IX.

PRACTICAL CONCLUSIONS

In this, the last, chapter we shall try to draw a few practical conclusions from the material collected in the preceding pages and concerning the physiology of emotions. Considering the central position occupied by the emotions both in normal psychology and in psychiatry it must be expected that a closer elucidation of the bodily phenomena of emotions cannot be without practical value, especially when the matter is considered from a medical viewpoint.

I.

The first thing to be pointed out is the extremely great importance of *laboratory examinations at the bedside being influenced by emotions.* Considering that examinations, e.g. of blood-pressure, test-meals, basal metabolism, and sugar contents in the blood are some of the daily routine examinations in any medical ward it must be wondered at that this fact is so little known by practising physicians. A knowledge of the fact actually exists and appears to some extent from text-books of medicine, but the knowledge has not advanced so far as would be desirable.

As to blood-pressure it will be remembered that even so slight and transient an emotion as the one associated with a visit to the doctor may increase the blood-pressure by 10—20—30 per cent. and thus convey the wrong impression that the patient suffers from a lasting hypertonia. Every physician has experienced that in an anxious patient he may find a blood-pressure of 160—180—200 mm. But as the patient becomes acquainted

with the doctor or remains in hospital for some time the blood-pressure falls to the normal. Nevertheless we still see that in medical reports a single examination of the blood-pressure is given without any statement of when it was taken and whether the patient's mind was at rest.

The same applies to examinations of Ewald's test-meal, as will appear from chapter V.—In this case the phenomenon is not so marked as in the case of the blood-pressure, the emotional achylia being comparatively more rarely seen. But in return the diagnostic value is much greater, as in a patient in whom achylia is found we generally prescribe a diet or acid treatment, thus causing the patient both trouble and expenses of no use. The practical procedure should be that in each case where achylia is found the test-meal is repeated at least twice, often three times, the patient's emotion thus being lowered as he gets accustomed to having the stomach-tube passed through his oesophagus. As a constant achylia indicates a determination of the index of the blood and may draw the attention to other disorders of the organism it is important to make sure that it is a real and not an emotionally determined achylia. It is futile and often directly misleading to let the patient appear in the doctor's consulting room in order to get a single test-meal. Nevertheless, in doctors' case records and in those of hospitals, too, we see the result of Ewald's test-meal stated without any further corrective.

The same remarks hold good in the case of the basal metabolism. In this case it is perhaps somewhat better known that preceding emotion engenders an increase, as *Krogh* and numerous clinical authors have warned against the single determination. Nevertheless we can still find case records where a single determination of the basal metabolism, perhaps even an ambulant determination, is stated without further corrective. That this is an objectionable procedure will appear in full from the results stated in chapter III.—A determination of the basal metabolism is only of value in the case of a completely calm patient who is able to cooperate in the examination, and the numerous examinations of maniacs or confused insane patients

reported in the literature are completely bewildering. Even far-reaching conclusions about the metabolism in insanity have been drawn from such examinations. This applies e.g. to manio-depressive patients in whom a number of satisfactory determinations may be obtained during the depressive period, whilst it is impossible to get useful determinations during the maniac period. But also in schizophrenous and hallucinated insane patients the profession has considered it possible to use the results, ignoring completely the emotional increase of metabolism and the deleterious effect of the motor unrest on the examination.

Lastly there is the increase of the sugar contents in the blood owing to emotions. As will be seen from chapter VI. the hyperglycemia of late occurrence with ensuing hypoglycemia is not so considerable as to play any part in moderate emotions. The question is, however, whether the emotional influence on the blood-sugar may be increased under pathological conditions, partly in different bodily disorders, e.g. diabetes, partly in mental disorders, organic cerebral disorders and functional neuroses, which have a great emotional lability. This question requires further examination and so much can be said that when we will be confident of a blood-sugar figure we must be sure that the patient is in a state of emotional rest. In this as well as in other domains ambulant examinations are of doubtful value.

This was the first practical value of our examinations:— The influence of the emotional testing on the laboratory examinations.

II.

The second domain in which we can obtain practical results from the preceding examinations is the one dealing with *the influence of emotions on bodily and mental conditions both in a diseased and healthy state.* It would lead us too far to recapitulate the comprehensive literature on the importance of the emotions to bodily conditions. I shall refer briefly to the following publications:—

O. Domrich: Die psychischen Zustände ihre organische Ver-

mittelung und ihre Wirkung in Erzeugung körperlicher Krankheiten, 1849. *Hack Tuke:* Geist und Körper. Studien über die Wirkung der Einbildungskraft, 1888. *A. Sell:* Sindsbevægelser som Sygdomsaarsager, 1884. *L. Braun:* Herz und Angst, 1932. *Fl. Dunbar:* Emotions and bodily changes, 1935.

I believe that the preceding examinations have thrown new light upon a special field within neurology and psychiatry. It is *the manner in which hysteria and the psychogenous psychosis arise.* Here we are confronted with two disorders, about which we have the experience that psychical shocks and injury to the emotional life are the causes of the occurrence of the disorder. But hitherto it has been an enigma how injury to the emotional life can give rise to a series of bodily and mental symptoms such as are found in hysteria and psychogenous psychosis. Here it is that our extended knowledge of the bodily, accompanying phenomena and the mesencephalon may give us the key for the solution of the riddle.

As is known hysteria is a mental disorder with mental as well as bodily symptoms. Two elements are required in order to engender a hysteria:

1. The hysterical constitution and 2. The psychical trauma.— No human being escapes psychical traumata, but only a certain number become hysterics. This is due to the fact that few people have the hysterical constitution. This constitution may be congenital or acquired. It is most frequently congenital and on a familial basis; thus it dates from birth. But sometimes it may be acquired. During recent years especially the chronic epidemic encephalitis has given us instances hereof. In a number of patients, especially the younger ones, who have not previously been abnormal, a hysterical constitution appears after encephalitis. In these individuals a psychical trauma will engender hysteria, a disorder which they previously would have been unable to develop.

My examinations now show that in hysterics there is an abnormal reaction of the emotional life, not only in the psychical but also in the somatic domain. When a number of hysterics are tested by means of the emotional testings referred to in previous

chapters, gradually being comprised into a single connected examination performed at one sitting, it will appear that the results arrived at with respect to flush of the skin, temperature of the skin, basal metabolism, perspiration, and blood-sugar are greater in hysterics than in a control material of normal persons. Thus these patients have an increased emotional-somatic lability, i.e. signs of a real, bodily disorder (*Oppenheim, Wilson, v. Bogaert* a. o.). The examinations will be communicated in a future publication of collected emotional testings in hysterics and insane patients.

In itself it is not to be wondered at that such abnormal, emotional reactions in hysterics can be substantiated objectively. The hysterical stigmata have been known for centuries, consisting of suspended faucal reflex, universal analgesia, brisk plantar reflexes, ovarialgia, clavus etc.—These symptoms have been found so more frequently in hysterics than in other individuals as to enable us to regard them as a bodily abnormality that is present besides the psychical abnormality. As these symptoms also are present outside the actual hysterical attacks they can be considered a feature of a hysterical constitution.

The abnormally increased reactions found in the emotional testing are, however, indicative of a phenomenon which is of the greatest importance to the explanation of the pathogenesis of hysteria. For they suggest that *the acquired somatic-hysterical constitution may be due to an acute or chronic somatic traumatisation of the emotional apparatus* (*the mesencephalon, the vegetative nervous system etc.*). From clinical experience we know that sorrows and cares, poverty and misfortune, operations and shocks have been amply inflicted on many of these patients. It has often been thought that this was a consequence of their hysterical constitution. But the reverse might possibly be the case, namely that psychical traumata have brought about a bodily disorder manifesting itself as hysteria.

In order to understand this we must imagine that a normal individual is exposed to a single, not too insignificant, injury to his emotional life, what we call an emotional trauma. From our examinations referred to above we know that comprehensive

and partly far-reaching alterations will occur in the organism: —The glands of the skin, the organs of digestion, muscles, circulation of the blood, endocrinous glands take part in this process. Hardly any organ is exempt from the effect of a psychical trauma, and it may be effects which in certain cases are as radical to the organ in question as a bodily disorder of the organ, an infection, intoxication, physical trauma or the like.

Let us moreover imagine that such an emotional trauma befalls the individual not once but many times, perhaps throughout several years (unhappy marriage, economic cares, troublesome conditions of life, disease in the family). Thereby repeated injury is inflicted on the whole of the organism. The physiological equilibrium is disturbed, the individual organs as well as the cooperation between them being injured. The vegetative nervous system and the mesencephalon are traumatized both primarily and secondarily. A condition occurs that can be more fatal to the organism as a whole than a bodily disorder, e.g. a fractured leg, a nephritis, a pneumonia. A hysteria occurs.

If this is so—and the matter itself can hardly be disputed—we must be reluctant to put the main stress on the contents of the psychical trauma and to absorb ourselves too much in its nature and standing and in the so-called »subconscious complexes«. The psychical trauma is the cause, it is true, but the effect cannot be explained solely by psychical route. *The trauma has acted through the bodily, sensitive mechanism, the emotional apparatus, and in hysteria it is as important to consider the bodily disorder as it is to consider the psychical disorder.* It will be a perversion of facts if in the etiology and therapy of hysteria attention is paid exclusively to the psychical trauma as such and not to the bodily, accompanying phenomena. Such a view would correspond to a case of injury to the head in which interest was only taken in the question whether the injury was due to the fact that the pt. was hit by a tile on his head, or that he fell down from the 3rd floor, whilst examination of the skull as well as the cerebral lesion is for-

gotten as is also the treatment of these bodily injuries in favour of the treatment of their psychical symptoms.

The treatment of hysteria must, therefore, be of a physical as well as psychical nature. By the psychical route we can influence the organic symptoms; here we agree with the psychotherapeutists. But we can also influence the psychical symptoms by the organic route. It is incorrect to consider hysteria solely as a psychical disorder, as it has a bodily basis, and there is reason to believe that the more sensitive our biological methods of examination become, the more numerous will the organico-pathological findings be, also in the case of hysteria, and the organic treatment of this as well of other mental disorders will be emphasized. On the whole time must be ripe now for the so-called »neuroses« to be submitted to a thorough biologico-physiologic testing so that these disorders, whose frequency and economic costs to society exceed all other disorders, will obtain the place within the internal medicine which they highly deserve.

What has been said here about hysteria, however, also applies to other psychogenous disorders. Hysteria has been termed a neurosis, although it is a psychogenous mental disorder. The cause hereof is that its symptoms chiefly are of a bodily nature, especially the cramps, the pareses, the disturbances of sensibility and other physical manifestations. In reality there is no difference in principle between hysteria and the psychogenous psychosis as regards etiology and pathogenesis. *Both disorders are due to psychical traumata as releasing or predisposing elements and in both cases the psychical trauma has acted through the bodily substratum, the emotional apparatus.* In psychogenous psychoses the symptoms are chiefly psychical:—Confusion, restlessness, hallucinations, disturbances of the frame of mind etc.—But in these disorders as in hysteria it is probable that abnormal somatic emotional reactions would be found if emotional testing could be performed in psychogenous psychoses. It is, however, difficult, owing to the unrest of the patients and their lacking ability to cooperate in the experiments; but attempts should be made.

It applies to these disorders, to a still higher degree than to hysteria, that the treatment must be of a somatic nature. Only the most one-ideaed psychoanalyst would consider himself able to cure psychogenous psychoses solely by means of psychoanalysis. Here the bodily treatment with soporifics, sedatives, rest in bed, isolation etc. must be employed. It is probable that certain soporifics are of additional importance besides the sleep-producing effect, viz. in influencing the vegetative centres regulating the emotional life which are localized to the same region as the centre of sleep.

In continuation of the present publication a series of examinations into the somatic effect of acute emotional testing in insane patients has been commenced in this hospital. The examinations are performed with the methodics referred to in the preceding pages (measuring of the temperature of the skin, the metabolism, the perspiratio insensibilis, blood-sugar etc.) and it is hoped in this manner to find more signs of the underlying *bodily* disorder of these patients and thus the means of treating them, especially the manio-depressive patients.

SUMMARY

Attention is drawn to the fact that it is objectionable and misleading to perform a number of laboratory examinations without making sure that the patient is in a state of emotional rest, or stating a corrective of the error of examination resulting from emotional unrest. Emotional testing thus becomes of practical clinical importance.

The theory is advanced that repeated acute or chronic traumata of the emotional life entail physiologic effects through the vegetatitve nervous system on a number of organs. A short reference is made to examinations with emotional testing that have been commenced and which are indicative of an abnormally great emotional lability in hysterics, also in the somatic domain, which suggests that hysteria has an organic pathogenesis, viz. an injury to the emotional apparatus, which is an intermediate link between the psychical traumata and hysteria. The same applies to the psychogenous psychosis.

It is suggested that the present investigations into the normal physiology of emotions may be supplemented by investigations into the pathophysiology of emotions, especially in patients suffering from manio-depressive psychosis, which possibly may lead to therapeutic results.