedly fanciful observers, however, who have sought to make correlations between psychic pattern and facial form, have at least attempted to base their anatomical data upon definite measurement. John Hunter, Blumenback, Cuvier and Petrus Camper all studied the comparative relationships between face and head size. Work of these observers was stimulated partly through the interest in different races of mankind and partly be a desire to correlate with facial form the psychological, emotional, and temperamental differences between races and individuals. Darwin made many observations upon facial expression. Laycock wrote extensively on "Physiognomical Diagnosis." (8).

Very valuable is the facial part of medicine which deals with pathological signs, as it is not rarely that the physiognomy of the patient permits the diagnostic or, at least guides the clinical judgment along definite classifications or pathology. It needs, at the same time great experience and high critical
Physiognomy is sometimes referred to as facial diagnosis, but this does not mean that diagnosis is made by the face alone,—it is merely a helpful attribute. In many instances one gets more information as to prognosis than diagnosis. (3)
That portion of the anatomy which is constantly before us, and which presents in its individuality a most interesting study of the patient as an individual and as a mirror of health or disease is the face. Blanton (2) described it very simply as that portion below the supraorbital eminences made up chiefly of the orbits, nose and jaws. When one views the face one notices the color, the presence of freckles, birthmarks or other blemishes; and also wrinkles which themselves indicate either a loss of subcutaneous fat, increasing age, the presence of disease or perhaps merely individuality. Those wrinkles noticeable are more or less pronounced nasolabial folds, the crow's foot extending outward from the external canthus, and supraorbital wrinkles, both longitudinal and horizontal.

The male naturally having a varying amount of hair is perhaps not noticed as much as the female who presents a markedly visible amount of hair on her face.

One's attention is on somewhat closer inspection drawn to the texture of the skin which may vary widely as a result of the physiology of the glands of the skin or as a result of disease.
Architecture of the face may be divided simply into: 1. The narrow face (leptoprosopic) which includes high orbit, narrow nose with the opening directed up, a long and high palate, a delicate lower jaw forming an obtuse angle, the teeth in a smaller curve;
2. The broad face (chamaeprosopic) presenting low orbits, broad nasal aperture a rather broad jaw forming a square angle with the edge of the teeth showing an antero-posterior curve. Draper, Dunn, and Seegal (8) describe different types of faces with the aid of exact measurements which describe several types of faces quite well. They state the usual conception of the face is an oval bounded superiorly by the hair line. Anthropometrically limited superiorly by a line drawn through the nasion. In this more restricted sense the face is a more or less squat horizontal truncated oval, the facial diameter always of greater length than the facial height. Those facial measurements used were:

1. Nasion prosthion (aa), from nasion to maxillary alveolar point.
2. Facial height (bb), from nasion to menton.
3. Facial diameter (cc) the widest interval between the zygomatic arches.
4. Bigonal diameter (dd) or distance between the angles of the jaw.
5. Interpupillary space (ee) to center of each pupil.

6. Infrafrenal -- from mandibular alveolar point to the mental tubercle.

7. Nasal height -- from nasion to lower border of nose where it meets the lip.


9. Palpebral length -- of eye slit.

10. Palpebral breadth -- greatest distance between upper and lower lids with eye fixed on distant object. Obviously a good clinician sees much more in the face of his patient than can be measured by instruments.

Again in noticing a face one's attention is immediately called to any asymmetry present, perhaps the right orbit will be somewhat higher; the right eye higher and larger; the right eye may be further from the nose; the right palpebral fissure wider; the right jaw stronger; the right upper jaw and malar bone more prominent; the right nostril smaller; the right fold of cheek more marked; or, the same represented on the left or both sides of the face. In a description
of facies this will be more accurately described.

From infancy to puberty the face is continuously changing and maturing. In the first year of life the face outgrows the cranium. Then from the first to the fifth year the face widens, and from the fifth to the seventh year it takes on length. At puberty growth continues in all directions for several years, but very noticeable are the lengthing of the nose, the development of the supraorbital ridges and the increase in size of the lower jaw.

In searching for landmarks on the face they are found in an abundance; there are the supraorbital ridge and notch, the malar prominence, the zygoma, the condyle of the inferior maxilla, the incisor and canine fossae, the concavity of the superior maxilla (anterior wall of antrum), and the nasal bone and cartilages. Naturally most marked landmarks are the nose, eyes, and mouth. Concerning the nose one should observe the size, shape, direction, and symmetry; then again, size, shape and symmetry should be noticed of the mouth. One should be particularly observing of the eyes noticing the size, a widening or narrowing of the palpebral fissure, the appearance of the epicanthus, and the presence or absence of symmetry.
The high excellence and physiological unity of human nature are visible at the first glance. The head, especially the face and the formation of the firm parts, compared to the firm parts of other animals convince the accurate observer of the greatness and superiority of his intellectual powers. The eye, the look, the cheeks, the mouth, the forehead whether considered in a state of entire rest or during their innumerable varieties of motion, are the most expressive, the most convincing picture of interior sensation, desires, passions, will, and all those properties which so much exalt moral above animal life.

If we take the countenance as the representative and epitome of these three divisions, then will the forehead to the eyebrows be the mirror, or image of the understanding; the nose and cheeks the image of the moral and sensitive life; and the mouth and the chin the image of the animal life; while the eye will be to the whole as its summary and centre. (18)

The appearance of the face is often of diagnostic importance. It frequently indicates the subjective sensations and not rarely the psychical condition. To say that a patient's expression is that of suffering, acute pain, anxiety, overwhelming illness, or that it is excited, dull or stupid, is intelligible...
without further comment. The face is an index of the physiological age of the patient. The gray hair, wrinkled brow, arcus senilis, and hanging folds of skin about the neck are very suggestive. They enable the clinician to compare the apparent age of the patient with his actual age as measured by years. The facies of fever patients is often characteristic. In the stage of excitement there is an intensification, in that of depression a blurring of expression, accompanied by a peculiar moist appearance of the eye, a feverish flush and often a very slight turgescence of the skin of which I shall speak more fully of in a later paragraph. Equally characteristic is the facies of dyspnoea. Here also puffing or turgescence is present, sometimes marked, and there is cyanosis, and with these symptoms dilated nostrils, an open mouth, and hurried breathing. The flushed face and bright eyes that follow too much wine, and the bloated countenance with its blurred lines, dilated veinules, thickened nose, acne, and trembling tongue of some forms of chronic alcoholism are sadly familiar. The characteristic change of the countenance seen in those about to die, especially in patients suffering from ileus, peritonitis, cholera, and similar diseases, is described as the Facies Hippocratica. The changes
are largely due to a diminution in the contents of the blood and lymph-vessels and muscular relaxation. The skin falls back upon the bones, the lines of expression are more sharply defined than normally, the nose is sharp and pinched, the eyes sunken, the temples hollow. With the pallor there is some degree of cyanosis which gives the skin a leaden or faintly livid hue. The surface is cool and bathed with sweat.

The appearance of the face in the following conditions is suggestive if not always characteristic.

In functional nervous diseases there are frequently changes in the countenance more easily recognized than described. The pallid, slightly drawn face of the neurasthenic with its habitual air of depression is familiar to the practitioner. These traits, somewhat intensified, are common in women broken down by frequent child-bearing and in those who suffer from disease of the pelvic organs--Facies uterina. In hysteria the face usually remains free from the motor disturbances so common elsewhere, particularly in the lower extremities. There is neither spasm, paralysis nor other constant characteristics save that it reflects, often intensely, the varying uncontrolled emotions of the patient. Equally without cause laughter succeeds tears or vivacity is
followed by an air of sullen and dogged indifference.

Central or peripheral disease of the nervous system may manifest itself in spasmodic twitching of the facial muscles. Mimetic spasm or convulsive tic consists of clonic contractions of the muscles supplied by the facial nerve. They are usually limited to the region about the eye or above the corner of the mouth. Sometimes they involve the greater part of one or both sides of the face. Similar contractions of the muscles of expression occur in children and are known as habit spasm. In peripheral facial palsy the affected side is smooth and motionless, the wrinkles of the forehead and the labionasal fold disappear, the corner of the mouth is lowered and frequently drools, and the mouth itself is slightly drawn toward the sound side. The eyelids are motionless and can only be partly closed. The tears fall over the cheeks. The contrast with the opposite side is intensified upon efforts to smile or close the eye. When the paralysis is due to central causes the lower segment of the face is chiefly involved. In old cases, after contracture has taken place the mouth is drawn toward the affected side.

In organic disease tremor and paralysis are significant. Tremor of the lips and tongue occurs in chro-
ic alcoholism. Fibrillary tremor is frequently associated with progressive palsy. In bulbar paralysis the lips are thin, compressed, and tremulous, the tongue is wasted and protruded with difficulty, and there is dribbling of saliva. In paralysis agitans the appearance of the countenance is very strikingly changed. The face has a curious stiff, expressionless immobility which has given rise to the name Parkinson's mask. There is often drooling from the partially closed mouth and the lips and tongue frequently share in the general tremor. In general paresis local twitchings of the face, irregularity of the pupils, and slight tremulousness of the lips are suggestive. The rare disease facial hemiatrophy is a trophic neurosis affecting one side of the face, commonly the left. The soft tissues and bones are alike involved in the atrophic process, which is sharply limited at the mesial line. The eye is sunken and the corresponding half of the tongue and soft palate may be implicated.

The facies in disease of the mind is often characteristic. The depression of melancholia, the agitation and eagerness of acute mania, the alert slyness of chronic mania, the irregular contractions of the facial muscles in paresis, the fixed expression in
paranoia with homicidal tendencies, the fatuous face of the imbecile, are well known to every student of psychiatry.

The expression of the face is produced by the formation of creases, or alterations in the contour of the skin and subcutaneous tissues by trophic and muscular action, and these changes are in time brought about and perhaps made permanent by the mental tendencies and habits of the patient, his temperament, his intellectual development, his exposure to outdoor or indoor influences, and, finally, these are very important by pathological processes which may be going on somewhere in his body. The temper of the man also affects his expression, particularly as he approaches middle life, and he looks amiable, capable of sudden anger, or sullen, as the case may be.

The intellectual face is easily recognized. Sometimes it is deeply thoughtful and placid, at others eager or keenly alive to the surroundings or the conversation, and it separates the man descended from several generations of men who have lived as thinkers from him whose ancestors have been but recently wage-earners by physical labor, involving only ordinary human intelligence.

The skin of the face and the expression about
the eyes of one who has been exposed for years to
the weather are so characteristic as to need no de-
scription, while the face of the clerk, whose life is
almost entirely spent indoors, is pale and wan.

Fullness of the lips, particularly of the lower lip,
is supposed to be present in persons of strong sexual
appetite, and often indicates a phlegmatic temperament,
whereas, the thin, mobile lip is typical of the high-
strung, nervous individual.

The expression of the lips as a whole is also to
be regarded in connection with the expression of smil-
ing. The risus sardonicus of strychnine poisoning
or tetanus is quite characteristic, and the simple
smile of hysteria is equally notorious.

The alcoholic similarly, the face of a person who
uses alcohol to excess, is generally flushed, heavy,
and more or less expressionless. The eyelids are
redder than normal, and the skin is apt to be puffy
and unhealthy looking. Women at the menstrual period,
or when suffering from menstrual disorders, often have
dark areas under the eyes, and pigmentation of the eye-
lids is often seen very early in pregnancy. In women,
and sometimes in men, excessive fatigue and loss of
sleep cause marked infra-orbital discoloration. A
puffiness under the eyes, most noticeable in the morning,
may indicate renal lesions or the excessive use of arsenic; or if it is unilateral it probably depends upon some local inflammation of the eye or rarely upon disease of one of the cephalic sinuses. So, too, an ecchymotic spot under the eye may be due to a bruise, to some one of the forms of purpura, or to scurvy.

The human face may be spoken of as that part of the head which lies in front of a vertical plane passing just anterior to the ears. This includes the anterior portion of the skull with the soft parts attached thereto. These soft parts consist of the facial muscles which move the features of the face, and certain muscles of mastication; the interstices between the muscles are filled in with fat. Skin covers the whole face; it is in part adherent to the subjacent muscles, and is moved by them. The skin is continuous with the mucous membrane at the openings for the mouth, nose, and eyes.

The facial muscles proper, the muscles of expression, are supplied with motor stimulus by branches of the facial nerve, the muscles of mastication being supplied by the motor division of the fifth pair of brain nerves. Vessels supply blood to all these parts and to the skin. Branches of the sympathetic nerve supply
the muscular walls of the small arteries, and by their action control the amount of blood supply; palsy of the sympathetic nerve on one side leads to flushing of that half of the face; thus the mobile colour of the face is largely controlled by the sympathetic nerve.
(27).

When one studies the face of a sick child many things have to be considered:
Anatomical form and shape.
Skin and its color.
Action of muscles.
Eyes.

Consequently on action of the muscles and appearance of the eyes we get what is known as facial expression. Many pathological states and chronic diseases depend for their recognition on deviations from normal anatomical form and are determined by bony structures: Mongolism, hydrocephalus, congenital, syphilis, rickets.

Sir Charles Bell in his Anatomy of Expression was dependent on the motions of the features, but I think some part is played by color and natural shape of the face, or shape of the face as altered by disease. Bell states the whole character of the face of the child results from the fleshy parts and integuments being calculated; and so to speak, for the support of larger

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bones than they possess in early years. The features are provided for by growth and development of the bones of the face, and hence the fullness, roundness, and chubbiness of infancy.

In the case of children, much information can be gained as to the state of the system by the facial expression, particularly while the child sleeps. If it is asleep and healthy and well, the eyelids are closed, the lips are never so slightly parted, the nostrils are particularly immobile, and the general expression is very peaceful. If, on the other hand, the eyelids of a sleeping child are slightly parted as to show the whites of the eyes, there is probably present some digestive or nervous disturbance, perhaps accompanied by moderate pain. If in the course of an illness the eyelids remain far enough apart to result in glazing of the conjunctiva from dryness, this is a sign of grave importance. Again, twitching of the eyelids often indicates nervous irritation or the early stages of the convulsive state, and is not uncommon for an expression to pass over the face of a child, who, while sleeping, is suffering from pain, which begins as a smile and ends with a drawing-in of the corners of the mouth, an expression somewhat like that seen on the face of a waking child when it
seems to be in doubt as to whether to laugh or cry. Whether asleep or awake a child in pain, if not crying, has a pinched look about its nose and mouth, and sometimes some idea of the seat of the pain may be gained by the part of the face which is drawn. When pain is in the head, the forehead is apt to be wrinkled into a frown; if the nose is pinched and drawn, it is said to show that the pain is in the chest; and if the upper lip is raised, pain is probably felt in the belly.

Aside from these symptomatic manifestations, however, we find in the face of a child several evidences of important diathetic tendencies, or even hereditary diseases. Thus we see the light flaxenhaired, slimly built child with a refined, spirituel face and transparent skin, whose temporal veins can be easily traced and whose expression is often thoughtful and deep. Such a child often comes of tuberculous parents, and is frequently a victim of tuberculosis, in one of its rapid forms, as it approaches puberty. Or, again, the child is "stocky" and cheesy looking, apparently solid and sturdy, but its features are heavy or perhaps even coarse, while its neck is thick and short. Such a child is often a victim of tuberculous bone or lymphatic disease. In other instances a square,
projecting forehead with faulty bone development elsewhere indicates rickets, or an immense, bulging forehead with a wizened, puny face beneath shows hydrocephalic tendencies. Sometimes a broadness of the bridge of the nose or marked flatness of it indicates congenital syphilis. Such a child is often much wasted, its features pinched, and its lips thin, while the flattened nasal bridge is bluish, and its face is often that of a little old man, shrivelled and wrinkled. Mucous patches at the corners of the mouth or around the anus are often found in such cases, and, if found confirm the diagnosis of infantile syphilis.

In children suffering from lesions or the mitral valve of the heart it is very common for some blurring or indistinctness of the features to be present.

Finally, in respect to facial expression in childhood, attention must be called to the "fishmouth," vacuous and "nose-pinched" expression of those children who are "mouth-breathers" from nasal obstruction. Great immobility of the lips and cheeks may be due to mucous patches or other ulcerations of the buccal mucous membrane; and if high fever is present, the presence of herpetic blisters about the lips points to the possible presence of croupous pneumonia in the child or adult. (16).
When we look at a human face we may observe its form, colour, and conditions of mobility.

Color of Face: Normal varies with race and complexion yellowish tint of Oriental; brown to black of negro, and coppery tint of American Indian. Racial mixtures give modifications of color. Also blonde and brunette types.

Flushing may be transient due to vasomotor disturbance, or persistent, notably in the early stage of acute fevers such as yellow fever, pneumonia, tuberculosis. Also in excessive cardiac hypertrophy and in chlorosa rubra. Also in apoplectic attacks and stages of alcoholic intoxication.

Cyanosis, noticeable mostly in the lips and ears and occurs in uncompensated heart disease.

Similar bluish discoloration is seen in poisoning with coal tar products.

Yellowish discoloration, suggestive of cachexia of malignant disease, syphilis or chronic malaria; is seen also with chronic constipation, with an inactive liver, certain cases of exophthalmic goitre, and Addisons disease. Retaining of subcutaneous fat and a lemon yellow color is seen in pernicious anemia. Shades of yellow from a faint tinge to deep a copper are seen in gall bladder with ob-
struction.

Brownish muddish patches are present in chloasma frequently in pregnant women and females with uterine, or uterine and ovarian disease.

The general form and outline of a face is largely determined by the shape of the skull beneath. There is probably more direct expression seen in the face than in any other part of the body. The face is an index of the brain; the mobile conditions of the face are so many direct expressions of the brain condition; especially are those fine shades of variation expressive which accompany emotions and mentation.

We also see in the face many examples of expression by uniform coincident development; this is an empirical form of expression, in which the condition of development of the parts we can see indicates the probable state of the brain which we cannot see. These different modes of expression must be considered separately.

In studying such a difficult and complex subject as the direct expression of the face, certain methods must be followed, and the different facial expressions that have been observed must be analyzed and described. The principal movements of the facial muscles are:
1. Dilatation and contraction of the facial foramina—the openings of the eyes, nose, and mouth.

2. Elevation and depression of parts, as the eyebrows, the angles of the mouth, etc.

3. Retraction and drawing forward of parts, as in grinning and screwing up the mouth, corrugation of the forehead. Either side of the face can move separately; hence the necessity, in analyzing a facial expression, to observe whether it be symmetrical.

An expression may affect the face principally in the upper, middle, or lower portions, and it may appear more on one side than on the other; hence, in analyzing a face, each half and each region must be examined separately. I have found the following method convenient for making an analysis: [Warner] (27):

"To examine a face, hold a sheet of paper in front of it, with one edge vertical, and opposite the middle of the face; either half of the face can then be covered in turn while the other half is examined. Again the face may be divided into three zones, or horizontal areas,—the upper, middle, and lower. To observe each zone in turn, hold the sheet of paper with one margin horizontal, leaving the forehead above the eyebrows uncovered,—this shows the upper zone; then view only that part of the face
which is below the lower margin of the orbits, showing the mouth, the greater part of the cheeks, and the openings of the nose,—this is the lower zone; lastly, the middle zone may be demonstrated alone by holding the horizontal margin of one sheet of paper so as to cover all above the eyebrows, and another sheet of paper so as to cover all below the orbits, thus leaving to view the eyebrows, the eyelids, and eyeballs, with the bridge of the nose."

By these methods we can easily examine for symmetry in a face, both as regards form and action; and we can, at the same time, also observe any special nerve-muscular conditions in any particular zone.

To illustrate by a supposed case, say that our common experience tells us that a certain man presents a facial expression of "mental anxiety," and on personal inquiry he acknowledges that he is suffering from causes producing "mental anxiety." On making a physical analysis of the expression by methods suggested, we find that the expression is symmetrical; we see the special signs of anxiety more when observing the upper zone than when looking at the middle and lower parts—hence the expression is symmetrical and principally located in the forehead, or upper zone. The nerve-muscular signs of the brain condition
whose mental action is "anxiety" are localized in the frontal region, and these signs are direct expression. In thus studying a face we look to the nerve-muscular condition of the various regions, and observe the effects of the kinetic action of the brain.

We may next inquire what the trophic conditions of the face teach us. We look for those signs in the face which experience teaches us are commonly associated with certain coincident conditions of brain development—conditions of the skull or brain case, its form and size, the form of the forehead, etc. The structure of the skin of the face, whether it be fine and thin or coarse and thick, the features of the face—the lips, cheeks, nose, and the size and proportions of the mouth—demand attention.

In looking at different types of faces, we are at once struck with the fact that the passive appearance of some expresses intellectuality, while others are marked by inborn vulgarity, apart from any special expression by nerve-muscular action. Elements contributing to the low vulgar type are a large prominent under jaw, thick lips, a thick immobile make of skin, etc. Here the face is more fitted to bear exposure than to show fine nerve-muscular action, and the expression as to the mode in which the brain

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will probably act is due to the empirical face that this type of face does coexist with that state of brain development which makes the individual tend to vulgarity in mentation and in action. This is only an empirical statement dependent upon the results of observation, and as such is likely not to be true in a particular case; indeed, it is often an untrustworthy sign. Such observations need to be corrected, by noting many nerve-muscular signs before we can determine the character of the individual. A somewhat plain or even vulgar-looking face may receive an intellectual expression when the brain is in action from mental work; other faces are most pleasing when passive, but when in action show a poverty in their nerve-muscular expression indicative of low organization of the brain centres. Speaking of idiots, Dr. Langdon Down remarks that "the prognosis is, contrary to what is so often thought, inversely as the child is comely, fair to look upon, and winsome."

The condition of nutrition of the tissues of the face is an important index of the general nutrition of the body, and its different organs. A slight amount of malnutrition makes the face look dull. This I believe, is due to slight absorption or shrinking of the fat of the face, leading to very fine wrinkling
of the skin, which then reflects light in such a manner as to look dull. The dull skin looks bright, if it be stretched; a temporary afflux of blood accompanying a state of mental excitement often makes the face look bright, because it swells up the tissues and stretches the skin, thus removing the wrinkles and the cause of dullness of the countenance.

If we examine the face of a man, say, thirty years old, we may observe—1. The passive conditions resulting from heredity; 2. The present trophic condition, the state of nutrition; 3. The marks or permanent impressions made by the nerve-muscular actions during thirty years; 4. The nerve-muscular condition at the time of observation.

This shows the necessity for balancing the different modes of expression, and, while observing the total expression, assigning the due value to each of its factors. We have spoken of the impressions made by the nerve-muscular actions of preceding years; if the muscular action in the face due to the condition of the brain which accompanies mental anxiety has been often repeated during many years, it leaves permanent marks upon the tissues of the face.

Several modes of facial expression affect specially the lower zone. This is the region of the face that
is the most weakened by brain disease. A slight amount of brain damage in one hemisphere will usually produce, for a time at least, a certain amount of weakness on the opposite side of the face, in its inferior part. This facial weakness is easily demonstrated by making the patient show his teeth, or smile. The face when in action is asymmetrical and the muscles in the lower zone on one side about the mouth act very indifferently; the groove running from the side of the nose to the mouth on that side is almost lost; that angle of the mouth falls lower than the other. No such asymmetry is seen in the upper and middle facial zones. Now, the muscles of this region are those most commonly seen in spontaneous action in imbeciles; it is these muscles that work so awkwardly in nervous one-sided grinning. Seeing, then, that the muscles in different facial regions are differently affected by brain conditions, the question presents itself, can we say that one region of the face represents intellectuality more than another?

Francis Warner (27) attempted to determine this problem on the negative side by observing the conditions of the face in fifteen idiots. In conjunction with Dr. Fletcher Beach, of Carenth Asylum, he analyzed each face according to the following form: General
Muscular Condition; The action, or relaxation, of the muscles of the limbs and body generally were noticed.

Face: Facial aspect, and muscles in action or relaxation.

Upper Zone: Frontal region, occipito-frontalis and corrugator. Middle Zone: Eyelids and orbicularis oculi. Lower Zone: Mouth muscles; muscles of nose; cheeks.

Summarizing the results, he obtained figures showing the frequency with which these muscles respectively come into spontaneous action in a meaningless manner. This is perhaps some indication of the degree of their intellectual representation. Thus the corrugator and orbicularis oculi were much less frequently thrown into meaningless action than the occipito-frontalis and zygomatic, and probably the former are much more expressive of intellectuality than the latter. Again, applying direct observation to the other side of the question, and noting which muscles are most frequently put in action in the faces of intellectual people in the expression of their mental states, I think that we see intellectuality most commonly expressed in the frontal and middle zones, while grinning, yawning, and the meaningless smile are seen in the lower facial
zone, that region which is the most readily affected by brain disease. It is not uncommon for nervous people frequently to produce a peculiar, awkward, grinning expression, owing to unequal action of the muscles on the two sides of the mouth. Such asymmetry produces a very unpleasing effect.

A general condition of fatigue is expressed in the face by a relaxed, toneless condition of the muscles; the face elongates or falls slightly, and the variation of the mobile expression, the play of the features, is lost.

A special sign of exhaustion is seen in those who have suffered habitually from recurrent headaches. When specially studying the faces of patients, the subjects of recurrent headaches, and analyzing them daily, Warners' attention was particularly drawn to the middle zone. It is not uncommon to observe that an individual "looks as if he had a headache." Analyzing such faces, it soon became noticeable that there was a look of depression, heaviness, fullness about the eyes, especially about the under eyelid. It appeared that this expression must be due principally to the condition of the orbicularis palpebrarum muscle. There was no pitting on pressure, therefore obviously no dropsy, and where the face is drop-
sical this relaxed full appearance is not seen. Further, if the patient were made to laugh, the muscle became energized, and tucked the skin in well against the eyeball; thus the expression of headache was lost for a time. Specially observing the orbicular muscle and the parts adjacent, there seemed to be a loss of tone in it; there was an appearance of fullness and flabbiness; the skin hung too loose, with an increase of the number of folds; and, in place of falling against the lower eyelid neatly, as a convex surface, it fell more or less in a plane from the ciliary margin to the lower margin of the orbit. This condition is often best seen by looking at the face in profile. It was often seen when the skin was healthy and elastic; especially in children, and it could be completely removed by energizing the child. It passed away, in many cases, as health improved. It is not suggested that the nerve-muscular condition indicates only the states of brain producing headache; it may occur in other states of nerve-depression. (27)

We have now considered several distinct modes of facial expression dependent upon nerve-muscular conditions—difference in the tone and conditions of contraction of the different facial muscles. These con-
ditions are a direct expression of the brain action, because they result solely from brain action. The facial muscles are indices of the brain action for the same reason that postures or movements of the hands are expressive. It is only when the facial muscles are free and disengaged that they can receive, and be acted upon by, the finer nerve-currents coming to them from the brain. It is, then, the disengaged face in which we see the most expression of that action of the brain which produces the emotions and mentation.

Observing a man while his facial muscles are performing the movements necessary to eating, or while a strong light is shining in his eyes, does not afford a good opportunity for observing the effect of mental action in producing mobile conditions of expression. While the facial muscles are passive, and not under the influence of any strong stimulus, they are much more impressionable to nerve-currents coming down from the centres of mentation. When strongly acted on by some reflex stimulus, they are less impressionable to the slight ever-changing currents coming from the centres of mentation.

When the orbicularis muscles are contracted from a light shining in the eyes, when the semi-reflex
actions of eating are going on, or while whistling, the facial muscles are less expressive of the condition of the mind. Conditions of disease of the brain may render the movements of the face inexpressive of the state of the brain as regards its function of mentation.

Throughout the mechanism of the human body the muscles are arranged in groups, acting antagonistically to one another. In the limbs flexors oppose the extensors, pronators oppose the supinators, etc., likewise in the face the muscles, which contract the openings oppose the muscles which dilate them. These opposing groups of muscles may be energized by nerve-currents, either separately or together, or more commonly they are stimulated to contract in unequal degree, and to the muscles which are stronger, or the most stimulated, produce the actual movement. If the flexors are the most stimulated, flexion results. If strong and unequal nerve-currents are sent to the opposing muscles, a quivering or tremor of the part moved by the muscles may result. Such action is often seen about the muscles of the mouth under the influence of "conflicting emotions." Suppose a child has hurt his finger but is trying hard not to cry, we shall see the muscles of the mouth quiver, until
finally the effect of the injury to the finger acting upon the nerve-centres is too strong for the action of his will, and the angles of the mouth are depressed and the outbreak of sobbing follows. The conflicting emotions, or the conflicting nerve-currents acting upon the muscles cause the expression about the mouth.

Most people, if questioned, would say that in the human face there is great expression in the eyes; that the eyes are very expressive features, and that the soul and mind shine out in the eyes, etc. In conversational language, which is not always quite precise, the term "eye", as a feature of the face, is used somewhat loosely; but it is necessary in this method of study to differentiate carefully between expression seen in the eyeball, and expression in the parts that surround the eyeball—the eyelids, the eyebrow, etc.

Certain so-called "emotional states" cause variations in the size of the pupil, that is, the changes in the size of the pupil are expressions of the emotions; the material change which produces the emotion produces at the same time a change in the iris. Ferrier showed by direct experiment, that, in pigeons, irritation of the optic lobe on one side causes the opposite pupil to become intensely dilated. (27)
In the child watching the eyes is at times very helpful; oftentimes when palpating a painful region or limb the pupils will dilate widely and then contract. Hippocrates said, "If a part of the white appears when the eyes are closed, should the cause not be diarrhoea or purging or should the patient not be in the habit of so sleeping, it is an unfavorable, in fact a deadly symptom;" however we know now that this is not entirely true. The open fixed eye is a bad sign.

Much has been said by different authors about expression in the eyes, but many descriptions do not particularize as to whether the expression is seen in the eyeballs, or in the features of the face, the eyelids, and the parts around them.

I think there is more expression in the action of the muscles of the eyelids than in the changing conditions of the eyeball itself. If a man wears a mask, showing the eyes only and hiding the other features of the face, there is so little expression seen that it is impossible to recognize the individual thereby, as may be seen at a masked ball. It is the custom in some parts of Italy for men to beg in silence, wearing a loose garb, and a hood covering the face, with holes showing the eyeballs only, and the absence
of expression is marked.

Now, let us inquire whether there be evidence that the condition of the mind is expressed by movements of the eyes; in other words, whether those brain changes which produce mentation often cause synchronous movements of the eyes. Can anything be shown with regard to the intellectuality of eye movements? Eye movements are most expressive of mental conditions when the eyes are free or disengaged. If the optic axis has been directed towards an object by the stimulus of light reflected from that object (i.e. a visual stimulus), the centres which move the optic axis to its position remain under that stimulus, and this position of the eyes is maintained till that stimulus is removed, or some stronger stimulus excites the nerve-centres. While the eyes are thus fixed by the sight of an object, or other visual stimulus they are not altogether free or disengaged to express emotions; their nerve-centres are engaged as much as those of a hand while digging.

The skin of the face, as a part of the general cutaneous surface, shares in diffused pallor or cyanosis. But there are certain special alterations in the colour of the face of some diagnostic value—viz., sallowness, brownish discoloration, and flush-
ing of the face.

Sallowness: This is a combination of pallor with a yellow or brownish-yellow tint. It is normally present in brunettes or natives of hot climates. But the presence of sallowness should always suggest its possible pathological character.

A sallow face may be indicative of one of the cachexiae due to cancer, lead, syphilis, or malaria. It is also seen in the anaemias of brunettes. Osteitis deformans usually gives rise to a notable sallowness. Very many, indeed, the great majority, of the sallow faces seen in the consulting room are due to some disturbances or disease of the digestive system and resulting anaemia. Under this head come those who are subject to habitual constipation, chronic gastric disorders, or chronic enteritis. Hepatic congestion, cirrhosis and abscess of the liver are usually accompanied by a sallow complexion. The yellowness of the sallow face is to be discriminated from the yellow tint of slight jaundice by the absence of colour in the sclerotic and of bile pigments in the urine. (4)

Brown or brownish-yellow spots upon the face, the so-called "liver spots" of the laity, are in the greater number of instances examples of the chloasma (localized deposit of pigment) found in connection with pregnancy,
chronic affections of the uterus or liver, and exophthalmic goitre. The possibility of the presence of Addison's disease should be considered. Localized deposits of pigment may be caused by continued scratching or by the use of counter-irritants or vesicants. There appears to be in some individuals an unusual predisposition to the deposit of colouring matter in the skin after the local use of mustard, turpentine, or cantharides, a face not to be forgotten for cosmetic reasons in connection with women patients. The internal use of arsenic or the external application of the oil of cade may cause permanent discoloration of the skin. (4)

Flushing of the face may be of considerable duration, lasting for hours or days, or it may be sudden and evanescent, passing as quickly as it arrives. A permanently flushed and ruddy face may on closer inspection be seen to be caused by dilated arterial twigs or venous radicles, in which case it should arouse suspicion of atheromatous arteries or chronic nephritis. A flushed face is characteristic of the early stage or onset of the majority of febrile temperatures. It is particularly noticeable in malarial fevers and acute articular rheumatism, and may persist for days in typhoid fever. The unilateral flush of pneumonia is frequently seen, and the malar flush
of pulmonary phthisis is sadly familiar. Ordinarily there is a red face in the first stage of acute alcoholism and the apoplectic form of intracranial hemorrhage. The face is usually flushed in hysterical convulsions and frequently in the comatose form of the same disease. Large fibroid tumours and ovarian cystomata are not uncommonly associated with a florid face. A heart which has hypertrophied to a greater extent than is demanded by its work at a given time may produce more or less permanent flushing of the face. (24)

Evanescent or transient flushing of the face is a manifestation of irregular vasomotor action, which may be due to a variety of perturbing influences. In many cases such flushings are simply evidences of a more or less marked congenital instability of the nervous system, and when exhibited under mental excitement by children and young adults, particularly young girls, are not of diagnostic value. Care should be taken in such cases that a face flushed by the slight agitation of an interview with the physician does not disguise the presence of a decided anaemia (chlorosis rubra). It is not unusual, after the first excitement has subsided, to see the familiar pallor replace the red upon the cheeks and lips. In addition to an-
aemia, transient flushings are associated with conditions of fatigue, especially neurasthenia and exophthalmic goitre, sometimes with constipation, gastric catarrh, and gastric neuroses. Alternate redness and pallor of the face is quite common in cerebral meningitis, and is occasionally witnessed in typhoid fever. The vasomotor condition which above all others is made the subject of bitter complaint, is the flushing, accompanied by a sensation of heat and by sweating, which attends the menopause. (4)(13)(16)

The face shares in the condition of general dropsy or anasarca, especially that which is due to renal disease. Puffiness or edema of the face as a whole may be due to emphysema (toward the close), pneumothorax, chronic interstitial pneumonia, and mediastinal tumours. In pertussis it may be present from the frequent interference with the return circulation caused by the violent expiratory efforts during paroxysms of cough. The face is more or less characteristically swollen in erysipelas, measles, variola, dengue, and trichinosis. The enlargement of the face in myxoedema is due to a thickened condition of the skin and subcutaneous tissues, which resembles edema but does not pit on pressure.

Localized edematous and usually fugitive swellings
of the face may be due to urticaria or angioneurotic edema, or may occur as an intercurrent symptom of exophthalmic goitre.

Swelling over the upper jaw may be due to alveolar abscess, phosphorus necrosis, or disease of the antrum.

Swelling and puffiness of the forehead may occur in glanders or thrombosis of the superior longitudinal sinus.

Swelling of the lower jaw may be accounted for by alveolar abscess or actinomycosis.

A swelling in front of the ear, extending downward behind the angle of the jaw, at first unilateral but later appearing also on the other side, is due to parotitis, usually epidemic (mumps). Owing to the position of the gland, the lower portion of the ear is rather characteristically pushed outward.

A tender edematous swelling over the mastoid process may be due to involvement of the mastoid cells in the course of an otitis media, or to thrombosis of the lateral sinus.

The cheeks are sometimes swollen as a result of the gingival conditions in scurvy, and in gangrenous stomatitis (cancrum oris) there is a great and brawny infiltration of the cheeks and lips. Furuncles and
anthrax (malignant pustule) may also be the cause of inflammatory swellings seated upon some portion of the face.

Pallor is often noticed in the face but is by no means a normal condition. There is pallor of the face in fright, faintness from hemorrhage (acute of chronic), that is due to lack of proper food, and the peculiar pallor of chlorosis. In the latter disease the faint yellowish-green tinge of the skin in some parts of the face, which still retains its plumpness, is quite typical. A parchment-like, skin stretched over the face so that it appears as if stretched and dried over the under structures is seen in some young persons suffering from syphilis, and in some cases of advanced hepatic cirrhosis.

The color of the face may be rendered gray or bluish by the ingestion of overdoses of the coal-tar products, such as acetanilid, antipyrine, and phenacetin, and it is curious that this effect is best seen when the patient is viewed at a little distance.

A few miscellaneous affections of the head and face of interest will be mentioned. Syphilitic or Tuberculous Ulceration--Indurated grayish spots upon the face which break down, giving rise to deep, scooped-
out ulcers with hard, thickened borders, and leaving smooth, white, circular cicatrices, are ulcerated subcutaneous gummata. It is sometimes difficult to distinguish an ulcerating gumma from a tuberculous ulcer, but in the latter the ulcer is more shallow, the edges are flat and soft, and the scar reddish or purple.

If the diagnosis is uncertain, an attempt may be made to find the tubercle bacillus or the therapeutic test may be applied.

Herpes Zoster—one or more groups of small vesicles seated upon an inflamed base, attended by a burning or neuralgic pain, and occurring along the course of one or more branches of the fifth nerve, is herpes zoster.

Distended veins: Distended or enlarged veins upon the scalp may be due to tumours of the neck, thrombosis of the lateral sinus, or meningitis. They are especially prominent in chronic hydrocephalus.

Erysipelas of the face and head: Redness beginning over the bridge of the nose or at the site of an abrasion, spreading rapidly over the face and scalp, the advancing edge being well defined, causing great oedema of the face, eyelids, ears, and scalp, which sadly alters the patient's appearance, and attended with sudden, usually high, fever, is erysipelas.
(streptococcus pyogenes).

Excessive sweating of the head in a child is suggestive of rachitis (q.v.), although it is observed to a considerable extent in many children who are not rachitic.

Nutrition is a matter of the highest importance. We must consider its expression. One is, however, unwilling to enter at any length upon the expression of nutrition, because the subject is so extensive and so important. Nutrition may be expressed by (a) trophic, or material visible signs; (b) kinetic, or motor signs, the direct outcome of nutrition. The trophic signs are commonly known; the kinetic signs are perhaps too often passed over with scant notice. As evidence that kinetic signs or movements, and the results of movements, may express nutrition, let us examine a few examples.

In an ill-nourished infant spontaneous movement is much lessened, or the child may lie almost motionless, instead of being constantly full of movement while awake. The return of spontaneous movement is a sign of the improved nutrition.

In a man after a severe illness, such as a fever, the tone of the voice is usually altered so that we can no longer recognize the individual by his voice.
This motor sign indicates, as well as the worn countenance, the man's lowered nutrition. Returning health is indicated by the patient "looking like himself" and "recovering his old voice."

In a child seven years old emaciation and ill nutrition, indicated by loss of weight, may be accompanied by chorea or finger-twitching, which disappears when weight increases and nutrition is improved. (27).

A strong well-nourished man is less fidgety than a weak one.

Now as to the expression of nutrition by trophic signs. Proportional development is often an indication of conditions of nutrition. A seedling pea-plant, if kept in a room with deficient light, is not well nourished and the ill nutrition is indicated by the small yellow leaves and the long white stem. That assimilation has not occurred during the life of the plant is demonstrated by the fact that the plant when dry weighs less than the seed from which it grew. Here ill nutrition is expressed by the relative growth of leaves and stem, the leaves being very small, the internodes very long. In children we often see growth for a time occur in height without lateral development; then the proportions of
growth change, and the child fattens.

It often happens that after extended observation we find the condition of growth or development of one part of the body expresses, or indicates, the presence of certain properties in the subject not directly connected with the special sign observed. Dull heavy-looking features usually accompany a dull inactive mind (brain), not because the dull features cause an inactive condition of mentation, but because this cast of features usually accompanies a make of brain with slow action. This mode of expression is, then, indirect and empirical; in many examples no causal connection can be seen between the two subjects of similar growth. In an Englishman excessive development of the epicanthic fold of the eyelids is often accompanied by mental dullness; here, then, there is similar bad development in eyelids and in brain. The want of symmetry of bilateral or corresponding parts often indicates poor development of brain. Asymmetry of ears in dull children is common.

Similarity of development in two parts may be good in kind. Handsome, regular features of the face often accompany mental perfection. In giving a list of examples of similar development it will be seen that some are empirical, and not at present capable of ex-
planation; such are probably due to a common force acting alike on both subjects. In other cases the coincidence can be explained.

Emaciation or fatness of the face usually (not always) indicates emaciation or fatness of other regions of the body.

Absence of the organ of hearing indicates deafness, and usually indicates deaf-mutism.

Congenital absence of eyes indicates blindness, and probably atrophy of the optic tracts.

A congenital condition of the skin, termed ichthyosis, indicates usually a liability to bronchitis, in this condition the skin cannot perspire, and too much work is thrown upon the lungs.

A very small or microcephalic head is a sign of congenital idiocy. The absence of the faculty mentation depends upon the smallness of the brain consequent upon the microcephalism. If the skull of the infant at birth be fully ossified expansion will not occur, and the brain must ever remain microcephalic; but still it is not certain that the brains of such children would be capable of growth and development if the bony case were expansive as in a normal child.

Cleft-palate may accompany marasmus; both may be
due to similar ill development, or the cleft-palate may cause difficulties in feeding the child and lead to marasmus. Congenital collapse of lung may lead to patent foramen ovale in the heart.

The principle has long been admitted that the tendencies in the development of a child or adult may be studied by determining the diathesis, as it is called. Certain things are observed in the man, and then experience enables us to say that such and such will be his constitutional tendencies.

Compared with the expressions and variety of facial play in the adult, the expressions of the infant and young child are simple: The more complex ones, and especially such as terror, despair, jealousy, and rage are not seen in the healthy young; but in illness one may see close imitations of them, and from one class alone the mental defects, a whole series of illustrations could be produced.

The infant under six months, shows three expressions: repose, pleasure, and annoyance.

Sorrowful emotions are depicted in a description by Bell (1) as "drawing down the angle of the mouth, of the nostrils, eyebrows, and eyelids. Emotion of pleasure by the reverse of these movements."
And, so in ending this discussion on the "Study of the Face", one might say that the face is man's most distinguishing feature and we are easily impressed with minute individual differences.
CHARACTERISTIC FACIES

In covering the literature in search of material concerning characteristic facies they were mentioned in many different articles but their description consisted of nearly the same observations concerning particular facies. This was to be expected since certain marks of distinction of a certain type of face would be expected to hold true in repeated cases. Thus an attempt has been made to assemble those facies characteristic of disease and as far as possible to illustrate them. Considering the number of facies concerned here and each being quite characteristic in itself they will follow with their description in an alphabetical order.

Acromegaly: A very characteristic facies. In the course of its's development changes in appearance frequently take place to such a degree that the patient becomes unrecognisable by friends who have known him only before the onset of the disease. Changes are the result of abnormal growth on the part of the bony and subcutaneous tissues in many parts of the body and especially in the skull and extremities. The characteristic facies is brought
about by osseous hyperplasia of the supraorbital ridges making them prominent and arched and causing an enlargement of the frontal bone; hyperplasia also occurs in the mastoid, zygomatic, malar and nasal processes, while the lower jaw is usually enlarged in all directions. The prominent arched eyebrows with retreating and wrinkled forehead, the massive nose, long thick upper lip and heavy chin form most conspicuous features. The lower set of teeth may protrude in front of the upper and are unduly wide apart. The increased weight of the lower part of the face tends to make the head lean forward and ultimately to rest on the sternum. In some cases the lower jaw is not affected, and the face may be described as abnormally square. (21) (27) (B-1).

**Adenoid Facies:** Here are inscribed the changes brought about by excessive enlargement of lymphoid tissues in the nasopharynx causing a narrowing of the passages. It becomes impossible or almost, to breathe through the nose. The mouth is always open while sleeping; the lips are large and thick and usually dry, and the eyelids are drooping. (2).
There is a similar appearance in a child to that type of facial development resulting from conditions where feeding has been improper, more especially in regard to technic. Sucking is done with the tongue squeezing the teat against the hard palate with the mouth open. The muscles of the jaw are not used to chew or bite the teat, and so the bone of the lower jaw remains small and micrognathos results (3). If such a condition be present it should be corrected because of such serious results as anemia, gastric disorders, and phthisis, which may follow if it is neglected.

The expression of the adenoid facies may be described as stupid or even idiotic where marked. (6).

Addison's Facies. E. Monteiro (21) describes this type of facies as one of sadness an accompaniment of, or expression of the condition of the mental state of the patient. Particularly noticeable of the skin is its thinness and intense bronze color.

Chronic Alcoholic. The face of a person who uses alcohol to excess is generally flushed, heavy, and more or less expressionless. The eyelids are redder than normal, and the skin is apt to be puffy and unhealthy looking. The lips may be observed to be parched and seared. Tremor of the lips and tongue are also
present in the chronic condition. As was formerly mentioned some of the expressions are often fleeting or too mobile to portray on paper or to represent in a photograph; such is the passive vacant aspect of a chronic alcoholic—how difficult to portray the traitorous tremor which hovers about the corners of his mouth when he opens it to proclaim his temperance! (13).

**Aortic Regurgitation.** Also known as Corvisarts' facies. These cases show no signs of cyanosis but the face is generally pale and of a rather sallow tint. The eyes are bright and staring,—the sclerae being pale or bluish. (29) The cheeks are sunken and the lips and mucous membranes are either red or pale, but not cyanotic. Dyspnoea is not easily evoked. (6). It is the opinion of Sir Russell Wells (28) that in aortic regurgitation the blood is more arterial than normal and tends to accumulate in the systemic arteries and the circulation tends to quicken.

In aneurysm of the arch of the aorta the compression produced on surrounding structures, will if it occurs suddenly, give rise to varying degrees of edema of the head, face, neck, and arms, and will produce cyanosis of the face. When the compression is exerted gradually, as it usually is, the col-
lateral veins assume the burden and obliterate these symptoms. (31).

Apoplexy: Embodying cerebral hemorrhage, embolism, and thrombosis the hemiplegia produced is usually accompanied by partial facial paralysis on the same side. The frontalis, orbicularis oculi, and corrugator are unaffected. The paralysis is of the upper motor neuron type and the tongue and palate are also affected. If conjugate deviation is present the head and eyes are turned toward the side of the lesion except in the early spasm. The face may recover rapidly from this affection. During the stage of coma the cheeks are blown out with each respiration, accompanied by sputtering of the lips. (28).

Bell's Palsy:

The muscles on one side of the face are completely paralyzed. The nasolabial fold is obliterated and in
old-standing cases the angle of the mouth may hang down in a pouchlike fashion. All the wrinkles and furrows of the face on the paralyzed side are erased, in consequence of which it assumes an expressionless, masklike appearance. The patient is unable to frown or raise the eyebrows, close the eyelids, whistle, or smile. These features of the disease are best brought out by having the patient show his teeth, pucker his lips, or smile. The condition is one in which the lower motor neuron is involved. (16).

Facial Paralysis; is almost always unilateral, very rarely bilateral. It is due to many causes and presents special characteristics dependent on the portion of the seventh cranial nerve affected. The characteristics, however, of the facial paralysis are more or less constant in all forms. The affected side of the face has a smooth, expressionless appearance, due to obliteration of the natural wrinkles; the mouth is drawn to the sound side; there is inability to pucker the lips as in whistling, and the labials are poorly enuniated. If the paralysis is of peripheral origin, the eye cannot be completely closed and the forehead cannot be wrinkled, while the tongue, though actually unaffected, is apparently deviated when protruded, due to the pulling of the mouth
to the sound side. If the paralysis is of central origin the power of closing the eye and wrinkling the forehead is largely retained, and the tongue actually deviated toward the sound side. To detect these facts the patient is requested to close the eyes tightly and to raise the upper lip so as to expose the teeth, or to attempt to whistle. The various sites at which the nerve may be affected are supranuclear, nuclear, and infranuclear, and in the latter either in the pons, at the base of the brain, within the temporal bone, or in the peripheral distribution. If the lesion in supranuclear (cortex, corona radiata, internal capsule, upper portion of the pons), the upper branch is unaffected (the frontalis, or orbicularis oculi, and corrugator escaping), hemiplegia is usually present, and the paralysis is of the upper motor neuron type. If the lesion is nuclear, other nuclei are also usually affected, the upper fibers generally escape, and the paralysis is of the lower motor neuron type. If the lesion is infranuclear and in the lower portion of the pons there is usually crossed paralysis, the nucleus of the sixth nerve is almost always affected (conjugate deviation away from the lesion), and often also the fifth nerve; if at the base of the brain, the eighth nerve is usually affected, causing deaf-
ness; if within the temporal bone, taste is usually lost in the anterior two-thirds of the tongue and there may be hypersensitiveness to musical tones; and if in the peripheral nerve, the effect is only that of paralysis of the facial muscles supplied by the nerve. (28).

Cerebral Tumor: The presence of facial paralysis depends naturally upon the situation of the tumor. If it is located in the lower third of the motor area there is facial paralysis of the supranuclear type on the side opposite the lesion; the frontalis, orbicularis oculi, and the corrugator escape and the tongue actually deviates toward the sound side. If it is in the pons, there is usually "crossed" paralysis; facial paralysis on the side of the tumor, conjugate deviation to the opposite side, and hemiplegia of the limbs on the opposite side; or there may also be nuclear palsy of the sixth nerve on the same side as the facial paralysis (Millard-Gubles syndrome). When the lesion is in the crus there is a third nerve palsy on one side with hemiplegia of the opposite face, arm and leg, usually most marked in the face (syndrome of Weber). In cerebellar-pontine tumors there is usually slight facial paralysis on the side of the tumor, associated with deafness and tinnitus. The seventh
nerve may also be involved by extension in tumors arising from the base of the middle fossa of the skull, associated with deafness and ocular nerve palsies.

**Bulbar Paralysis.** This facies has a vacant expression. The mouth looks large and is always open. The lower lip hangs loosely, away from the teeth and is constantly dripping saliva. (30). A spasmodic smile may occur. (2). It is of gradual onset manifesting a difficulty in mastication and deglutition; an indistinctness in articulation; an inability to protrude the tongue into the cheeks, to part the lips as in blowing and whistling; and a regurgitation of food into the nostrils.

Bulbar paralysis not uncommonly occurs in the late stages of amyotrophic lateral sclerosis. (30).

**Catalepsy.** The facies is by no means always that of smiling, but if it should be, then the smile is a fixed one. Characteristic of catalepsy is the maintenance for hours at a stretch of some attitude that would rapidly fatigue an ordinary person. (30). There is usually a history of cat-
alepsay and associated mental symptoms of melancholia or dementia. (31).

**Choleric Facies:** In general the choleric face resembles that of Hippocratic facies. It is anxious and inexpressive; the skin is pale and extremely dry; the nose is sharpened; the eyes appear deeply sunken; the eyelids are partially open during sleep; the cornea is dry and may be ulcerated. These changes of the face are seen in cholera morbus and in extreme cases of cholera nostras. (21) (22).

**Chorea:** This disease is more peculiar to female (70%). The face is continuously being twisted into grimaces; twitching movements of one or muscles may also be observed, and it is not uncommon for tic-like movements to develop out of an attack of chorea and persist for some time. (16). It occurs frequently between fifth and fifteenth year, although the onset of chronic progressive chorea is between the ages of thirty and forty. There is a hereditary tendency in the chronic progressive type; the onset is gradual and the movements are as in chorea but slower and with marked incoordination which in the early stages are controlled by the will, but later are severe and universal. Speech is difficult owing to tongue spasms and there is a chronic progressive tendency toward
dementia. (16).

The child with chorea presents a mask-like face with no expression at all. The reappearance of expression indicates the passing off of the acute stage. (3).

Cirrhosis of the Liver. Later in the disease the facies is unmistakable. The patient may be markedly emaciated with deep sunken eyes which upon closer examination show the sclerae and conjunctivae to be icteric and watery. (16). The nose and cheeks show distended veinules, and the complexion appears muddy or icteroid. (6).

Congenital Heart Disease. Since infants with congenital heart do not live many years and many die as the result of a complicating infection the facies is characteristic of infants and young children. In children there may be noticed an excess of hair on the upper face. In the absence of fever, cyanosis in an infant usually means congenital heart disease. William Brown (3) made the observation that so many of these children with congenital heart disease have such dark brown irides,—this may be merely a coincidence.

Congenital syphilis. In the late stages, after ten or twelve years of age, the facies is distinctive.
There is an overhanging forehead, often with frontal bosses, a depressed nasal bridge which is commonly spoken of as "saddle-nose". Characteristic are the striated scars radiating from the lips and corners of the mouth and spoken of as rhagades. The presence of Hutchinson's teeth, the upper incisors may be wide-gapped, irregular, and deficient of enamel over their anterior and medial cutting edges--thus forming crescentic notches. Brown (3) has noticed an increased hairiness of the upper face in children and an unusually bright appearance to the eyes. The skin is yellow and wrinkled presenting a muddy complexion. The face may be weazened and old looking. (16).

**Cretinism.** Not often seen in this country, but
when present the facies is distinctly characteristic. The head as compared to the body is relatively large. The face is broad and flat presenting a bloated appearance. The eyes are wide apart and the eyelids are markedly thickened (11). The lips are thickened, often the lower lip droops allowing drooling of saliva. The nose is broad and flat of the negroid type, and the ears are large and coarse. The mouth is usually open and expressionless. The tongue is more or less constantly protruded and the chin is poorly developed. (16). The hair is usually scanty and brittle. The skin is coarse, dry, and often almost yellow in color. (13)

The accompanying illustration supplied by Dr. A. O. Skinner at the Nebraska State Institution for the Feebleminded, brings out these characteristics excellently. The patient sitting on the left side of the bench has received practically no treatment with thyroid extract, while the patient on the right end of the bench has received persistent
treatment.

Dolorosa: Very often seen and self explanatory. It is of a patient who is experiencing severe pain or sickness (6). The skin may be either congested or extremely pale. The lines of the face are accentuated. The lips move restlessly and the pupils are at times dilated, nearly always becoming so with pain. (21).

Dyspnoea. Presents a characteristic facies. The mouth is open; the lips and tongue are dry; the nostrils dilate with each inspiration, and the face presents a bluish pallor of cyanosis. The expression is extremely anxious. (4). One glance at the face of a patient showing trembling nostrils, blue lips, and an anxious facies, directs ones' attention immediately to the heart and lungs. (16).

Dementia Praecox. Other wise spoken of as schiz-ophrenia presents the facies of the catatonic type
which is expressionless; the eyes may be closed, and
the whole picture being one of deep abstraction. (30).
Or, in the hebephrenic type there is a silly and
meaningless grin associated with lip movement (16).
There is marked emotional and intellectual deterioration. The accompanying illustrations were supplied
by Dr. T. K. Jones at the Lincoln State Hospital for
the Insane; they represent the catatonic and hebephrenic types. Both these types may be present in
the same patient.

**Dementia Senilis.** Here the face is wrinkled and
inelastic with a vacant expression. Its presence in
advanced age with a history
of gradual loss of memory,
especially for recent events;
periodic excitement and confusion; mental and emotional
deterioration and physical deterioration, are complete
in the dementia senilis. (16).

Photo supplied by Dr. T. K. Jones.

**Epilepsy.** It is in the convulsive seizure that
one may make a diagnosis most easily. Twitching of
the facial muscles may precede an attack. During the
clonic phase of the attack twitching begins and in-
volves the face, body; and limbs, mainly on one side. (16). Onset is usually before twenty years of age in true epilepsy, commonly appearing in infancy, at the time of the second dentition, and at puberty. There may be aura, a cry just before loss of consciousness; then convulsions, first of a tonic and then followed by clonic convulsions; during these convulsions the facial muscles likewise take part. The same type of convulsions occur in metrazol shock.

Eunucoide. The face of that male individual who has been castrated before puberty and has been afflicted with a genital unsufficiency. The face appears feminine; it is small and round. The nose is delicate and the skin of the face as well of the other hair-bearing portions of the body (pubis, chest, axillae) are devoid of hair; the skin is also of a very fine texture. There is also usually associated a deficiency in mentality. (21).

Exophthalmic Goitre (Bädedows' disease). The expression is one of wide-eyed staring. The eyeballs are protruding with retraction of the lids causing exposure of the sclera above and below the cornea. (16) The patient winks less frequently than in health and there is a marked tremor of the lids. (24). Usually the harmony of movement between the eyeball and eye-
The lid is missing. The surface of the conjunctivae may be abnormally bright and glistening and secretion of tears may be excessive. Often considerable dark pigmentation of the eyelids with some edema. The size of the pupils varies. The skin is moist and shows a readiness to flush (13). J. L. Tracy (26) describes the face of such a patient very well: "I walk into the room and see a middle-aged female lying in bed, awake. The face is pale and the skin dry. The features are thin; the facial structures apparently shrunken suggesting emaciation. There is an indication of nervous tension in the features. The facial expression is that of mental instability. There are furtively fearful glances of the eyes. The loss of orientation is recognisable. One catches glimpses of passing hallucinations. The eyes are prominent, pupils dilated and the cornea hazy; the lids do not meet in an effort at winking. Respiration
occurs through the mouth and is rapid. Visible, regular oscillations of the bed coverings are noticed about the neck indicating exaggerated heart action".

Facial Hemiatrophy. The face presents an appearance as though it were composed of two lateral halves of different individuals, with the vertical line of junction sharply defined. Facial asymmetry as a congenital defect, and curiously enough is often developed in children who suffer from congenital wryneck; however this should not be confused with that extraordinary condition called facial hemiatrophy which usually begins in childhood in one spot, and slowly proceeds until one side of the face, sharply outlined from the other, becomes wasted in its skin, muscles, bones, color, and hair. (16). The hair on the smaller side is thin, white, or absent; the eye may be sunken and shrunken. The teeth on affected side become loose and the eyebrow is shed. Sebaceous secretion is diminished or abolished (11). Sometimes the wasting is accompanied by painful twitchings which increase with mental excitement. (16).
Facial Hemihypertrophy. Even more rare than facial hemiatrophy is hemihypertrophy, one side remaining normal in size and the other becoming gigantic. (16) It occurs as an anomaly in facial development and is sometimes associated with hypertrophy of one whole half of the body (11).

Familial Lenticular Degeneration. The characteristic facies is only seen in advanced cases and is described as one of fixed emotion. (13). The slightest attempt to engage in conversation may evoke an expression of exaggerated mirth which takes a long time to wear off and is quite unlike that seen in other diseases of the nervous system, although perhaps related to the spastic smile of hemiplegia (16). There is a tendency to fall to one side or other when in the sitting position (13).

Gall Bladder Facies and Pernicious Anemia Facies considered together. After making measurements of the faces of 17 males and 33 females with gall bladder disease, and 21 males and 23 females with pernicious anemia, Draper, Dunn, and Seegal (8) drew the following
conclusions: 1. That in all disease groups the face of the male is consistently more narrow in proportion to its height than in that of the female.

2. Gall bladder and pernicious anemia patients have wide faces and wide upper faces.

3. Female faces of pernicious anemia individuals are considerably wider than those of gall bladder people.

4. Pernicious anemia people have wider lower faces than do those of gall bladder, and also much wider eye zones.

The accompanying sketches illustrate the above points.

General Paresis. The facies has a peculiar stability, and in speaking there are marked tremors about the lips and facial muscles (27). The presence of this facies in view of a history of syphilis, change of character, mental exaltation, tremors, Argyil-Robertson
pupils, suggest the clinching of the diagnosis by examining of the spinal fluid (Wasserman) (16).

**General Swelling of the Face.** Not in themselves directly characteristic. It is seen in nephrosis; it may persist for months or even years. In trichiniasis edema is an important sign. There is early transient edema of the face and eyelids about the eighth day. In the fourth or fifth week the edema is often extreme, involving the face, limbs, and entire body.

Measles cause much swelling of the face, especially about the eyes when the full eruption has developed, and the features are sometimes scarcely recognizable.

Smallpox causes marked swelling, sufficient to close the eyes when the lesions are confluent.

Sunburn produces a swollen, red, hot and painful face.

Skin of face is often much swollen with eczema.

Puffiness of the face is noted in acute alcoholism when the dissipator awakes after his spree.

Whooping cough presents a bloated face from the constant congestion, and is most marked about the eyes.

Less common causes of swelling of the face and in which the swelling is merely a symptom, are: Hodgkins' disease, pericarditis with effusion, Ludwigs' angina,
thrombosis of the superior vena cava, subcutaneous emphysema, pneumothorax, dengue, chronic drug intoxication, trypanosomiasis, scurvy, serum sickness, and tuberculosis of the bronchial glands.

Hippocratic Facies. The facies of impending death. There is a drawn pinched and livid appearance of the face indicative of approaching extinction (6). As Hippocrates so descriptively put it: "A sharp nose, hollow eyes, collapsed temples; the ears cold, contracted, and their lobes turned out; the skin about the forehead being rough, distended, and parched; the color of the whole face being brown, black, livid, or lead-colored."

William Brown (3) describes the facies in children in which there has been a great loss of fluid by vomiting or diarrhea. The face has not lost its fat, there is hollowing of the orbits, the eyes are sunken and staring, the skin of the lower lids is loose and redundant, however this condition is not fatal as that present in chronic dehydration. Here there is so great sinking in of the eyes; the sutures are overriding; the forehead in the wakening hours is lined with horizontal furrows--a hopeless prognosis--the facies is fixed.

The Hippocratic facies is that one present in
agony,—of individuals in advanced peritonitis (21).

**Hutchinsons’ Facies.** A peculiar appearance which occurs in ophthalmoplegia externa. The eyeballs are fixed, the eyebrows raised and the lids are drooping (6). Thus the eyes appear half open and gives a sleepy appearance to the face. Two compensating phenomena result: The forehead contracts causing horizontal wrinkles; and because of the drooping lids the head extends itself in order that the luminous rays arrive at the pupil across the edge of the lower eyelid (21).

**Hysteria.** A silly and vacuous but very amiable smile may greet the physicians introduction to the patient, or accompany the answer to every question asked (27). On the other hand, a peculiar intense frowning may appear in response to every remark involving the patients’ symptoms, the face smoothing and clearing when the subject is changed to one of outside interest. In the coma of hysteria the face is immovable, but has its natural coloring and a quivering resistance of the upper eyelid is met on any attempt to raise it (16).

J. L. Tracy (26) describes a case of hysteria:
"A female is seen lying in bed, awake, but apparently oblivious to her surroundings. Her eyes are closed—
there are tears in the corners. Sighing is apparently involuntary. Between the acts of sighing the mouth is firmly closed. The hair is disheveled. The facial expression is that of high grade virtuous humility, of sacrifice of self for the purpose of teaching someone else a needed lesson. The expression, however, is of a victory overdone."

Idiocy. The facies is dull, unintelligent, "birdlike". (16) Shows what is known as "sunshine and shadow" rapid unexplained changes alternating between pleasure and sorrow in a fraction of time. It resembles the pulling up and down of a dark blind over a window on a sunny day. There is hairiness of the upper face in children; also a receding forehead and chin (3). Warner describes the face as being fatuous (27).

Leontiasis Ossea. The face, as the name suggests, has a lion-like appearance. The patient first notices that he has had to get a larger sized hat. (13). There is a progressive enlargement of the bones of the skull and face, beginning usually in the superior maxillary bones. There is occasionally blindness from pressure.
on the optic nerves (11).

**Leprosy.** A peculiar lion-like appearance is seen in some cases of leprosy (6). In the first stage there are attacks of fever with swelling and patchy erythema of the face, several attacks occurring yearly for one or two years. In the second stage the patches swell and become infiltrated and hyperesthetic. The tubercles begin in the patches as papules which multiply and grow, coalesce, and form the typical flat masses of leprotic tissues which become anesthetic. When fully developed, the natural lines of the face are obliterated and replaced by creases between masses of growth. All facial hair is lost (16).

**Lobar Pneumonia.** The face is flushed, with a deeper tint on one cheek, and the alae of the nose dilate with each inspiration; the breathing is hurried and often accompanied by an expiratory grunt; herpes is usually present on the lips or nose; the eyes are bright, and often the pupils are unequal (16). As the crisis is approached a dusky red appearance of the cheeks is noticed. The patient is
restless and semi-delirious. Delerium is read in the lip movements and in the expression in the eyes which are wide open and very bright, notwithstanding the delerium; there is a facial expression of intense anxiety (26). In children there is seen a faint yellow tinge to the skin and conjunctivae. These children are very toxic and this color makes one give a more guarded prognosis. A distinctive flush of one of the other or of both cheeks may indicate the side of the lesion in children, but one must be sure that the child has not been pressing the face into the pillow (3).

**Long Asthenic Facies.** Described by E. Monteiro (21) as one which shows a pronounced smoothness of the framework; a delicacy of the malar parts; and a marked hypoplasia of the lower segment in comparison to the upper segments. The general appearance is one of thinness and weakness. This type of facies as noticed by Pende (21) and others, is found in the hyperthyroid, hypoparathyroid, hypo-suprarenals and hypogenital individuals.

**Long Hypersthenic Facies.** Offers the opposite characteristics of those found in the long asthenic facies. There is a strong skeletal framework; the lower parts of the face are well developed; the sub-
nasal segment is very prominent. It belongs to the hyperpituitary, hypersuprarenals, and hypergenital types (21).

**Facies of Malignancy.** When persons have had continuous pain for a long time, as in patients who have growths of a malignant character or other organic disease, the expression of the face, naturally gentle, often becomes hard and stony, or if the pain be in the head, the expression, is not only that of pain, but of profound mental depression. In cases of visceral carcinoma the face becomes thin, the skin yellow and straw-colored, and often-times greasy and thick, and there is often an expression of anxiety. On the other hand, the patient sometimes has a dogged expression on his face as if he had been told of the true cause of his illness, and was rebelling against the inevitable progress of the disease. (27).

**Manic-Depressive Psychosis.** The facies during the manic stage has an aggressive animated expression with heightened color (16). The expression is described by Warner (27) as one of agitation and eagerness in acute mania; while there is an alert slyness of chronic mania. In many children a long illness with the exhaustion following it sets up a depressive psychosis; they have a look of melancholy and refuse
to take interest and far less any pleasure in either toys or food; then there comes a casual glance at the toys, finally a smile—the turn is taken (3).

Marshall-Hall Facies. (Chronic Internal Hydrocephalus). The diagnosis is made by inspection. The head is large and spherical and the face comparatively small (16). Elmer and Rose (11) describe the face as triangular in shape with the base of the triangle above. The features which are of normal size present a marked contrast with the enormous forehead. Butler (4) describes the head as large and globular, sometimes pyramidal with the anterior fontanel large and bulging; the veins of the scalp are visibly distended; the eyelids are raised with difficulty, and the forehead is prominent at the root of the nose. The eyeballs protrude slightly and are rotated downward leaving some of the sclerae visible above (16).

(The photo was supplied by Dr. T. K. Jones of the
Meningitis. J. L. Tracy (26) made the following observations on a child: The face was pale; the chin apparently elevated; muco-pus was present in the nostrils; external ear discharges were present along with post-aural glandular enlargements; child was delirious, evidently in great distress; the child would cough, then cry and then moan; the conjunctivae were reddened and purulent; the eyes were turned away from the light and in constant motion; the pupils were constricted; a slight noise caused the child to be disturbed. Wm. Brown (3) noticed transient irregular patches of high color are to be seen in the course of meningitis which vary their position from time to time; these rashes indicate that the end is near. When herpes are present and widespread reaching over the face and neck, one's thoughts immediately turn to meningitis. In pronounced cases the eyes are fixed and held widely open—a look which indicates an intense horror or fear—the "meningeal stare".

Microcephalus. A very small or microcephalic head is a sign of congenital idiocy. The absence of the faculty mentation depends upon the smallness of the brain consequent on microcephalism. The face presents a fatuous appearance (27). The facies is
dull, expressionless, and unintelligent. The forehead is low and receding giving a flattened appearance to the top of the head. (16) The face shows what is known as "shunshine and shadow" rapid unexplained changes alternating between pleasure and sorrow in a fraction of time (3).

**Mitral Facies.** In cases of mitral stenosis even when well compensated, the lips and mucous membranes have a cherry-red to purplish tinge, the cheeks being of a bluish-pink; slightly dilated veinules are often seen on the face and elsewhere; the eyes are rather watery, and the whites not infrequently slightly pink; dyspnoea of a more or less marked degree may be evoked by not very severe exercise (28). Sir Russell Wells (28) concluded from a study of mitral stenosis that the blood as a whole is more venous than normal and tends to accumulate in the systemic
veinules; and, the circulation tends to slow down.

**Mongolian Idiocy.** The head is described as brachycephalic. The palpebral fissures slant obliquely inwards and downwards toward the broad, flat nose. The ears are large and pitcher shaped. The lips are fissured and open, allowing the large, flabby fissured tongue to protrude. Brown (3) mentions a downy appearance (16) of the hair on the forehead. The hair of the head is scanty, wiry, and mouse-colored; and the complexion is florid and mottled (16). French (13) states that the facies is so characteristic that a diagnosis may be made at sight; the nose is rendered even more broad by the presence of epicanthi; the eyelids show signs of chronic blepharitis. The almond-shaped eyes, presence of epicanthi; florid complexion, and the absence of fatty masses serve to distinguish the mongolian from the cretinoid idiot; but, in case of doubt, the benefit or otherwise of thyroid treatment may clinch the diagnosis. (The photo was supplied by Dr. A. O. Skinner of Nebraska State Institution for the Feebleminded).
Myxedema: The face has a full-moon broadness in myxedema; there is no true bony enlargement (27). The features are coarse and broad, the lips thick, the nostrils broad and thick, and the mouth is enlarged. Over the cheeks there is a reddish patch. The face is moon-shaped and expressionless. The hair of the head and eyebrows is scanty, coarse, and dry (16). The lines of expression in the face are obliterated by edema occurring in the subcutaneous tissue (11). The presence of a dulled intelligence is betrayed by the apathetic physiognomy. The lips are swollen so that a more than usual amount of mucous membrane is showing (13). Infantile myxedema, otherwise known as cretinism may be found described under that heading (24). The tongue is heavy and tends to fill in the gap between the swollen, partly opened lips. On the whole the appearance is one of stupidity (21).
Myasthenia Gravis. There are two types of facies:

one in which the patient can hardly keep the eyes open and whose chin tends to drop exhausted to the chest, and the other in which there is a characteristic smile which might be described as a unilateral sneer (16). The illustrations were taken from French (13). The first illustrates the exhaustions of the patient; the second simulates a sneer. This unfortunate and misleading facial expression is the result of deficient action on the part of the zygomatic and risorius muscles and exemplifies the curious way in which some muscles are affected and others escape, in this disease, even when they derive their innervation from the same source (13).

Myopathic Facies. There is a loose pout of the lips while at rest. The smile takes on a completely horizontal transverse character (13). The condition is also spoken of as facioscapulohumeral muscular
atrophy. The muscles of the face are wasted; the lips are thickened and weakened and cannot be firmly closed, so that the large mouth and wasted face give a peculiar expression to the face known as "tapir mouth" (16).

Paresis of the orbicularis palpabrarum are striking when an attempt is made to close the eyes, and this may lead to prominent and perhaps staring eyeballs; other cases show drooping of the upper lids. The patient is unable to whistle or to blow out the cheeks quickly due to weakness of the orbicularis oris. (13)

Nephritic Facies. In reviewing an article on "Facial Form and Disease Correlation", by Draper,
Dunn and Seegal (8) made some interesting observations and measurements in eighteen nephritic hypertensive males and twenty nephritic hypertensive females. In all disease groups the face of the male is consistently more narrow in proportion to its height than in that of the female. The nephritic hypertensive individual has a relatively narrow face; they also have a rather wide eye zone in contrast to the narrow eye zone of the tubercular individual.

The facies of acute nephritis is that of a pale full face with baglike swellings beneath the eyes. Puffiness of the eyes and face, and of the ankles is present at the onset, and then later as anasarca develops, the whole body, including the face, is markedly edematous, and the tissues pit on pressure (16). Brown (3) noted a difference in the child whose lids showed a former edema from nephritis as distinguished from those represented by dehydration,—in both the lower lid is wrinkled and lax, but the eye of nephritis is not sunken like that of the dehydrated child.

In the chronic parenchymatous nephritic the face is expressionless, puffy, and putty colored (16).

E. Monterio (21) describes the face as being edematous, pale, and soft with a predominance in region of the lower eyelids. Warner (27) says that the face
besides looking pale and puffy, appears worn and weary. In children there is often a peculiar transparent or poorly look in the lower eyelid, so that it seems somewhat pellucid.

**Normal Facies.** Is so described by E. Monteiro (21): "If we ideally divided the face by two horizontal lines, one passing above the eyebrows and the other between the nose and upper lip, we would obtain three segments. In the normal facies, also called proportional, these three above mentioned segments are equal, or very nearly so both in height and breadth."

**Osteitis Deformans.** Here again the face is described as triangular in shape with the base of the triangle above as was described in the Marshall-Hall facies. But here the onset is in middle life rather than infancy and early childhood. Hare (16) states that when the cranium is enlarged the face and chin appear
comparatively small; the head is held forward with the chin raised. Marked deformity of the skull is noticed when compared with earlier photographs (24).

Paralysis Agitans. The face of paralysis agitans, sometimes called the "Parkinsonian visage", is distressed and pathetic, and yet somewhat intense (27). Hare (16) says that the face is stiff as if starched, and the appearance is mask-like. Butler (4) says the face presents a sphinx-like immobility (stony visage) and lack of expression, conjoined usually with a color which is usually too healthy to go with the general condition.

The cardinal symptom is that of muscular rigidity which affects the skeletal muscles generally as well as the face,—the eye muscles escape; because of this, in spite of the "starchy" appearance of the face the eyes appear to move with natural or abnormal rapidity, for instance, they will turn in the direction to which the patient desires to look before the head has assumed the position. There is a staring expression of the face, the eyelids being constantly retracted.
by the tonic spasm of the orbicularis palpebrarum. There is an absence of normal winking. In contrast with the slow development of facial expression under the influence of emotion, there is sometimes a marked want of control over the fully developed emotional movement and the patient complains that the exuberance of his laughter or tears is entirely out of proportion to his feelings of merriment or sorrow (13).

Monteiro (21) remarks that there is an attitude of constant puzzlement, and at other times the forehead contracts forming vertical furrows and the eyebrows rise with horizontal furrows arising, both of which give the suggestion that the individual might be frightened.

Pernicious Anemia. Description and illustration discussed with that of gall bladder facies. See page 74.

Progeria. The face is that of a weazened old man with the head bald or covered sparsely with gray hair but is abnormal because of its occurrence in children (16). There is an absence of the facial hair and the skin is rough and pale; the fore-
head is low and the hair of the scalp, if present, is dry and either gray or white (21).

**Pulmonary Tuberculosis.** Warner (27) describes the sanguine and the phlegmatic types of tuberculosis.

**The sanguine type.** Individuals placed in this class are credited with these features, and they refer more particularly to children. They are tall, slight, and graceful, with well-formed limbs, hands, and feet, a fine clear skin, and usually a fair complexion. The face is oval, the lower jaw small, the features delicate and regular, the lips thin. The eyes are bright, and covered with long eyelashes, and the hair is often remarkably fine and silken. A sprightly and excitable disposition may be added, and the picture is complete.

In the phlegmatic type are composed individuals, as a rule, short and burly, with coarse limbs, large hands and feet. The face is broad, the lower jaw large, the malar bones often prominent, the features coarse and irregular. The nose is generally thick, the lips tumid, the lobes of the ears large, and the neck unshapely. The skin is coarse, harsh, and thick. The amount of subcutaneous cellular tissue is considerable, and often sufficient to conceal the muscular outlines of the body. The skin in the previous type is fine,
and it is possible to pinch up with the fingers a little portion of it; but in these individuals none but a large fold of skin can be picked up, as it is so coarse. Speaking generally, persons of this class appear flabby and heavy-looking; they are apathetic, have little muscular power, and are soon tired. The vascularity of their tissues appears to be impaired, and leads to certain peculiarities of parts.

Brown (3) states that often in children there is seen a hairiness of the face associated with general body hairiness; the eyelashes are also long. The face of the child loses its chubbiness and shows old lined features; the expression is far beyond that normal to the age of the child, partly due to a wasting of the face and partly due to a loss of contentment and pleasure.

The facial expression of adults in many diseases is more characteristic than it is in children. Thus one sees in acute pulmonary phthisis the widely opened eye, the hunted expression, the quivering nostrils, the red flush over the malar bones the wasting and dryness of the hair and skin, and the eager or in other cases apathetic glance of the eye (27). In pulmonary tuberculosis the masseters do not remain firm and prominent but are flabby and small as a
a part of general wasting (25). The wide-open appealing eyes with white sclerotics, the emaciated face, the general pallor with red spots over the malar bones, the dilating alae and panting respiration give the impression of a fugitive (16).

Scleroderma. When the face is involved there is a absolute lack of expression, the features appearing to be ironed out. There is either diffuse or circumscribed thickening of the skin, which is bound down to the under-lying tissues (27). The skin surface appears glossy, dry and smooth; and may appear whitish or bronzed, the tissues become thickened, hard, and appear edematous. (16)

Short Facies. There may be described here the short facies and the short hyperplastic facies. The short facies is characterized by a predominance of breath over heighth; the supraorbital arches are less prominent; the nose is small; the mandible is quite fragile; and there is a pointed, narrow, and cimpling chin. The delicacy of the framework may be covered by excessive fat; in such cases the face is given the title of moon face or of full moon (21).

The short hyperplastic face presents a thick skin, prominent supraorbital arches, a large nose, a strong jaw, and a chin which is long, rounded and prominent.
This type of facies belongs to individuals of hyper-pituitary temperament (21).

Tabes Dorsalis. The small size or inequality of the pupils, a slight drooping of the eyelids combined with some wrinkling of the forehead due to a compensating effort on the part of the frontalis, gives a sad expression (16). The drooping of the upper lid may be called a pseudo-ptosis or hypotonia, not due to paresis of the levator palpebrum superioris, as may be shown by the raising of the lid when the patient is looking up. The hypotonia of the muscle allows for the action of gravity, with the result that the lid hangs like a half-raised curtain in front of the eyeball. In other respects the face may be normal, but the majority of tabetics have a sallow complexion and very little subcutaneous fat, two facts which contribute to their generally unhealthy aspect. It is thought by French (13) that many victims of this disease exhibit a deficiency of the emotional reflex movements of the facial muscles, and that during conversation the play of their features in response
to the subject of their talk is not so noticeable as that of healthy individuals.

Tetanus. In tetanus the face is rigid with contraction of all the muscles especially the masseters, pterygoids, and temporals (27). The impression of extreme suffering is given, but nevertheless a mechanical, forced smile called "risus sardonicus" is marked from the first; the face soon looks like that of an old man owing to the muscular contractions (21). The typical "risus sardonicus" is a fixed unmirthful grin due to tonic contraction of the facial muscles, drawing the angle of the mouth outward and raising the eyelids (16).

J. L. Tracy (26) describes the typical appearance of a patient in an inter-convulsive period. "The head is bored back into the pillow. The man is wide awake, intelligently conscious--acutely so. The eyes are only partially open, being held semi-closed by muscular spasm. The pupils are normal, the eyebrows are elevated, the upper lip is drawn back over the teeth, the corners of the mouth are drawn outwards; producing the sardonic grin. The lips are slightly separated. The face in expression is almost a general blank because of spasm of the facial muscles. The expression of the eye is one of alert watchfulness.
and of dreaded expectancy, the respirations are rapid, shallow, and guarded.

**Ulcer Facies.** (Gastric and Duodenal) J. B. Stenbuck (25) gives an interesting and descriptive account of the ulcer facies. Due to the infrequent occurrence of ulcers in females and the fact that the face seldom, as compared with man, arranges itself in lines and folds, made it impossible to study the facies of woman. But in the male he found a rugged face representing apparently undeniable firmness. The lines were straight and almost cruel in their fixity, the curves having been replaced by sharp angles. The sleek duodenal ulcer facies described by Moy-nihan may be observed about once in fifty cases. The average face in health is as if molded in plaster, its characteristics are broad, the general contour is smooth, and the surface coloring may vary in different
parts of the face. The facies in cases of ulcer, on the contrary is as if modeled roughly in clay with the thumb and as if no attempt had been made to make smooth the edges. The resemblance to clay lies also in the apparently lifeless texture of the skin, which, whether pale or ruddy, is uniform, lacking the variation in complexion that may be found in health. The forehead low and broad, when wrinkled, in spite of emaciation, the skin is thrown into thick heavy folds, due to thickness and lack of elasticity. The eyes appear small under the heavy brown and supra-orbital ridges and they glisten from the depths. This appearance depends on general emaciation as well as the thickened ridges. The nose is straight and of variable length; it is not prominent. The ears are large and protrude from the head perceptibly; they are round and lack well defined marking and lobules. The mouth is broad; the lips are thin as if firmly pressed together. The cupids' bow formation of the normal mouth is lacking. The general impression of the mouth is that of a straight line broken only at each end by a downward curve. The chin is big in all dimensions and is one of the most distinguishing features. The jaw bones are widely separated anteriorly and posteriorly as well, giving the impression of a
large, blunt wedge. The masseter muscles are prominent which is strange in a patient who eats little and chews less, living as he does on a soft and fluid diet. The infraorbital ridges are prominent due to emaciation, and give the appearance of high cheek bones which are only relatively high. The nasolobial fold is a most prominent feature. It is not represented by a mere cleft, but is a substantial cord-like structure, strung like a piece of molding on the face; it may even be pendulous. It does not taper down as it reaches the corner of the mouth but forms a nipple-like protuberance. The complexion varies considerably; the mildly ruddy face is common, but there is a pallor in more advanced cases. Berg (25) has noted an edema of the forehead in those patients who are ailing.

Robinson (23) describes the ulcer facies as one with a tense worried look. A person who seldom smiles at first contact, not given to much spontaneous smiling or gaiety; one whose face muscles are set to give an anxious, tense, and worried expression, a long and thin individual chiefly of the male sex.

Draper, Dunn, and Seegal (8) found that the ulcer patient was one intermediate in all respects between the long, thin nephritic-hypertensive face with its wide set eyes, the equally long thin tuberculous face
with its wide set eyes, the equally long thin tuberculous face with its narrow set eyes, and, the wide gall bladder countenance with its relatively narrow eyes and wide pernicious anemia features with its very great inter-pupillary space and its wide jaw angles.

Uterine or Ovarion Facies. Weingraf (9) finds regret, resignation, and indifference characteristic of the facial expression of fibroma patients. He notes nevertheless, that behind this mask there are strong hidden emotions which find expression in the peculiar personality and character changes which appear after fibroma operations, changes to which science thus far has paid no attention.

Thus in closing this discussion on the importance of the study of the face and facies characteristic of health and disease it would seem to add even more to the value of this study if one were to quote the words of S. C. Robinson, (23): "Some day we will add to the armamentarium of the medical student motion and sound pictures of patients with different diseases so that the important factor of facies may be studied."
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