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T H E S I S

for the Degree of M.D., Edinburgh University.

on

FACIAL IRRITABILITY (including distribution of
mechanical irritability of nerves in various
parts of the body).

by

ANDREW FLEMING, M.B., Ch. B.

APRIL 1910.



P R E F A C E.

I was interested in the reflexes and spasmodic conditions, particularly in childhood, and examined numerous cases at the various places mentioned in the Thesis, through the kindness of Drs. Ker, Philip, Robertson, and especially of Dr. John Thomson. The results are discussed in the following pages.

FACIAL IRRITABILITY

(INCLUDING DISTRIBUTION OF MECHANICAL
IRRITABILITY OF NERVES IN VARIOUS PARTS
OF THE BODY.)

It does not occur in children under 3 or 4 months - this is probably due to the fact that the child's system has not yet undergone its first disturbance in the way of teething, and up to this date at least, outward impressions would not appear to have much influence, - even irregularities in diet would require time to shew their results on development.

It is not so common among breast-fed children, and among well nourished children of the poorer class, and the difference as regards its appearance on cold and warm days is quite striking, there being many more cases on a cold day, as Dr. Thomson has pointed out.

It is very common between 6 and 24 months in rickety children, e.g.

W.C. aet. $8\frac{1}{2}$ months. - Weight, 10 lbs. at birth.

Bottle-fed since 2 months. - Teething, 2 left centre incisors, $4\frac{1}{2}$ months. - Complaint, "Fits"

on /

on three occasions. - Rickets, evidence present. - Facial Irritability, present. - Nervous System, Mentally intelligent - very cross. - Reflexes, knee-jerks brisk. Plantar, poor.

B.G. Aet. one year.

Complaint, Diarrhoea and vomiting. - Duration, 4 weeks. - Fed on sterilised milk. - Rickets, evidence of slight rickets. - Facial Irritability, 2nd. degree.

J.M. Aet. 7 months.

Diagnosis, Tetany. - Feeding, Breast-fed to 5 months, bottle for 2 months. - Facial Irritation, Slight.

Janet H. Aet. 1 year 2 months.

Admitted, 22nd. April 1908. - Complaint, "Fits". - Duration, 3 months. - Feeding, Breast for 12 months. - Teething at 8 months - Respiratory System, Laryngisms. - Nervous System, Hand rolling at times. - Knee-jerks not elicited, though muscles contract on tapping over motor points. - Plantar Extensor - Facial Irritability marked. - Treatment given was:- Anti-pyren, gr. ii. thrice daily. - Cold douche, once a day.

April 25th. Facial Irritation less marked.

May /

May 1. Facial Irritation still present. Calcium Chloride begun. 2 gr. t.i.d. contd.

Geo. S. Aet. 1 year 2 months.

Admitted 9th May 1909.

Complaint, Stiffness and cramps in hands and feet.-

Duration, 3 days. - Evidence of Rickets - Well-marked evidence of Tetany. Reflexes of the knee not elicited. - Reflexes of Plantar not elicited. - Abdomen Reflex Sluggish. - Neuro-muscular irritability. - Facial Irritation prominent.- Chin Reflex present - Pectoral Reflex marked - Thigh Reflex present.

12th May. Tetany much improved. - Mist Rachiitis.
t. i. d. 3i.

14th May. Condition of Tetany much improved, but still evident in hands and feet.

17th May. Slight tetany present in hands and feet.

Thomas H. Aet. 1 year.

Diagnosis, Rickets. - Feeding, Breast-fed for 6 months, after that bottle-fed. - Housing, small room and dark. - Facial Irritability well marked.

Lily G. Aet. 10 months.

Complaint, Diarrhoea. - History, Diarrhoea at 6 months. - Evidence of Rickets - Facial Irritability, well marked Jaw jerk.

James M. Aet. 1 year.

Admitted 12th May 1908.

Complaint, Restlessness, irritability, throwing head about. - Sweating of head since birth.

History, a premature child. - Feeding, bottle from first. - Evidence of Rickets. - Nervous - Mental, extreme irritability.

Motor Functions. Knee jerks active. Plantar Extensor. Abdomen Reflex active.

Eyes. Occasional slight nystagmus on lateral deviation.

Progress. 13.5.08. Milk two hourly, Red meat Juice, Mist Rachitis, t.i.d. Yolk of Egg once daily.

14.5.08. Ferri Redact. gr. i t.i.d.

19.5.08. Much less feverish and irritable, sweating less.

23.5.08. Discharged. Much quieter and more contented.

John F. Aet. 9 months.

Diagnosis, Rickets and Bronchitis.

Facial Irritability. Marked.

James S. Aet. 17 months.

Diagnosis Rickets. Has had Tubercular Dactylitis.

Facial /

Facial Irritability present.

Janet H. (contd.)

May 5th. Several fits.

Sodium Citrate gr. X. t.i.d. Given also Chloral
gr. iii. t.i.d. and Potassium Bromide gr. Vi.
six hourly.

Facial Irritability. Movement was like the snarl
of a dog, and much better marked during sleep.

Etta D. Aet. 1 year 8 months.

Admitted 15th December 1908.

Complaint. Fits. Not walking.

Duration. 15 months.

Rickets. Evidence well-marked.

Reflexes. Knee-jerks very lively. Plantar.

Abdominal Reflex present.

Facial Irritability marked.

Walter T. Aet. 11 months.

Admitted. 23rd Feby. 1909.

Complaint. Fits of crying, peculiar position of
fingers.

History. Breast-fed for 10 months. Has had
very little milk since weaning.

Nervous System. Curvature of Spine. Reflexes
all /

all very lively. Tap anywhere above the knee is sufficient to elicit the jerk. Knee-jerks lively.

Plantar Reflex. Extensor.

Superficial Reflexes in upper limb all lively.

Facial Irritability. Marked.

Weight 16 lb. 10 oz.

Pulv. Rhei gr. $\frac{1}{2}$ Sodium Bicarbonate gr. 2.

26 '2 '09. Weight same.

27.2.09 R. Chloral gr. i 4 hourly.

Mist Rachitis 31 t.i.d.

3.3.09. R. ol. Morrhuæ cum Phosph. 3i.

t.i.d.

William M. Aet. 1 year 1 month.

Admitted 2nd. April 1909.

Weight. 24 lbs.

Complaint. Fretfulness. - Swelling of Abdomen for 5 days.

Family History. Mother died of Phthisis.

Present Illness. Up to 14 days ago healthy, then he had an ulcerated mouth, with Diarrhoea and vomiting. That stopped under treatment, then abdomen was noticed.

Knee jerks normal.

Facial /

Facial Irritability. Second Degree.

Plantar Reflex. Extensor.

From the foregoing cases which I have selected as being under 2 years, it is seen to be common from about 6 months to that age, along with tetany, convulsions, laryngismus, etc. Its presence seems to be modified by dieting, and its much greater frequency in cold weather has been noted.

In older children and adults, it is well marked in Tetany, and of course, in mechanical irritability in general.

I have found it in Chorea, Enuresis, Tuberculosis, Henoch's Purpura, Peliosis Rheumatica, (This patient has always been a bad sleeper), and also in children who suffered from Night Terrors.

It is frequent in General Paralysis. I investigated the cases of General Paralysis at the Toyal Asylum, of whom there were 20 male cases and 9 females.

Of the 20 cases, there were 12 positive, and 8 negative. In only one of the 3 advanced cases was it very marked, the other two only giving a mouth contraction.

Of the 9 females, 6 were negative, and 3 positive./

positive. On investigating the histories, I could find no determining factor to explain its presence or absence unless, as in the males, that the more advanced cases gave slightly more evidence of its presence.

William B. Tabetic General Paralysis.

Facial Irritation. Orbicularis Oris.

Knee Jerks. Negative.

A.E.

Facial Irritation. Delayed. 1st degree.

Knee Jerks lively, and so on.

Wien Klin. Wochenschrift uber Gesichts Reflexe bei Sauglingen Novr. 21.

by Dr. E.Moro.

He refers to the "Facial phenomenon" and the "Trousseau phenomenon" as seen in Tetany, along with galvanic hyper-excitability.

Then he proceeds to confuse, as it seems to me, the Lip Reflex with the tremor of the Orbicularis Oris, as he has found it in quietly sleeping healthy infants. Dr. John Thomson has drawn clearly the distinction between the two, the tremor of the Orbicularis Oris, (Thiemich's Lip Phenomenon) being "merely a localised variety of Chvostek's Symptom".

He /

He writes also of a "Lid Closing Reflex" which consists in this, that in the sleeping infant the touching lightly of the point of the Glabella up to the middle of the brow, as the percussion of the place of exit of the Supra-orbital nerve, has for result the momentary concentric contraction of the Orbicularis Oculi."

He does not consider this as a defensive Reflex, and thinks it continues in infants from the 2nd day of life to end of 1st month; why it should end then, he does not explain.

On the other hand, from my own observations, I am inclined to consider it a defensive Reflex, if Mendel is right in his contention that the Frontalis is an eye muscle.

Comptes Rendus de la Societe de Biologie.

Seance du 11 Juillet 1903.

Le Reflexe Buccal.

par MM. Ed. Toulouse et Vurpas.

"In the course of our researches in our attendance on lunatics, we have observed it almost constantly in General Paralysis, Organic and Senile Dementias, and the States of Alcoholic Intoxication, it has seemed to us to be frequent in the conditions of Idiocy. We have observed it generally when the /

the tendon reflexes, notably the reflexes of the forearm were markedly exaggerated.

"This Reflex is present in the infant, later on disappears to shew itself anew in certain pathological states.

One knows that in the new form, the functions of the cerebral cortex exercise little action on the reflexes.

It should be particularly so with the "Reflex Buccal," which one may consider as a functional Reflex representing congenital Bulbar associations, since this reflex has been observed in anencephalis. Later on, as the cortical functions are developed, while the action of sucking takes place no more, the "Reflexe buccale" is no longer produced. But when grave troubles come to alter the working of the cortex, this reflex, which is in relation to the latent functional associations, finds new conditions favourable and can be easily provoked by mechanical excitations of the lips."

Die Tetanie. F. Hochwart. Die Symptome der
Tetanie. p. 74.

Die Mechanische Erregbarkeit der Nerven und
Muskeln .

(Chvosteksches Phänomen.)

He /

He distinguishes three degrees of the phenomenon. The highest degree, (Chvostek No. 1) shews itself in this, that with a percussion stroke before the external ear, twitching appears on the whole facial region. In still higher degrees, light stroking over the face, brings out the phenomenon. (Schultze's Phenomenon Chv. No. 1.)

The middle degree, (Chv. No. 2). exists in this, that the percussion stroke under the Zygomatic Arch evokes spasm in the ala of the nose and angle of the mouth; with the slightest degree, (Chv. No. 3) with the percussion hammer on the place named, the angle of the mouth exclusively twitches.

Though not absolutely pathognomonic of Tetany, yet it occurs more often in that than in other diseases. He also maintains that though it may be found in healthy people, yet they are especially neurasthenic and hysteric individuals, also in epileptics, it has been found.

He thinks this is interesting in connection with the " Stipulated" connection between Tetany and epilepsy. It is also found in Scrofulous persons, in whom mechanic hyperexcitability can be demonstrated. Indeed the symptom was not seldom observed/

observed in Tuberculosis, and Schlesinger speaks of it expressly as an early symptom of that affection. Isolated facial phenonena also come under observation after Thyroidectomy, without the appearance of Tetany.

He points out that the Facial phenomenon occurs very seldom, in its highest development in those not suffering from Tetany.

He considers too, that this isolated Facial phenomenon may be a miniature form of Tetany.

He quotes Kraepelin as having found Chvostek's symptom in a case of Myxoedema. He himself found it well marked in a lad of 18, in whom the thyroid was completely removed at the age of 14. Eiselsberg has found it in a case of Cretinism.

"Animals that have undergone Thyroidectomy present mechanic hyper-excitability." (v. Wagner etc.)

Mager of Brünn found the Chvostek phenomenon in 40 cases of Enteroptosis, and thought the cause of the hyper-excitability to be Auto-intoxication from the side of the intestine disturbed in its functions.

He sums up:-- The Facial Phenomenon occurs /

occurs in almost all acute, as also in many chronic, forms of the diseases mentioned, and mostly in the higher degrees. In many cases it is to be considered as a single manifestation of Tetany disease, (accumulation of "normal" individuals at the tetany time in tetany towns, it remains after tetany cure, its appearance after Thyroidectomy.)

"Sometimes it is in connection with nervous diseases, which often stand remote from Tetany, (Neurasthenia, tumours, old Facial paralysis etc.,) sometimes are akin, (Epilepsy, Hysteria, Myotonia,) It also seems to occur here and there as an indifferent peculiarity in the quite healthy. But it is interesting that it not seldom appears in conditions, like tetany, which are perhaps to be looked on as intoxications, so namely in Thyroidism, and Athyroidism, (Cretinism Myxoedema) in the triad of Struma, just described by me Vaso-Motor-Hyper-excitability and Chvostek Phenomenon in Tuberculosis as in the Severer intestinal conditions.

"I once saw an interesting anomaly in a neurasthenic of 18, who showed, after lively stroke with the hammer before the ear, two twitchings, one after the other.

"On the whole one speaks of direct mechanic hyper-excitability, and not of increased reflex action, for in Tetanus, in which the reflex excitability /

excitability, is greatly increased, this kind of symptom is not demonstrable, while in Tetany on the other hand, the reflex excitability is manifestly lowered, e.g. the knee reflexes can disappear temporarily or even lastingly.

Studien über den Oppenheimschen "Fress Reflex und Einige andere Reflexe."

Deutsche Zeitschrift. Nerven .

Review of Neurology and Psychiatry. March 1905

p. 214.

Fürnrohr has made observations on Oppenheim's "feed reflex" on Henneberg's "hard palate reflex," and on the "buccal reflex" of Escherich, Toulouse and Vurpas.

In the healthy infant during the first few months of life, by stroking the lips, tongue, hard palate, or any part of the oral cavity, we produce a reflex consisting of rhythmic sucking, smacking, chewing, and swallowing movements, repeated from 4 to 6 times. Normally, after the age of 8 to 10 months, this reflex is no longer present. But in certain pathological conditions it may persist, not only in older children, but even in adults.

In /

In them it may even appear spontaneously, probably the result of salivation. Oppenheim found this reflex in cases of pseudo-bulbar paralysis and of post epileptic coma.

Fürnröhr. also noted its presence in post-hemiplegic coma and in the coma of hydrocephalus. In these conditions, as the coma passes off, the reflex disappears. In pseudo-bulbar paralysis, it occurs without coma. The reflex is considered to be due to the uncontrolled action of a subcortical centre, either in the optic thalamus, or more probably in the Medulla Oblongata. As cortical control appears in the child, this reflex disappears; but if control development be deficient, it may persist.

Henneberg's "hard palate" reflex in healthy infants is seldom present. It is elicited by rapid firm stroking of the hard palate from before backwards, with a rod or Spatula. The result is a strong contraction of the orbicularis oris. It occurs chiefly in pathological conditions, which may be of the most varied kind, but with much less constancy, than Oppenheim's "feed reflex." The hard palate reflex is a short reflex muscular twitch, unlike the slow rhythmic movements of Oppenheim's phenomenon. Fürnröhr believes the two phenomena to /

to be distinct, Henneberg's being a mucous membrane reflex analogous to the anal reflex.

The "buccal reflex" is produced by percussion of the upper lip, producing a pouting contraction of the orbicularis oris. This phenomenon which is normally present also in anencephalic monsters, certain idiots, alcoholics, and general paralytics, is considered by Fürnrohr not to be a true reflex, but simply a sign of increased irritability to mechanical stimulation analogous to the well known facial irritability of Tetany.

Lip Reflexes again confounded with facial irritability. (Chvostek 's Symptom.)

Monatsch. für Kinder-Heilk. Decr. 1902. Band 1.
 No. 3. Über das Facialis Phänomenen bei
 alteren Kindern, by Dr. M. Thiernich.

He points out the relation of the facial phenomenon to tetanoid conditions, also the persistence of the former after other evidence of tetany &c., has disappeared. He refers too, to its absence for the most part in the Summer and Autumn, and its reappearance in the Winter and Spring, as also is the case with tetany, and thinks that this conformity may speak for the "tetanoid" nature of the facial phenomenon.

He ends by stating that the Facial phenomenon is to be considered as an enlargement of the series of "nervous" Stigmata, and is to be looked on in later childhood as a pathognomonic latent symptom of tetany.

Neurol. Centralblatt 1908. No. 2.

"Spasmophilie und Calcium-Stoffwechsel."

by Professor Stoeltzner.

He has already made the observation, that in "Spasmophilie" children, experimental Calcium importation increases the galvanic excitability of the peripheral nerves, and he further lays down the hypothesis that a Calcium Stasis of the tissue fluids lays the foundation of Spasmophilia. He supposes, for /

for such a Calcium Stasis, an insufficiency of the Calcium excretory function of the intestine; favouring this, there must work on one side, high Calcium provision with the food, on the other side, negative Calcium balance of the skeleton.

He thinks that his hypothesis explains the predisposition of the artificially nourished rachitic and intestinally diseased infants to the disease of Spasmophilia, and how others, in spite of copious provisions of Cow's milk or Calcium compound, are not spasmophilic. He assumes, too, that it explains the result of treatment with phosphor cod liver oil.

The healthy infant takes in more Calcium daily than it excretes. When does the retained Calcium remain?

At no time can calcium Stasis occur, as long as lime absorbing tissue is present in excess, and the bony skeleton is that tissue.

If, on the other hand, the new formation of tissues ready for calcification is slight, whether the lime is conveyed with the food or not, the calcium retention on the side of the skeleton will be negative, i.e. the Calcium descent is from the bones and the tissue fluids.

Thus /

Thus the calcium tension of the latter is kept high under all conditions; so long as the excretory function of the intestinal mucous membrane happens to be even, the excessive calcium is separated, but so soon as the excretory function of the intestinal mucous membrane is insufficient, the calcium tension of the tissue fluids must, by negative calcium balance, be raised, i.e. there is Calcium Stasis.

He there gives the results of an experiment by v. Cybutski on a boy with fits and laryngospasm, and also Chvostek's and Erb's phenomena:-

Lime Metabolism expressed in the 24 hours.

	Conveyances.	Excretion.		Relation.
		Urine	Faeces.	
1.	0.585	0.002	0.461	0.122.
2.	0.332	0.003	0.151	0.178
3.	0.383	0.008	0.041	0.334

1. Severe symptoms of spasmophilia.
2. Less severe symptoms of spasmophilia.
3. Very insignificant symptoms.

Über das Facialis phänomen bei einigen infektiösen Krankheiten. by Gioseffi.

Rev. di Chir. Pediatr. Sept. 1908.

The author found the Facial phenomenon in 38 % of Diphtheria cases, 41% of Scarlet Fever, 38% of Measles, 20 % of Whooping Cough, and 61 % of Typhus cases. Besides other hypothesis the author speaks also of those which Borrino lately brought forward for Diphtheria infection, that the question is as to an increased reflex excitability, which would be physiological in infants some weeks old, (More) then again would appear with special intensity in the course of infectious processes in general.

Through the courtesy of Dr. Ker, I was allowed to examine the cases at the City Hospital in this connection, and my results were:-

Facial irritability, chiefly the first degree of Chvostek's symptom,

in	40%	of	Scarlatina.
	10%	of	Whooping Cough.
	40%	of	Mumps.
	44%	of	Diphtheria.
	20%	of	Measles.

The few cases of Cerebro-Spinal Meningitis and Typhoid I saw were positive.

Die Tetanie des Kinder, by Professor Theodore
Escherich.

Die Mechanische "übererregbarkeit" des Nerven
und Muskeln.

He refers to the fact that the so-called
Facial phenomenon were first mentioned in infantile
Tetany by Abercrombie.

He is disposed to regard the phenomenon
described by him as mouth phenomenon as a genuine
Facial Reflex. It appears in healthy, especially
breast-fed children during the first 2 months, if
one percusses during sleep the mouth or neighbouring
parts.

It is often followed by true sucking move-
ments. This phenomenon has nothing to do with
Tetany.

He further remarks that the question, as
regards this phenomenon, is not about an alteration
in the excitability of the Muscle substance, but
about a hyper-excitability of the terminal ramifi-
cations of the Motor Nerves coursing in the Muscle.

He does not agree with the notion, that
the existence of an isolated Facial phenomenon is
under all circumstances in persons otherwise quite
free of tetany or sufficient for the acceptance of

a /

a rudimentary or worn out Tetany. (Thiemich Chvostek Jr.)

He has found, like Loos, the phenomenon in a large number of neuropathic and hysterical children, and has also observed it in the course of severe illnesses leading to emaciation, e.g. Typhus, Tuberculosis, post diphtheric paralysis, without the existence of other tetanoid symptoms.

The weightiest objection in his eyes to accepting the existence of the facial phenomenon alone as evidence of a latent tetanoid condition is that the phenomenon is so seldom directly observed at those periods of life, in which, as Tanas' investigations show, anatomical lesions of the epithelial bodies were found, (33%) most frequently, while it is of relatively frequent occurrence in older children and adults, when yet lesions of the epithelial bodies and tetany occur much seldomer.

A child for several days may shew only the facial phenomenon, only afterwards do other symptoms of tetany appear and thus if only seen once in out-patients, may not be set down to tetany.

(Ganghofner.

(Zeitschrift fur Kinderheilkh.)

Chvostek's or the Facial phenomenon, (erroneously called Facial Reflex,) is an expression of increased mechanical irritability of the nerves.

The pathognomonic importance of the facial phenomenon is much greater than is normally believed.

(Pfaundler & Schlossman. Vol IV.)

The Facial phenomenon rarely occurs alone in childhood. It shews an ascent from 5 years up to 14, and is found chiefly in weakly, excited children to be designated as "nervous." The objective symptoms of the nervousness consist in an increase of the Patellar tendon reflexes, a failure or weakening of the Corneal and Throat Reflex. The relations of the isolated Facial phenomenon to tetany are demonstrable in a great number of cases.

(B. Spenk. Zur Klinischen Bedeutung des Facialis phänomens im Kindes alter. Jahrbuch für Kinderheilk. April 1910.)

Associated movements of the Head and Eyes in Infants.

Extr. from American Journal of the Medical Sciences. Novr. 1904. by Sam. C. Hamill, M.D. and Wm. C. Posey M.D.

The various forms of movements of the head and eyes in infants - the so-called rotary and nodding spasms of the head, and vertical horizontal rotary nystagmus - are observed quite commonly.

They cite 3 cases exhibiting these Symptoms, together with definite symptoms of rickets.

They then proceed to the question of

Etiology:-

Predisposing Causes. Age being mostly between 2 and 12 months.

Heredity. A number of cases in families of bad nervous history, including epilepsy.

Rickets. is probably the most common predisposing factor as in the dozen or more cases seen by them rickets of some degree was manifest in each.

Exciting Causes.

Dentition may act as a contributing cause, but that it has not the important position accorded to it by Henoch/

Henoch is manifest from the fact that many recorded cases have occurred at an age which would eliminate the teeth as a disturbing element.

Gastro-intestinal irritation is generally conceded to be an important factor.

Traumatism was recorded in a number of Hadden's cases. Peterson thinks that concussion is probably the determining factor in most cases - "a concussion setting up in the centres of the Spinal Accessory, and at times in those of the Oculomotor nerves an Arrhythmic discharge.

"Hadden believes that the seizures pointed to instability of motor centres above the nuclei in the Spinal Cord and 4th Ventricle, therefore attributing the disorder to a functional or other disturbance of the cerebral cortex. The child has acquired certain voluntary ~~or~~ purposive movements of head and eyeballs, but these have not as yet become thoroughly organised and fixed in the psychomotor areas of the brain, hence a dissolution takes place because of the inability of the strained cortical centres to stand the work to which they have been too early subjected." "This opinion quoted by Mills, is one which he believes throws the best light on an obscure subject. Aldrich voices the same view /

view. They incline to accept Hadden's explanation.

They then discuss the 3 cases, and opine that they are all dependent on some form of irritation of the cortical areas.

The extreme rachitic manifestations present in all the cases mark this condition as the predisposing factor. They believe that the toxic products resulting from the disturbed metabolism due to the rickets were the irritating factors in these cases.

The rest of the paper is taken up with a discussion of the relationship existing between the movements of the eyes and head.

After /

After reading the remarks of the various writers quoted, I examined several cases at the Royal Victoria Hospital for Consumption.

I found evidence of Facial Irritability in most of the cases, but not always accompanied by exaggerated myotatic excitability. On the other hand, I found myotatic excitability without Facial Irritability. It seemed that, apart from the definitely nervous cases where one always found Facial Irritability, there seemed to be some relation between it and the disproportion between the height and weight, i.e. if the latter were much on the negative side.

I suppose the explanation of this irritability in Phthisis is to be found in the following facts of Physiology.

Local cooling of Nerves increases the irritability to the constant current lasting for a considerable time, and to mechanical and some chemical stimuli.

(Irritability of Nerves. p. 630. Landois' Physiology.)

"If the terminal nerve apparatus is exposed to a temporary disturbance of its normal nutrition, it responds to the restoration of normal nutrition processes by the development of a more or less intense /

intense irritative process.

The effective disturbance of nutrition need exist a shorter time the more sensitive the nervous apparatus in question is to the nutritive disturbance, such as cutting off of the arterial blood-supply or interference with respiration."

(l.c. p. 633)

" Facial Nerve."

Irritation of the facial Nerve gives rise to circumscribed or diffuse, direct or reflex, tonic or chronic spasm.

l.c. p. 698.

Local working of the muscle increases its irritability for all kinds of stimuli. Claude Bernard made the observation that the muscles of artificially cooled animals retain their irritability for many hours after death. Heat causes rapid disappearance, with temporary increase of the irritability.

(l.c. Thermal Stimuli. p. 557.)

It will, I think, be admitted that in phthisis there are some of the factors that would lead to increased nerve irritability. There is the disturbance of nutrition, including the elements of intoxication, though not of the same character as in rickets, where, as a rule, the evidence of facial /

facial irritability is much more marked. In phthisis the loss of weight, with the slight cyanosis, specially apparent in cold weather would seem to serve as an example of the physiological facts already stated.

Among numerous cases examined at the Royal Hospital for Sick Children, I found that I could not add much to what had already been written on the subject.

An interesting point was that higher intelligence seemed to be the determining factor among 3 cases of chorea in the Dundas Ward at one time. Two brothers did not show facial irritability though suffering from Chorea while another boy, who looked brighter than the other two, showed it in the second degree. His knee jerks were also exaggerated. I noted at the time that he had large staring eyes and looked highly strung.

In a great many cases I found the knee jerks increased along with the facial irritability.

The youngest patient shewing facial irritability was about 8 months, and the oldest 60 years, the latter suffering from chronic tetany, which was benefited by Thyroid.

Another interesting case was that of a child /

child under 2 years who had Diabetes and shewed
Facial Irritability of the first degree - knee
jerks being slightly exaggerated.

Nachträgliche /

Nachträgliche Bemerkung zu der in Heft 4 dieses Bandes
beschriebenen Reflex bewegung bei der Diplegia
spastica infantilis. by H. Oppenheim.

"I had the chance of observing and establishing the sucking, Taste, Masticatory and Swallow reflex in a case of epileptic coma, in an adult in whom they were no more obtainable at the expiry of the coma, which had followed on a series of attacks of epileptic character in a woman of 50, and was deep. The cornea was anaesthetic, the tendon phenomena were extinct; on the other hand, the Babinski and the leg phenomenon described by me were to be got quite distinctly in both legs. The pupil light reflex was not completely absent. On touching the Mucous membrane of the lips, on touching the tongue with the scoop handle, there ensued rhythmic jaw, lip and tongue movements exactly in the way described by me."

Two hours later the patient was practically conscious. Of the pathological reflexes, the Babinski only could be elicited on the right side: touching of lips, tongue, (no more brought out,) unusual reflex movements.

MYOTATIC IRRITABILITY.

Myotatic Irritability I found in several children, and thought it signified, if anything, a nervous tendency. I also investigated it in the patients I saw at the Victoria Hospital.

I am not disposed to think there is much significance in this symptom in childhood, though I have found it in adults who had no discoverable disease, yet I should be on my guard as to its being a manifestation of the irritable so-called pretubercular stage of phthisis.

L I P R E F L E X.

This is a true Reflex almost universally present at birth, during sleep, rarely during waking.

Thomson, (Clinical Examination of Children.)

It is got by tapping near the angle of the mouth, e.g. it is best elicited by a series of gentle taps on the upper lip a little above the angle of the mouth, or on the under lip a little below it. It can be got anywhere on the lips in a well-marked case. A gentle touch on the mucous membrane of the lips, such as might be given by the mother's nipple will often originate some degree of the movements.

In some cases after repeated tapping, there are to and fro sucking movements of the tongue along with the pouting movement. (Thomson. On the Lip Reflex of New born Children. March 1903.

I endeavoured to find when it normally stopped, and from the few observations I have made I would be inclined to place the normal limit at 10 months to 1 year.

It is occasionally present in older children, and its continuance ^{seems to me to} ~~may~~ be due to the persistence of their habit of sucking.

It varies in degree and in character in healthy /

healthy children and seems to be weakened in illness, at least if the latter is prolonged.

I have not found it in Micro-cephalics. As some of the writers I have quoted e.g., Oppenheim, remark, it is greatly exaggerated in congenital Diplegia. It is exaggerated in some cases of convulsion.

I have noted its presence in the young of lower animals, e.g., pigs, and lambs, which like some children shew to and fro sucking movements as well.

For its relation to abdominal and other reflexes, see Bychowski, and Noica and Marbe.

Archives of Pediatrics. October 1909.

The Reflexes in Infancy and Childhood. by
Dr. Bychowski. (Deutsch. Zeitschrift für
Nervenheilkunde, Vol. XXXIV. 1908.)

The examination of the reflexes in children under one year showed the constant presence of the patellar Reflex, which is more marked, as a rule, than in adults. The Achilles tendon reflex, on the other hand, was found to be practically always absent during the first half of the first year, becoming more frequent in the second half, till it is fairly constant about beginning of second year. The abdomino-parietal reflex likewise is/

is not congenital, appearing gradually in the course of the first year of life. The cremaster reflex is often absent up to the fourth or fifth month, after which time it is active and constant. Babinski's reflex preserves the Spinal type in the first periods of Life, (first and second year,) during which time it is positive. About the beginning of the second year it undergoes transformation from Spinal into cerebral type, and disappears.

Review of Neurology and Psychiatry. Vol. VII. 1909.

ABSTRACT.

Tendon and Cutaneous Reflexes in Infants.

Noica and Marbe. C.R. de la Soc. de Biol.

Tome 65 1908 p. 640.

From observations made at the Tarnier Maternité on 80 children whose ages ranged from 2 days to a year and over, the writers came to the following conclusions:-

The knee and ankle jerks are well marked in the newly born. Bychowski's inability to find the ankle jerks present before the age of 9 months (v. this Review 1908 p. 237) is attributed to his having examined them under unfavourable conditions. The reflexes in nurslings should be tested during suckling, for then only can complete muscular relaxation be obtained. The abdominal reflexes are rarely /

rarely met with until the age of 5 months, after which time they are almost constant. As a rule the three divisions are present at once, but sometimes the upper only or the upper and the middle, but never the lower alone.

The cremasteric and gluteal reflexes appear later than the abdominal, for even at the age of 16 months, they are not invariably present.

I can corroborate the statements of Noica and Marbe to the effect that only during suckling can the reflexes in infants be rightly obtained, owing to the muscular relaxation induced thereby.

It is interesting to note in this connection the Mother's nipple reflex - how on stimulation, the nipple projects and narrows itself, so as to adapt itself to the child's mouth. Were there not this provision, in cases where the nipple is "buried" the child would have a very hard time.

Monatschrift für Psychiatrie und Neurologie. Bd.14.
1903. p. 241.

"Über Einigebisher wenig beachtete Reflex bewegungen bei der Diplegia Spastica infantilis.

by H. Oppenheim.

He reproduces a remark from his book (Textbook of Nervous Diseases,) that the epileptic attacks in these diseases could sometimes be produced directly experimentally through fright. In the third edition he adds, " A remarkable phenomenon occurring in the majority of these cases is, according to our experiments, the abnormal fearfulness, e.g. the violent starting back at the least sound."

He then gives notes of two cases of Spastic Diplegia in which, on tapping Lips or Tongue there appeared a rhythmic series of movements in the Jaw, Tongue and Lip Musculature; which have the character of chewing, sucking and swallowing movements, only that they execute themselves in short rhythmic fashion, and with great regularity of sequence.

He found on making a noise by the stroke of a percussive hammer on the table, that there appeared a shortlived tonic spasm in the musculature of the trunk and of the extremities. They are only the acoustic stimuli, which bring forth the spasm, while sudden phenomena of light cannot evoke them. But a sudden seizing and shaking of skin of abdomen produces /

produces a similar motor reaction.

Then he discusses as to whether this is only a heightened motor or an increased psychological reaction, i.e. Excitability, and he inclines to the former idea.

In further discussing the rhythmic movements induced by touching the lips, &c. he remarks that "the physiological reflex of infancy is also here increased in an inordinate degree, it is evoked by simple contact stimuli", and has been got in children 4 and 5 years old.

LIP /

LIP REFLEX.

It is increased by the administration of certain drugs, e.g. sedative drugs such as chloral, as Dr. John Thomson has pointed out in the case of infants of a few months who are taking large doses of that drug on account of repeated convulsions.

I have observed the same phenomenon, which is probably due, as Dr. Thomson suggests, to their being able to stand an unusual amount of percussion without being aroused by it from their deep sleep.

On the other hand, in the cases that I have examined under Chloroform, though it was difficult to make observations while they were struggling and crying, yet when that stage was accomplished and the child was well under, the lip reflex was abolished.

Brit. Journal of Children's Diseases.

The Cremasteric Reflex, by C.M. Corner, F.R.C.S..

He defines a reflex in general and the Cremasteric Reflex in particular.

It was investigated in 300 cases.

The Cremasteric Reflex is not present at birth, but appears in the second year of life. The rapid acquisition of the reflex would seem to entertain a precocious nervous, not sexual development. With the onset of puberty cremasteric action returns to something like its former power and extent, but never to the same degree as it is present in boys about six or seven.

Later in life it becomes lost again.

He next discusses variations in the Reflex, then sums up as follows:-

(1.) The Cremasteric Reflex is best in healthy children. It is weakened or abolished in ill-health. It has therefore some value in detecting or confirming the detection of malingering children.

(2.) Any general disease will weaken or abolish this Reflex.

(3.) In the early stage of rickets the cremasteric reflex was much weakened and often abolished.

(5.) Incontinence of urine, enuresis - is in some cases /

cases caused by, and in many cases accompanied by, a superlative excitability of the Lumbar centres. In such cases the testicles may be tonically retracted and incapable of responding to a cremasteric reflex. In other cases the condition may be dependent on worms, alimentary disturbances, bad habits, rickets, &c, when the testicles may, be dependent and capable of response, (or not) to a cremasteric Reflex.

(8.) In older children and young adults it is of practical importance to note the relation between the condition of the scrotum and the character of the Cremasteric Reflex. In healthy, active conditions the Scrotum is contracted and rugose, with retracted testicles. In such cases, owing to the position of the testicles, there is little scope left for a cremasteric reflex action. This is the condition in vigorous healthy adults. In disease, sickness and nervous conditions, the Scrotum is often smooth and lax, with pendulous testicles. In such cases there may be a feeble cremasteric Reflex retained.

(11.) In spastic conditions the Cremasteric Reflex curiously enough, seems sometimes unaffected. But some times the testicles are retracted by tonic contraction of the muscles.

NUMEROUS MORE OR LESS NORMAL REFLEXES have been described by:-

- I. McCarthy - Neurol. Centralblatt 1901. Sept. 1. November 17. "Ein Neuer Reflex im Gebiet des 5 und 7 Nervenpaares."

McCarthy makes out that, on striking with a percussion hammer on the Supraorbital nerve, he produces a fibrillary tremor of the Orbicularis Palpebrarum, which he looks upon as a Reflex.

I do not consider that this so called fibrillary tremor is a Reflex, as it has none of the characters of a Reflex. I should think that the phenomenon would bear the same explanation as the so-called ~~Chrostetes~~^{Chrostetes} Symptom - a mechanical stimulation of the Frontalis.

- II. Nur Frage des Supra-Orbicularis Reflex. Neurol. Centralblatt. 1901. Oct. 16. Novr. 20.

Carl Hudovernig upsets McCarthy's assumption and considers the so called Reflex as a mechanical stimulation of the Frontalis, the fibrillary tremor in the orbicularis Palpebrarum being only a wider propagation of the mechanical muscle irritation to a muscle neighbouring, and /

and innervated by the same nerve.

He sums up by the expression of opinion that this symptom has no pathognomonic value.

III. Neurol. Centralblatt. 1901. Oct. 16. Novr.
20. Ueber Reflexe im Antlitz und Kopf Gebiete.
by W. v. Bechterew.

He first discusses his so-called "Eye Reflex" which is evoked by percussion of the whole fronto-temporal part of the skull and of the Zygomatic Arch and shews itself in a more or less pronounced contraction of the orbicularis oculi, and thereby in partial, for the most part slight, approach of the eyelids."

He proceeds to discuss McCarthy's paper and points out the conclusion stated above, and considers that the "Reflex may not be, properly speaking, a Reflex of the stem of the Supra-orbital Nerve, but presents an ordinary periosteal Reflex. The name "Supraorbital Reflex" seems to me, therefore, not quite conclusive."

His next Reflex is an "Jugal Reflex" which is elicited by percussion of the Malar Bone, and manifests itself as a backward and upward movement of the angle of the mouth. I agree /

agree with him in thinking that this Reflex is distinguished by very little constancy.

A third Reflex is the "Mandibular Reflex" which appears when with half opened mouth the chin, or the lateral parts of the lower jaw in front of the insertion of the Masseter is so percussed from above down that a sudden downward movement of the lower jaw present itself. "With increased Reflex Excitability, this Reflex can be evoked even by percussion of the lower jaw. He thinks this Reflex is especially of value with regard to determined cases of Pseudo-Bulbar Paralysis. He has also found it sometimes increased in General Paralysis and sums up for it that "the trial of this Reflex has naturally a quite special significance in peripheral and central affections of the 5th nerve.

Among the Mucous Membrane Reflexes, besides the conjunctival and Pharyngeal Reflexes, of which the latter is often found in Hysteria, he designates the Nasal Reflex. "This Reflex easily appears on mechanical stimulation of the Mucous Membrane, the deeper lying part of the Nasal Cavity, and shews itself in contraction of the Nose and of the Alae Nasi. I have been able to shew active increase of the Nasal Reflex in individual cases of Neuralgia of the 5th Nerve."

He /

He concludes:- "We have thus in the region of the Face and Head a complete series of Reflexes, whose condition is of value in the Diagnosis of diseases of the Brain, and Cerebral Nerves; they are in descending succession.

1. Conjunctival Reflex.
2. Eye Reflex.
3. Jugal Reflex.
4. Nasal Reflex.
5. Mandibular Reflex.
6. Pharyngeal Reflex.

while there are still distinguished in the head some special Reflexes of the organs of sense among which the Pupil Reflex only has gained a greater practical significance.

Neurcl. Centralblatt 1902. Feb. 1 Novr. 3.p.

107. v. Becherew.

Über den Augen reflex oder das Augen phenomen.

He refers to the "Eye Reflex", McCarthy's so-called "Supraorbital Reflex"; and to Hudovernig's remarks to the effect that he could get contraction of the Orbicularis Palpebrarum in a woman in whom the Gasserian Ganglion had been removed, whereas he observed weakening or even failure of the phenomenon in cases of paralysis or paresis of the Facial Nerve.

v. Becherew considers that the limits of this so-called Reflex are wider than either McCarthy /

McCarthy or Hudovernig makes it, then adds that the question as to whether this is a true Reflex or a stimulus transmission can only be decided by investigation of cases with affections of the 5th and 7th Nerves.

He concludes that the phenomenon may be conditional, in part, on Reflex influence, and partly depends on immediate spreading of the mechanical stimulation along the periosteum, ligaments, and muscles, even to the orbicularis oculi.

Neurol. Centralblatt 1903.

Ueber den Zustand der Muskel and Sonstigen
Reflexe des Antlitzes bei Dementia paralytica.

von. Prof. W.V. Becherew p. 850.

He refers to the lower jaw Reflex as being of most consideration in Paralytica Dementia and in General Paralysis of the Insane. The cases of General Paralysis that I examined must have been a specially phlegmatic lot, as I did not succeed in getting any facial movement other than slight contraction of the orbicularis oris.

In general he observed in paralytic dements mostly, Reflex increase in region of the muscles, the environs of the oral orifice, also above all of the Chin and Mouth Reflexes themselves.

In single cases of Paralytic Dementia there is, by percussion of the upper and under lips, besides the usual contraction of the orbicularis oris, secondary moving forward of the lips, also elevation of them, which patients often with the best will cannot suppress.

He refers, also, to the fact that he found cases, where the Reflex action of the Leg and Trunk musculature appeared more lively than on the Face Musculature.

In /

In some cases of Dementia Paralytica there is a distinct weakening of the Mucous Membrane Reflexes, this being usually associated with more or less marked anaesthesia in the Face and in the region of the Nasal and Conjunctival Mucous Membranes.

Neurol. Centralblatt 1905. p. 740.

Weitere Beitrage zur Natur des Sogen Supraorbital Reflexes. by Dr. Carl Hudovernig.

He reviews the positions taken up by Walker, Overend, McCarthy, v. Bechterew, and Lukacz respectively, then quotes cases of removal of Gasserian Ganglion to prove his contention, against these observers, that he could observe no influence of affections of the 5th nerve on the phenomenon; he also refers to Zanders' researches in which he found that the area of ramification of the Sensory nerves of the face is by no means constant.

Therefore the so-called "Supraorbital Reflex" is not a true Reflex, but is only a mechanical result of stimulation.

He therefore thinks the "discussed phenomenon" may enjoy still greater differential diagnostic value in central and peripheral Facial paralysis, therefore /

therefore a name for it would be desirable, and he selects v. Bechterew's second thought, "Eye Phenomenon" on his own "Orbicularis Phenomenon."

Neurol. Centralblatt No. 2. 1902.

v. Bechterew.

He considers that the Supraorbital Nerve is of no special significance for the origin of the so-called Supraorbital Reflex, and as the latter has a wide area of transmission, he does not agree with the description of it as Supraorbital Reflex.

Neurol. Centralblatt. 1902. p. 147.

Der Trigemini Facialis reflex und das Westphal-Pilz'sche Phanomenon.

Lukacz refers to McCarthy, Bechterew and Hudovernig. "There are in the face several points, by percussion of which, though we may repeat the stimulation often, the contraction of the circular eye muscle always appears. Such a point is the Supraorbital Cleft, and thereon the novelty of the McCarthy Reflex shews itself."

"I can confirm the assertion of McCarthy, that after resection of the 5th Nerve, also interruption of the conduction of the centripital path, the contraction disappears."

"Westphal/

"Westphal and Pilz have described a similar symptom with squeezing of the eye".

He thinks that pathognostic value can be granted neither to one or other symptom. For the reappearance of the orbicular Reflex could indicate at best the improvement of the Facial paralysis.

The pupil phenomenon on the other hand could perhaps be of use, according to Galassisi's idea, in distinguishing a peripheral from a central Oculomotor paralysis.

Numerous /

Numerous More or Less Normal Reflexes.

Review of Neurology and Psychiatry. 1909.

"Lachrymal Reflexes" by L.P. Kidd.

In a paper "On the Difference between Central and Peripheral Facial paralysis," C. Hudovernig. (Neurol. Centralblatt 1908 p. 577) writing in connection with the statement that the so-called Supraorbital Reflex is lost in peripheral facial palsy, denies that this is a true reflex and points out that the phenomenon can still be elicited after division of the 5th Nerve and Gasserianectomy.

But clearly, in view of the evidence given concerning different facial fibres, this fact would not of itself prove the point. Therefore we do well to keep an open mind on the subject at present."

SYNERGIC MOVEMENTS OF THE EYE AND MOUTH.

Synergic Movements of Eyelids and Mouth.

by W.M. Beaumont.

He gives an illustration in which the child, (a case of congenital ptosis with epicanthus,) had her attention attracted while the photograph was being taken, with the result that, in trying to raise her eyelids, her mouth is opened and it shuts again as soon as she gives up attempting to use the eyes.

Such cases of mouths and eyes acting in unison are very common, especially in children who have some difficulty in opening the eyes, either from congenital disease or acquired conditions, such as photophobia.

The tendency of mouths and eyes to open together may be readily tested by putting a finger between one's own teeth and gripping it firmly.

We do not find that the same muscles are associated in all these anomalous movements of the eyelids and mouth. In some the openers of the eyes act with the openers of the mouth; in others the levator of the lid acts with the external pterygoid in lateral movements of the jaw in grinding, or the same muscle may be associated with the act of swallowing.

The /

The intimate connection of the oculo-facial muscles with the elevators and depressors of the mouth has been noticed by anatomists, and the fact that there are exceptionally associated actions in muscles that do not normally act together is not surprising. Whether we accept Mendel's view that the frontalis and the orbicularis palpebrarum are eye-muscles and supplied from the oculomotor muscles, or whether we reject it, seems of little importance in the elucidation of abnormal associated actions. Whatever the nerve supply of the ocular and facial muscles, their fibres and their functions are so blended that exceptional co-ordination and association are to be expected. The ordinary normal associated movements of the eyes one with the other are regulated by the centres for associated movements in the cerebral cortex, and it may be that the associated movements of the eyes and mouth, which are now occasionally met with, but which in ancestral days may have been essential were likewise governed in a similar way.

Though it is difficult to understand why, for instance, movements of the upper lips should be associated with movements of the horizontal recti muscles of the eyes in an apparently purposeless partnership, yet the conclusion he would draw is that associated movements of the eyes with the /

the mouth are normal; and if from any congenital or pathological condition, such as ptosis, an increased stimulation is called for, there is a tendency, especially in children, to generate an excess of nervous energy in order to open the eyes. The discharge, owing to the lessened insulating power of childhood, overflows in the direction of muscles which in bygone ages were commonly associated; that is, into channels (nerves) which subserve the purpose of producing the epiphenomenon of opening the mouth.

(Brit. Med. Journal.

14th Sept. 1907.)

Neurol. Centralblatt 1902.

Der Corneo Mandibular Reflex. by Dr. F.
von Solder.

This Reflex is elicited by touch of the Cornea, and shews itself in a transient displacement of the lower jaw, to the side opposite the stimulated cornea.

The Corneo Mandibular Reflex is a physiological, if not too, a wholly constant Reflex. The question is probably about a pure intra-trigeminal Reflex.

Neurol. Centralblatt No.. 4 p. 15.

Ein Reflex im Gesichte, by Fuchs.

On practising, with lightly closed lids, slight pressure of the finger on the eyeball, there occurs a movement in the region of the mouth, in which, as it seems, chiefly the Zygomatici and the levator labii superioris have participated.

This Reflex was evoked in 50 out of 100 cases. Two cases of Tetany shewed striking increase of the Reflex.

Fuchs considers that the Reflex will be useful for comparison of the fitness of function of the Facial on both sides of the face.

Neurol /

Neurol. Centralblatt 1903 p. 910.

Zur Frage des CorneoMandibular Reflexes.

von Dr. J. Kaplan.

He thinks the substantiality of a Corneo-Mandibular Reflex is not made good, and that the movement of the mandible is only casually dependent on the ordinary Corneal Reflex.

Neurol. Centralblatt. 1904. p. 13.

Über der Corneo-Mandibular Reflex.

by Dr. F. von Solder.

v. Solder discusses Kaplan's objections and dismisses them as merely tentative; then goes on to say that the Pterygoid contraction accompanies the orbicular contraction only when this is evoked by stimulation of the Cornea; in all other cases the orbicular contraction is not accompanied by a Pterygoid contraction.

Therefore he contends that Kaplan's idea of a dependence of the Pterygoid contraction on the contraction of the orbicularis Palpebrarum is quite untenable.

I am inclined to think that Kaplan is right in his contention.

Blepharospasm /

BLEPHAROSPASM.

Among the forms of circumscribed spasm, tonic spasm of the eyelids, blepharospasm is the most frequent, being caused by stimulation of the Sensory nerve of the eye, principally in connection with scrofulous inflammation of the eye or in consequence of excessive irritability of the retina, (photophobia). Less commonly the irritation is transmitted from a remote point, e.g. in one case from inflammatory irritation of the anterior palatine arch. The centre for reflex stimulation is the facial nucleus.

(Landois' Physiology. p 698.)

Lukacz refers to cases of C. Remak

in which any stimulus (the cilia of the eyelid, with entropion, an inflammatory infiltration and such like through stimulation of the 5th Nerve on the paralysed half of the face,) caused Blepharospasm in the eye of the healthy side.

(Neurol. Centralblatt. 1902. p. 147.)

In some cases of so-called epileptiform Neuralgia there is painful intermittent Blepharospasm'

In one such case considerable improvement was obtained by tearing the Supraorbital and nasal nerves after all other measures had been of no avail.

(Berry's Diseases of the Eye.)

Spasm /

Spasm of the Facial Nerve may involve only the muscles around the eye. Blepharospasm, more commonly the spasm affects the lateral facial muscles with those of the eye, and there is constant twitching of the side of the face with partial closure of the eye.

(Osler. Principles and Practice of Medicine,
7th Edition.)

S U M M A R Y.

To sum up, I have thought it best to give the authors' own words, as far as possible, through the medium of my translation.

As regards Facial Irritability, I have found its existence in various conditions, and have attempted their explanation.

Perhaps I have not laid enough stress on the modification of the symptom by dieting, as I have not quoted a large number of cases of children and adults in whom I observed it. Treatment adapted to the condition of rickets certainly caused the symptom to become less marked, and through time disappear. But how much stress was to be laid respectively on good food, sunlight, Mistura Rachitis, in its effect on the abolition of the "Spasmophilia," is difficult to say.

I am inclined to lay considerable stress on the condition of weight, as in many thin, ill-nourished children, the symptom was present. I have referred to its frequent occurrence in tetany, and have found it to persist, in spite of improvement of the tetany, as a result of treatment.

The /

The most diverse causes seem to produce it, e.g. worms, night terrors, but apparently the basis is "nervousness" with all that it betokens, therefore the treatment of the symptom is that of the underlying affection. I have referred to its existence in General Paralysis, and in Phthisis. In the former condition the basis must be "nervous," but in the latter seems to be dependent ultimately on a failure of nutrition, as is the myotatic excitability, along with the positive factor of intoxication, these two factors being both powerful influences on nerves and muscles. The condition of the atmosphere as a cause has been alluded to. The rheumatic diathesis seems to underlie its manifestation in some cases, and I have found it too in Asthma.

To shew that the influence of perverted nutrition seems stronger than a rise of temperature in evoking the symptom, it was interesting to observe that any cases of rickets that I met in my investigations at the City Hospital, shewed it much more markedly than those who simply had rises of temperature.

Myotatic Excitability. I have referred shortly to this symptom, and its significance in children.

Lip /

Lip Reflex is a true reflex almost universally present at birth, during sleep, rarely during waking. I have noted when it seems to stop, and remarked on its presence in much older children, and on its variations in health and in illness; on its absence and on its exaggeration; its presence in young of lower animals, and its relation to plantar reflexes and abdominal reflexes, also on its relation to drugs and chloroform.

I have shortly considered the Mother's nipple reflex.

Numerous more or less Normal reflexes have been described by various authors, from whom I have quoted, but unfortunately, have not had the chance of practically investigating them.

Synergic movements of eyes and mouth in children. I have verified some of Beaumont's statements for myself.

Blepharospasm. I have shortly discussed.