Original Articles.

PARASYPHILITIC AFFECTIONS, OR REMOTE EFFECTS OF SYPHILIS.¹

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IN the opinion of Professor Fournier, syphilis is responsible not only for a multitude of manifestations undeniably syphilitic both in origin and nature, but also for a number of other manifestations which are not at all syphilitic in nature but are nevertheless syphilitic in origin; that is, they are produced by syphilis or under its influence. For these manifestations Professor Fournier has proposed the name *parasyphilitic*, which may be understood to mean proceeding from syphilis without being syphilitic. The term remote effects of syphilis is explanatory but not exactly synonymous.

These manifestations demand attention for two special reasons: First, they are very numerous, and second, they in great measure defy treatment.

Under the name of parasyphilitic affections we must include: The pigmentary syphilide; acute hystero-neurasthenia of the secondary period; divers neurasthenic manifestations of a more advanced stage; hystero-epilepsy; tabes; general paralysis; a special form of epilepsy; and a special form of muscular atrophy, and, for hereditary syphilis: Numerous general or partial atrophies; organic malformations, notably dental malformations; arrest or retardation of development, physical or mental; infantilism, perhaps dwarfism; congenital inaptitude for life; rickets; hydrocephalus; certain cases of meningitis; perhaps certain cases of true epilepsy; certainly juvenile tabes. These manifestations are not cured either by mercury or the iodides.

Two principal characteristics seem to establish a well-marked line of demarcation between the affections properly called syphilitic and the parasyphilitic affections. Firstly, the parasyphilitic affections are not referred necessarily to syphilis as a cause, while the purely syphilitic affections never exist without syphilis as a cause. No mucous patch or gumma exists without a pre-existing syphilis. On the other hand, general paralysis, rickets, infantilism, although so frequently the result of an antecedent syphilis, can be produced by other causes independent of all syphilitic antecedent. Secondly, parasyphilitic affections are not influenced by mercury and iodide of potassium, as are the true syphilitic affections. That is to say, these drugs do not exercise upon them a repressive or curative action so manifest that one may use it as a criterion of syphilitic character.

To explain the different conditions of these two results of syphilis, the doctrine of toxines may be invoked, and one may say that the usual

accidents of syphilis are the product of a microbe, while other possible remote accidents of the same disease are the result of a toxine secreted by that microbe. Whether this explanation is correct or not, the future alone can determine.

There is a syphilitic lesion of the skin which is particularly adapted to illustrate the parasyphilitic affections. This is the manifestation known as the pigmentary syphilide or as syphilitic vitiligo or leucoderma. It is impossible to deny the syphilitic origin of this manifestation, and yet, except for its location, the same lesion may be produced by divers morbid or perhaps physiological causes totally unrelated to syphilis.

By this name of pigmentary syphilide is designated a syphilitic manifestation which consists of pigmented spots upon the skin which have been preceded by no other eruption and which occur in the great majority of cases upon the neck. They occur in the course of the first or second year, and with rare exceptions only upon females. They form without pain or the slightest local symptom, and reach their fullest development in the space of two or three weeks. At this period they consist of a series of pigmented marblings, disposed without order, anastomosing for the most part and enclosing islands of normal integument; forming a sort of network or lacework with large meshes upon the neck. These spots present no other abnormality than the hyperpigmentation; they show neither redness, swelling, thickening nor desquamation. As to color, they vary from the faintest yellow to a dark brown. Very often they show simply the tint common to necks which have not been recently washed. When the bearers of them first notice these spots, they believe that their necks need washing, and it is only after various trials that they become convinced that the discoloration is really in and not on the skin.

Usually the enclosed skin, although it appears from its position to be deprived of pigment, is normal. The network of pigmentation may surround the neck evenly or be more marked in spots. Usually it is more marked upon the lateral surfaces. Rarely it is seen upon the upper part of the thorax or even on the face. Its persistence is great — a year or two, or even longer. It persists usually after other symptoms have disappeared and the patient has ceased to visit the physician, but it finally disappears.

These abnormalities in pigmentation constitute lesions which, derived from syphilis, do not belong exclusively to syphilis and which are refractory to antisiphilitic remedies. They serve as a type of the curious pathological conditions which are grouped under the name of parasyphilitic affections. In the adult, these phenomena, which it is proposed to call parasyphilitic, are mostly concerned with the nervous system. In their consideration it is not the intention to intrude in the least on the ground of the neurologist, but simply to complete the catalogue of parasyphilitic affections.

The first of the series of nervous phenomena is

¹ This paper is practically a condensation of Professor Fournier's book — but a certain freedom in the use of the material and certain comments and quotations from other sources make it impossible to call it simply a condensation. It was prepared originally as a lecture to the Fourth Class in the Medical School of Harvard University.

neurasthenia. These cases differ in nothing from ordinary cases of neurasthenia, with which syphilis has nothing to do. How, then, connect them with syphilis? Simply that they occur too often to be simply a coincidence and because the condition is sufficient to provoke the result:

(1) By the debilitating, depressing, anemic action which it exercises upon the whole economy;

(2) By the profound influence which it exercises upon the nervous system;

(3) And also by its action upon the mind in the terror and despair which it brings to some individuals.

It must be remembered that syphilis shows a predilection towards the nervous system. Of the cases of late syphilis, cases which may properly be called tertiary rather than parasyphilitic, because they are due to distinctly syphilitic lesions and are amenable to treatment, fully one-third are lesions of the nervous system. It is unnecessary to enumerate all the forms which neurasthenia may take — one of the most important to recognize is that which simulates tabes and may be designated as neurasthenia-pseudo-tabes. In it the patellar reflex, the pupillary reflex and the functions of the bladder are unchanged.

Syphilophobia. — The chronic forms of syphilitic neurasthenia are sometimes complicated by a special symptom. This is a hypochondriacal preoccupation known under the name of syphilophobia or syphilomania. There is a class of syphilophobiacs who have never had syphilis but only the fear of it. Of course the latter class is not included in this account.

There are certain syphilitics whose whole mind is concentrated upon one single object, namely, syphilis. They exaggerate its dangers and its possible consequences. For them syphilis becomes a disease which is never cured whatever one does, a disease which ends necessarily in the most lamentable catastrophes, such as caries of the bones, the destruction of the nose or paralysis. It is a monster which combines all the sufferings which may affect the human race. In this condition they see syphilis everywhere. Everything which happens to them is syphilis. Some go so far that even anatomical peculiarities hitherto unnoticed arouse their suspicion. The papillæ of the tongue become syphilitic growths. The lacunæ of the tonsils are syphilitic ulcerations. It is fortunate if to syphilophobia is not added mercuriophobia. In that case the unfortunate finds himself between two foes, if he escapes the one he will be the victim of the other. But this combination is rare; usually the syphilophobiac believes in mercury. Such manifestations are temperamental in some measure, occurring in excitable and apprehensive individuals. Sometimes, however, they prove to be the initial symptoms of graver forms of disease.

Parasyphilitic hysteria is simply a hysteria which manifests itself under the influence of syphilis as an exciting cause, but which is simply a hysteria like other hysterias. Syphilis plays the same rôle as in other hysterias does a traumatism, or an infectious disease. Such a connection between syphilis and hysteria has been

observed by others than Fournier. Taylor writes:

"In some exceptional cases in women, a mild and temporary aberration of mind is observed in the form of hysteria, emotional disturbances, hallucinations, delusions and morbid impulses. In men there may be present mild or severe stupor, delirium and even mania."

The really important — the most important members of the parasyphilitic group as sequels of acquired syphilis — are locomotor ataxia, general paralysis and epilepsy.

The question in regard to tabes is no longer whether syphilis may cause it, but whether other infections or intoxications can also produce it.

In the article on General Paralysis in the *Nouveau Dictionnaire*, published in 1885, the word syphilis is not even mentioned in the chapter on *Étiologie*. Since then there has been described a pseudo-general paralysis due to syphilis. Without discussing the question whether this division is right or not, the present reference is to true general paralysis, characterized by a prodromic stage, marked by certain changes of character — afterwards by a stage in which two orders of symptoms occur:

First. Symptoms called somatic: muscular trembling of the tongue, face, hands; modification of the handwriting; slurring speech; alteration of pupils, reflexes and gait; apoplectiform and epileptiform attacks.

Second. Psychic troubles; progressive enfeeblement of the intellect; diminution of the memory; either melancholy, depression, hypochondria or exaggeration of the personality, personal satisfaction, delirium of grandeur.

Finally, a terminal period of dementia, physical and moral decline, and death.

Whether syphilis has or has not any causal relation with general paralysis is the first question. Considering the frequency of syphilis in the antecedents of general paralysis, very widely different statistics, varying from 4 to 5 in 100 to 80 or 85 in 100, have been produced. The proper way to consider such widely varying figures is not to take the mean, but to consider the reliability and value of the different sets. Statistics which give only 4 or 5 cases of syphilis in 100 persons can hardly be of value, as the proportion of syphilis in the general population is larger than that. In Professor Fournier's opinion, at least 15 cases of syphilis will be found in any 100 males taken at random.

Professor Fournier draws attention to the frequent association between tabes and general paralysis; to the multiplicity of symptoms common to the two maladies; to the frequent combination of the two morbid types; to their similarity in evolution, in termination, in resistance to therapeutic agents. Such reasons seem to indicate that tabes and general paralysis are two topographical manifestations of one and the same malady. When it locates itself exclusively or predominantly upon the cord, it constitutes tabes; when it locates itself upon the brain, it constitutes general paralysis; when it affects both cord and brain, it constitutes a hybrid type, to which the

name cerebro-spinal tabes would be applicable. If these two diseases are so closely related that they are sometimes confounded, that they bid fair to be at some time united as simply different manifestations of the same pathological entity, they must have the same relations to syphilis as a cause.

Epilepsy follows syphilis frequently, or at least epileptiform attacks are symptoms in the evolution of a cerebral syphilis — as such they are the direct results of syphilis and to be classed with other tertiary lesions, but occasionally there occurs an epilepsy not conjoined with other syphilitic lesions, which Fournier believes should, in our ignorance of its true nature, be classed with parasymphilitic affections.

A curious form of progressive muscular atrophy described in 1893 by Raymond² deserves a place in this category. Clinically it is a progressive muscular atrophy of spinal origin tending to become general and differing from the classical cases in two principal symptoms, accentuated pains and localized paresis serving as prelude to the involvement of each muscular group. In four cases described by Vulpian and Raymond an antecedent syphilis existed in each.

Antisyphilitic agents exercise no influence upon the disease. In the only autopsy there was nothing specific; nothing which might not be found in cases perfectly free from syphilitic taint.

One case mentioned may be briefly summarized as follows: A young man of twenty-five contracted syphilis in 1874. He apparently recovered, but in 1883 was attacked by an ulcerating syphilide. In 1885 his nervous affection began under the form of lancinating pains in the right shoulder, which were taken for rheumatism. Soon afterwards appeared cramps and intermittent contractions in the fingers and hand of the right side. The action of writing became painful, difficult, almost impossible. In 1889 a new symptom, diplopia, appeared suddenly and persisted for two months. From that time the nervous affection was marked by two sets of symptoms: painful phenomena, consisting of lancinating pains in the posterior cervical region, the right arm and the shoulders; and paresis, almost paralysis, affecting divers localities; successive paralysis of all the fingers of the right hand, which began to grow thin; paralysis of the right vocal chord and a muscular atrophy gradually involving additional parts up to generalization. For a certain time the atrophy remained localized in the right upper limb and the posterior-superior region of the trunk. Afterwards it invaded the trunk, the left arm, the legs, the diaphragm, the muscles of the glottis. Little by little the patient was changed to a living skeleton. Dyspnea, dysphagia, aphonia, difficulty of mastication, followed, while the intelligence was preserved. He finally died of asphyxia, in April, 1890.

The autopsy revealed: Thickened medulla, atrophy of the anterior roots, profound alteration of the anterior cornua, with signs of a diffuse and intense vascular myelitis.

² Bull. et mém. de la Soc. méd., des hôp., Paris, 3 Fév., 1893.

There is also a series of affections which may at some time be included in the category of parasymphilitic diseases, though our knowledge of the relationship is as yet too small to make any such classification with certainty,— among which one may include the following:

- (1) Diabetes, which occurs so often in relation with syphilis that it seems as though there must be something more than an accidental connection.
- (2) Hemoglobinuria.
- (3) "Auricular tabes," that sudden form of deafness which resists all treatment.
- (4) Certain dermatoses of the tertiary period, described by Fournier under the name of Tertiary Erythema.
- (5) Perhaps certain forms of buccal leucoplasia.

In the fetus, in addition to its own proper manifestations, syphilis produces troubles of another order — to which may be applied the new term parasymphilitic affections:

- (1) It diminishes vital resistance.
- (2) It hinders the development of the embryo.
- (3) It gives place to certain failures to reach perfection.

One of the first effects of syphilis upon the products of conception is a polymortality. Of the children who thus perish, not all show actual syphilitic lesions. Many seem to die simply from inability to live; something that may be called *fetal cachexia* or an *inaptitude for life*. Hereditary syphilis often die without having any anatomical reason for dying.

Upon many of the children that live we find a curious retardation in development. They are backward in growth, in the evolution of their teeth, in learning to walk, in the signs of puberty, in the growth of the beard. Every one knows that at adult age hereditary syphilis remain, not always but often, little men and little women, reduced in all proportions so that at eighteen or twenty they seem like children. In one word, that which is called infantilism is one of the most characteristic traits of hereditary syphilis. In the same way hereditary syphilis may cause certain partial dystrophies of certain organs, as of the testicle, the breasts, the ovaries, or the bones; or of the brain, as in certain children of backward development, imbeciles and idiots.

A good example of arrest of development in a single system is found in the dental malformations of heredo-syphilis.

In the first place there is a notable retardation in their general evolution, the milk teeth beginning to appear only at the tenth, twelfth, fifteenth month, or even later;

- (2) Dental malformations, usually symmetrical, are very common, especially in the permanent set, of which the teeth known as Hutchinson's present the most characteristic and best-known example;
- (3) Microdentism, or dental dwarfing, and
- (4) Unusual vulnerability of the dental system are often observed.

Can infantilism go further yet and produce dwarfs? In other words, is heredo-syphilis the

cause of dwarfs? Fournier hastens to answer that he does not know, but without special research upon the subject two cases have come to his knowledge which seem to call for an affirmative answer.

His first case is one of a dwarf issue of parents who show nothing abnormal in figure, constitution or health. They are in easy circumstances, and all causes of depression are wanting. But the father had syphilis but a short time before he was married, and Professor Guyon believes it to be in all probability the cause of the child's deficient stature.

The second case is that of Bébé, the celebrated dwarf of King Stanislas I of Poland. When born he weighed about 15 oz., and his first cradle was an old shoe half filled with cotton. At fifteen he had attained his growth, and weighed nine pounds and a half. He died of senility at twenty-five. His intelligence was poorly developed. He could never be taught to read.

His skull, preserved in the Medical Museum in Paris, shows bosses upon the two parietals, the results of gummy osteomata, which correspond in seat, perfect symmetry and exact limitation to the two parietals exactly to the lesions of hereditary syphilis described and figured by Parrot.

These two cases would seem to show that the dystrophic influence of heredo-syphilis may be carried so far as to produce dwarfs — but certainly two cases are not sufficient to establish that proposition, and it may very well be true that if syphilis is a cause, it is but one of the causes which may produce dwarfs.

Fournier believes that syphilis constitutes one of the remote and occasional causes of certain congenital malformations — spina bifida, hare-lip, cleft palate, microcephalism.

Rickets is said to show itself with frequency in the subjects of congenital syphilis. Certainly rickets cannot be regarded as a late stage of hereditary syphilis as was claimed by Parrot. It occurs in animals and in children in whom there is no suspicion of syphilis. But syphilis may very properly be regarded as one of the predisposing causes of rickets.

So far only the arrest of physical development has been mentioned, but a possible consequence of hereditary syphilis consists in a similar arrest of intellectual development; certainly hereditary syphilis sometimes gives rise to veritable idiots.

Hydrocephalus is another pathological condition which sometimes owes its origin to hereditary syphilis. This assertion rests —

(1) Upon the frequency with which hydrocephalus shows itself in the issue of syphilitic parents. Fournier has himself observed more than thirty such cases in his private practice.

(2) In the family conditions under which hydrocephalus presents itself.

The following two cases are from Boerensprung:³

First case:

First pregnancy, infant born dead at eight months.

³ *Die hereditäre Syphilis*, Berlin, 1864.

Second pregnancy, infant born dead.

Third pregnancy, infant born dead.

Fourth pregnancy, hydrocephalus, dead at five months.

Fifth pregnancy, stillborn.

Sixth pregnancy, syphilitic infant.

Seventh pregnancy, syphilitic infant.

Second case (14 pregnancies):

First, child born dead at seven months.

Second, child syphilitic, died at one year and a half.

Third, hydrocephalus, died at one year and a half.

Other pregnancies produced children either dead, syphilitic or apparently healthy.

The following is from Jonathan Hutchinson:

First infant syphilitic and hydrocephalic.

Second infant died at ten months.

Third infant born dead and macerated.

Fourth infant syphilitic and hydrocephalic.

Fournier has seen three hydrocephalic children in one syphilitic family.

Dr. F. Astors of Marseilles believes that there are two classes of hydrocephalic cases resulting from hereditary syphilis:

(1) Hydrocephalus of syphilitic nature, resulting from syphilitic lesions.

(2) Hydrocephalus of syphilitic origin, resulting from a disturbance of nutrition and coinciding with certain arrests of development in the brain.

It is this second class only that can be classed with parasymphilitic affections.

Meningitis is a frequent cause of death in syphilitic infants. Some of them are certainly syphilitic. They are in a measure amenable to antisymphilitic treatment, and, as shown by autopsy, they are due to syphilitic lesions.

In others no syphilitic lesions are found, and Fournier believes that they belong in the same category with the parasymphilitic affections.

The history of certain families is instructive in this connection, of which only two, the most striking, are given:

First family: Father and mother both syphilitic; first child hydrocephalic — dead; second child meningitis — dead.

Second family: Father syphilitic; mother healthy; twelve pregnancies. Third infant hydrocephalic; fifth infant stillborn; sixth — living — syphilitic, Hutchinsonian teeth, infantilism, — epilepsy at the age of fifteen, dementia paralytica; seventh and eighth abortions; eleventh deaf mute, epileptic and hydrocephalic; twelfth died of meningitis.

Little's disease (spastic paralysis, cerebral infantile paralysis) is also included in the category of parasymphilitic affections.

It is needless to describe this disease, but it is necessary to inquire as to the evidence that refers it to a syphilitic origin. Fournier gives two cases. In one the child was affected with spastic paralysis of all four members. He also bore evidence of hereditary syphilis, and his father also gave a history of syphilitic accidents.

In the second case the antecedent history of syphilis in the father was known. The second child was seen with typical Little's disease. The

first child, already dead, was said by the parents to have been exactly like the second, and their statement was confirmed by the physician who had charge of it.

Furthermore, Little's disease is the result of a lack of development in certain portions of the nervous system, and lack of development in other portions of the economy are absolutely common in hereditary syphilis.

It is interesting to see what has been said on this subject by the writers previous to the time when views embodying parasyphilis were brought forward.

Bradford and Lovett have devoted considerable space to Little's disease. Concerning its etiology, they consider together three groups of cases — hemiplegia, spastic paralysis, incoordination, or idiocy — under the one head of cerebral paralysis of children.

As a cause they reject difficult labor and injury from forceps.

They report from Little that a large number of these cases are born prematurely, and say that premature labor has not received due attention as a causative factor. Infectious diseases have presented several cases, and syphilis is mentioned as undoubtedly a cause.

By way of parenthesis, it may be added that syphilis is a frequent cause of premature labor.

To quote a paragraph from their section on pathology: "The pathology of the condition is, in short, a lesion of the motor tract of the brain with consequent atrophy and retarded development of the affected portion and descending degeneration of the pyramidal tracts and lateral columns of the cord; from the extensive atrophy found in young children at autopsy, it seems that unquestionably sometimes the disease originates in defective development of the nervous centers, especially the pyramidal tracts, rather than in an acute cerebral hemorrhage or embolism."

These authors lay particular stress upon two etiological factors — premature labor and defective cerebral development, both of which factors are very commonly to be referred to a common source, namely, syphilis.

A question of great interest is raised as to the possibility of hereditary syphilis causing the group of nervous symptoms already mentioned in the category of parasyphilitic affections due to acquired syphilis, or, in other words, does there exist a neurasthenia, an hysteria, an epilepsy due to hereditary syphilis as an exciting cause?

Our knowledge allows only an imperfect answer. In the first place, the study of late congenital syphilis is of very recent date, and the study of the relation of syphilis to the so-called parasyphilitic phenomena is but just begun.

Professor Kowalewsky of Charchow believes in a neurasthenia of hereditary syphilitic origin.

There are many cases of hysteria in the children of syphilitic parents, but the relation of cause and effect is not so sure. And, also, of epilepsy it may be said of certain cases in heredo-syphilitics that while many of them are due to syphilitic lesions,

there are many others in which the convulsive seizures are the only symptoms, and in which it is impossible to say whether there are syphilitic lesions, whether syphilis is a provoking cause, or whether syphilis bears no relationship.

One can feel more certain as regards tabes and general paralysis. There are some very interesting cases illustrating the possible hereditary origin of tabes.

One case concerns a woman of thirty already profoundly ataxic. The tabes began about the age of twenty. She was free from all personal contamination of syphilis, but she furnished a series of particulars which left little doubt as to the existence of an hereditary syphilitic infection. Her father was said to have died from the effects of syphilis contracted as a young man. Her mother had had numerous premature births that various physicians had attributed to the disease of the husband. The patient was herself affected with a grave and chronic disease of the eyes at the age of three or four, which lasted fifteen to eighteen months, and from which an opacity of the cornea still persists.

Another case is from Remak, and relates to a case of tabes occurring in a child, certainly an hereditary syphilitic, of which the following is a summary:

Marie D., aged twelve, born of a syphilitic father and a mother who is now suffering from a frontal periostitis.

There have been eleven pregnancies, of which four were abortions, three children who died during the first year, three children survived, of whom Marie is the eldest. At nine there was an invasion of tabetic symptoms — incontinence of urine and later of feces, occasional loss of consciousness, occipital cephalalgia, ptosis, diplopia; at present, atrophy of the optic nerves, girdle pains, lightning pains, diminution of sensation to touch and to pain in the lower extremities, paresthesia, sensation of cold, abolition of the patella reflex, gastric crises.

It is only within the last years that we have concerned ourselves as to hereditary syphilis, *apropos* of the etiology of tabes. It will be necessary hereafter to ask information as to a possible inherited syphilis, as one nowadays asks for personal antecedents.

In regard to general paralysis, M. Regis has collected fourteen cases of general paralysis in youth (from thirteen to nineteen years). Of this number, six were derived certainly, and one, perhaps two, probably from hereditary syphilis.

The following case is taken from Clouston: *

Girl of fifteen years. Father syphilitic. Paternal uncle dead of general paralysis. Mother's paternal cousin insane, afterwards demented. Twelve pregnancies, three stillborn, three children dead, one of hydrocephalus and one of meningitis. Six children living, of whom one is a deaf-mute, epileptic and hydrocephalic. Personal antecedents: Habitual good health; intelligence good; indolent; typical Hutchinsonian teeth; breasts rudimentary; never menstruated; aspect infantile. From

* *Edinburgh Med. Journ.*, 1891.

six to nine years, three or four epileptoid attacks annually. At about fourteen to fifteen, sudden loss of consciousness, followed by prostration for two days. Two other similar attacks just before the beginning of the disease. All at once diminution of activity, indolence, indifference, mental enfeeblement, afterwards hesitating speech, difficulty in walking and muscular weakness. Admitted to the Edinburg Asylum at the age of nineteen, with the following symptoms: Dementia paralytica without delirium, physical signs very accentuated; nystagmus; disseminated opacities of peripheral coroiditis, which Argyle Robertson considered a manifestation of hereditary syphilis; coldness of the extremities with varying color, red to blue; spots of gangrene with erysipelas upon the feet.

This must not be considered as a final account of the subject of parasymphilitic affections. It is only a first attempt. It may be necessary in the future to add to or subtract from it. Perhaps the chapter can never be fully written until the bacteriology of the disease is known and enables us to distinguish between diseases which are syphilitic by nature and those which are parasymphilitic.

Certainly the consideration of the remote effects of syphilis increases considerably the gravity of its prognosis and gives an additional reason for the more careful study of the disease and for more careful attempt to control or suppress it.

SOME OBSERVATIONS UPON BLOOD PRESSURE IN THE INSANE.

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THE literature on the subject of blood pressure is increasing rapidly, and much pleasure and profit might be derived from reviewing the major part of it, but I will resist the temptation and merely call your attention to certain articles which have a direct bearing on the results which follow. For a long time it has been conceded by some that the blood pressure was increased in depressive states and decreased in excited conditions. In 1900 Maurice Craig in an article entitled "Blood Pressure in the Insane,"¹ says: "We may now, I think, take it as accepted that in states of acute mania the blood pressure is low, whereas in the majority of cases of melancholia the blood pressure is raised; in other words, that with the affective disorders of the mind there is an alteration in the tonicity of the vasomotor system." Pilez² reached the same conclusion, and in one of his cases of circular insanity the blood pressure varied from 60 mm. in the excited state to 160 in the depressed period. It has been found, however, that in agitated melancholia the blood pressure is low, and all the evidence seems to indicate that a low blood pressure in the insane accompanies motor restlessness. The article by Dr. Craig, from

which I have quoted, and another by Dr. Henry L. K. Shaw³ are two which I have found most interesting from the standpoint of the alienist. The latter contains a number of references to foreign literature, to several of which I shall direct your attention. Pilez found the blood pressure normal in the early stages of paresis, but low in the terminal stage. Heim⁴ found a high blood pressure in neurasthenics and hysterical children, and considered this a diagnostic point. The above references concern the points which will be of most interest to us in the consideration of the observations which form the subject of this paper. The other works to which Shaw refers deal with the effect of therapeutic measures upon the blood pressure, or with the history of the various methods of observing it.

Mention should be made of the investigations made at the Royal Asylum, Aberdeen, by Drs. Bruce and Alexander on cases of melancholia and of mania. Justice cannot be done to their work in a brief abstract, and I therefore append references to their published writings.⁵

Early in 1902 Dr. Harvey Cushing of the Johns Hopkins Hospital introduced to us his modification of the Riva-Rocci apparatus for determining blood pressure, and presented us with an instrument. Dr. Cushing's modifications are merely mechanical, and do not affect the principle of the apparatus. I wish to especially call your attention to the convenience of the Riva-Rocci instrument. Shortly before we began using it we were having constructed the elaborate apparatus of Mosso, which one might say requires a room to itself, and has as another disadvantage to its use that a number of patients are in no condition to be brought to this room. A number of those that might be would endanger the rather expensive apparatus. The form of the Riva-Rocci which we have used we have put together ourselves, and I am sure that three dollars will quite cover the cost of each instrument. It consists first, of a narrow rubber bag with linen covering with hook and loops, by means of which it is secured about the patient's arm. This bag communicates by rubber tubing with one arm of a glass T inserted in the cork of a wide-mouthed bottle, which latter is partly filled with mercury, and which has a straight glass tube with millimeter scale attached also passing through the cork, and from this the degree of pressure is read. The other arm of the above-mentioned T is connected by rubber tubing with a pressure bulb, such as is used on a Paquelin cautery. There is also a branch from the first tubing closed by a pinch cock, by means of which the air is allowed to escape from the instrument after the observation has been made. To operate the apparatus, the arm band is fastened about the patient's arm above the elbow, the radial pulse is palpated, and air is forced into the apparatus by means of the pressure bulb. The height

³The Tonometer and its Value in Determining Arterial Tension. *Med. News*, vol. lxxviii, p. 372.

⁴Deutsche med. Wchnschr., No. 15, 1900, quoted by Shaw.

⁵Journ. of Ment. Sci., October, 1900. *Lancet*, No. 4069, Aug. 24, 1901. *Lancet*, No. 4114, July 6, 1902.

¹Brit. Med. Journ. Sept. 22, 1900, No. 2073, p. 184.

²Wien. klin. Wchnschr., No. 12, 1900, quoted by Shaw.