Conclusions

It would appear, therefore, that the chance of curing a patient with thrombocytopenic purpura by the administration of ascorbic acid is, from the evidence at present available, 33 1/3 per cent. There is a rather higher chance that x rays may be of value—twenty-five favourable reports against twenty unfavourable have been found. Observations on snake-venom therapy at present show eighteen patients benefited and twenty-four with no improvement. There is no evidence that liver extract is of value. Hypercalcaemia has been tried in too few cases to permit of any conclusion. Transfusion has its greatest value in tiding an acute case over the preliminary stage and in pre-operative preparation. Splenectomy to-day has an immediate mortality rate of 7 per cent. or rather less, and the majority of patients who recover from operation have a reasonable chance of permanent improvement.

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THE NERVOUS FACTOR IN JUVENILE
ASTHMA

BY

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An investigation of the known aetiological factors in asthma was undertaken in a large number of cases seen over a period of five years.* The present paper briefly summarizes some of the observations made on the "nervous factor" in 187 of those patients, whose ages ranged from 2 to 20 years.

Evidence was early cumulative to show that the psychological element intruded in a varying degree in almost every case, and it was eventually possible to classify its relation to the syndrome according to three factors: (1) the nature of the inheritance and environment; (2) the degree of allergic thralldom; (3) the duration of the condition.

At an early stage of my investigation I was struck by the fact that a preliminary conversation with the parents of an asthmatic child could enable me to assess with surprising accuracy the measure of success which would attend treatment. Further experience made it increasingly obvious that parental invasion of its psychic life could markedly influence the affective states of the child. As Jung points out, "the first form of a complex cannot be other than a parental complex, because the parents are the first reality with which the child comes in contact." This is of supreme importance to our problem because, as I shall later attempt to show, allergy carries with it certain psychological limitations, and the allergic child is often made aware of disordered emotional currents in its allergic parents, and tends to fashion its own reactions in a "preselected" imagery.

What are the characteristics of those reactions, and how are they related to the syndrome? It is only possible to answer those questions when psychological considerations are related to physiological data.

Disturbance from Biochemical Changes

Analysis of the case histories under review shows that in the great majority the ideational pattern of the affective states is already deeply grooved in the nervous system prior to the onset of asthma. Around a primary nucleus of fear is developed a diffuse background of "over-sensitiveness" or apprehension. Clinically, this is evidenced by the fact that stimuli which impinge closely on the emotional life of these children appear to excite a diffuse wave of psychic radiation. The normal reciprocal inhibition is hereditarily faulty. The resultant loss of localization of stimuli widens the horizon of apprehension. The decision about what is to be done becomes momentous; the nature of the child's psychic endowment will be the ultimate guide to that decision. A failure in adaptation or a tendency to false compensation will enhance a potential overflow into autonomic channels. But, in my opinion, at this early stage rarely can emotion pervert the machinery of the lower centres until something of a purely physical nature impairs the integrity of cortico-thalamic control. All the evidence suggests that this disturbance is brought about by biochemical changes ushered in by allergy. In 98 per cent. of my cases I have not been able to determine a purely psychogenic cause for the onset of asthma in the absence of other factors. It must, how-

* "A Review of 300 Cases of Asthma in General Practice." (Sir Charles Hastings Prize, 1936.)

ever, be understood that the prespastic emotional life constitutes the basis of later disorder, for from its constituent elements may be eventually forged the dynamic energy of psycho-autonomic activity.

Case 1.—An only child, aged 7, had suffered from allergic bronchitis since infancy. The father was a chronic dyspeptic and the mother had migraine. After the birth of her child the mother seemed to lose a guiding motive in life. Migraine attacks became frequent. The suggestion of a holiday or other form of amusement invariably initiated an attack. Several times a week the child would see her mother incapacitated by headaches. The aura of "over-protection" was later extended to the child. The latter developed measles, which ran a protracted course. During convalescence her appetite became fickle. She wished to be left alone in a semi-darkened room, and at times would weep copiously, stating she had not strength to get up. The mother's anxiety intensified these childish reactions. The little patient was eventually ordered to get up and was dressed. It was then noticed that she was speaking like a child of 2 and walking with a corresponding gait. She was thus recapitulating in her own way those characteristics of infantile regression which appeared in a modified form in the mother.

Allergic Causes of Emotional States

When there is an overstepping of allergic tolerance and asthma ensues a further disturbance of the pre-existing tension states takes place. The most important clinical feature is the lack of psychic "buffering."

In the immediate prespastic stage the child as a rule becomes forgetful and is unable to concentrate. Problems which normally present no difficulty seem insuperable barriers, and the patient becomes irritable and fidgety. The shoulders become hunched forward in an expectant attitude. The normal facial contour is haggard and drawn, and replaced by an apprehensive mask. The child may be taken home from school and submitted to the care of parents whose anxiety not uncommonly enhances the apprehensive aura of the child. It is easy to understand the psychic changes that ensue. Judgement becomes progressively impaired, a turmoil of anticipatory ideas proceeds from strength to strength, and by an association network rendered momentarily freer extends the range of fear memories. Thus it is that so frequently we find bouts of rage and uncontrolled wildness alternating with terror and the assumption of the characteristic spastic posture.

Statistical realism in thought is replaced by a primitive "magical" thinking, whereby affect is detached from the ego and externalized. Every word or action in the non-ego is invested with potential danger. The visit of the doctor and the view of his apparatus are identified with the fear which they might be expected to provoke. "What is this for?" "What will it do?" "Will it hurt me?" "I won't have it!" "I don't like it!" "I'll run away!" Two cases illustrate this clearly.

Case 2.—A boy aged 9 developed asthma at the age of 5. He was the eldest of four children. The attacks had occurred at about monthly intervals when I was asked to see him as he had recently become hopelessly unmanageable. On three occasions he had attempted to set the house on fire. Bouts of almost sadistic cruelty to the younger children would alternate with biting and scratching his governess. On my arrival he refused to see me, and hid in the garden. Eventually he was carried by two servants into the house, yelling and biting. After a time I talked to the child quietly, but was unable to carry out any examination. On departing he subjected me to a torrent of abuse, and evolved an amazing scheme for my destruction: "When you come back you won't find me here. I will climb up on the roof and wait for you.

I will take up a big stone, a heavy stone, and when you are standing at the door I will drop it on your head." Three months later, freed from allergic thralldom, this patient had become a quiet, well-mannered boy.

Case 3.—A boy aged 10 had a history of allergic bronchitis in childhood. Urticaria and eczema supervened, with hay fever and eventually asthma. He was extremely emaciated, nervous, and emotionally unstable, and the same type of psychical reactions were present as in the former case. His method of avoiding a potential source of recurrent danger was unique. He waited behind a hedge in the drive with an air-gun, anticipating my visit. After four months' treatment by eliminating diets his asthma had ceased and he was able to live as a happy and sociable member of society.

Not merely does clinical evidence show that allergic activity may enhance psychic chaos, but biochemical evidence proves it. The Prausnitz-Küstner reaction, which can be obtained in nearly all those patients, gives positive evidence of the presence in the circulation of sensitization substances, apparently clinically capable of producing gross psychological disorders. Indeed, it is almost safe to assert that at certain times allergic thralldom may bear the same relation to the nervous factor in the asthmatic as does a positive Wassermann to the psychopathology of cerebral syphilis. Yet it would enable us to understand the freakishness of asthma better if we were able to prove that psychological factors could exalt or lower the allergic threshold on biochemical evidence. In this connexion the following experiment may be of interest.

Case 4.—On preliminary investigation an asthmatic girl aged 18 gave a severe cutaneous reaction to an intradermal test for egg sensitization. A wheal one inch in diameter, surrounded by a raised erythematous zone three and a half inches across, developed around the site of inoculation. Next day the test was repeated whilst the patient was deeply hypnotized. The suggestion was given that no reaction would occur. The patient was kept under hypnosis for half an hour and the suggestion was frequently repeated. No wheal developed, and there was no erythematous blush. Sphygmographic tracings of the pulse were taken before and during the experiment. As soon as hypnosis was induced the tracing altered markedly. The excursions became accentuated and more frequent. There was a sharp rise and fall. The predicrotic notch was registered close to the base line. The blood pressure increased from 110 mm. Hg systolic and 65 mm. diastolic to 130 mm. Hg systolic and 75 mm. diastolic. Next day the experiment was repeated in the patient's normal state, and the original wheal was obtained.

Should this paroxysmal overstepping of the allergic threshold continue unchecked a stage is eventually reached where great modification of personality temporarily ensues. The psychological reactions evoked thereby come to dominate the cerebration for the time being, and arouse anomalous conduct disorders, as in the following case.

Case 5.—A medical student aged 19 states as follows: "For several days prior to an attack I have a craving for highly seasoned or unusual food. I tend to smoke a great deal. My powers of concentration are greatly diminished. I begin a conversation but rapidly lose the train of thought. I may stop short in the middle of a sentence, groping for a suitable conclusion which evades me. A few moments later I remember the conclusion and mix it unaccountably in a new group of ideas. These ideas become more and more tinged with emotion. My voice becomes high-pitched, later reaching an almost hysterical scream. I seize upon irrational and illogical facts with frenzied fervour, and attempt to put them over with unjustifiable conviction. Increasing irritability makes me dwell upon ideas of resentment. The fancied slights of friends are magnified and distorted. I remember my enemies with bitterness. Rage begins to riot in my mind. In fancy I see myself a dictator, meting out swift justice to all whom I hate. Mentally, I torture them with sadistic glee.

The knowledge of my helplessness makes me an anarchistic enemy of society. These feelings are very real indeed to me at the time, and yet when the attack is over and I think of them I realize how foolish they have been."

In the course of evolution the flight of anticipatory ideas associated with emotion has been submitted to cortical control in the best interests of the individual. It is difficult to believe that the evolutionary progress could ever have been maintained without this toning down of impulse and emotion by the higher centres. In the asthmatic, however, clinical experience seems to show that this modifying apparatus is in a state of maladjustment.

All the evidence points to the fact that the allergic factor is principally responsible for the onset of juvenile asthma, and that the psychic factor is either mobilized or intensified by allergic states. This conclusion applies only to the early stages of the syndrome. When, however, the condition has continued for some time diffuse psychical reactions centring around the organ inferiority emphasize the pre-existing emotional fears.

Organ Inferiority

The potential asthmatic child enters the world with both a somatic and a psychic handicap. Not merely may it be the victim of an active or passive sensitization from the mother, but of a chromosomal inheritance from the father. It is born into a keenly competitive world, and early environmental influences begin to impinge upon a highly receptive sensorium with invidious insistence. Frequently it is the eldest or only child, and domestic pampering by parents, often themselves the victims of allergic imbalance with its concomitant psychic reactions, directs attention to physical insecurity. Not infrequently the position in the family widens the scope for "over-protection." Moreover, every other incidental illness is a source of anxiety, since by increasing the sense of constitutional weakness it tends progressively to undermine confidence.

In asthma frequent autonomic hyperirritability, initiated by allergy, is an ideal soil for the formation of fear complexes (Emerson).

The direction of attention to the condition lends it emphasis. Physical defects confer on the victim an aura of invalidism, and the psychopathic thinking of his parents may surround him with an almost pathological limelight. Attention becomes focused upon a subject which is daily discussed. "In any situation that is potentially dangerous, fear is present if attention is given to its dangerous aspects" (Rivers).

Fortunately indeed for asthmatic children, though the playing-fields may terrify them their scholastic achievements are of no mean order. About 73 per cent. were far above the average, and seven were dux of their school. Of the remaining 27 per cent. with one exception all were of average mentality and, in the quiescent periods, voracious readers. More and more do they tend to seek the company of much younger or much older people, and gradually acquire an outlook in life far in advance of their years. It is sometimes alarming to find a child of 7 discuss its condition with the matured fluency of an adult. They find an outlet for their latent energies in an endeavour to outstrip in the class-room those with whom they cannot compete in the playing-fields. The feeling of inferiority and isolation demands a compensation, and the time spent by other children in play is utilized by these patients in reading. It is very rare to find a purely autistic attitude to life except in that very small percentage of cases in which asthma occurs in the course of a psychosis.

The Conditioned Reflex

Once the experience of bronchospasm is sufficiently repeated there can be no doubt that it acquires all the characteristics of a conditioned reflex, and at this stage the memory of previous analogous stimuli is adequate to evoke it and eventually is sufficient cause for its persistence.

Once established as a conditioned reflex the potential catalysts, somatic and endopsychic, become numerous indeed. On the somatic side the activity of almost every organ under the control of the vegetative nervous system can eventually be the trigger of vago-sympathetic imbalance. Thus it is that a loaded rectum, a swollen mid-turbinate, or a distended stomach may initiate a spasm. Correspondingly, the diffuse ramifications in the psyche centralized around the primary emotional nucleus of fear may at any point lead to an attack. This is of great importance from the prognostic standpoint. In some long-standing cases the ideas clustered around asthma may come to colour the whole outlook on life. In such cases future security is to be found only in analysis and sublimation.

"Emotional shocks that are final cannot be forgotten. Many associations recall them" (Kretschmer). Every remembrance may be the occasion for the renewal of the original stimulus through a sensitized set of responsive neurones. Not merely so, but owing to the amazing psychical diffuseness associated agencies may touch the "agitating spot." Anything that will influence a sense organ is convertible into an affective stimulus. This explains why artificial flowers may provoke an attack in a sensitized subject.

Case 6.—A brilliant girl aged 20 had suffered from asthma from the age of 2 years. The patient did not exhibit allied allergic conditions, and physical therapy proved unsuccessful. The possibility of a psychological cause was examined, and the patient was analysed every day for five months and had asthma every night. Eventually it was discovered by hypno-analysis that the cause of her asthma was centred around the terrifying emotions of fear and suffocation when she was assaulted by a negro at the age of 2. The negro threatened that he would cut out her tongue if ever she mentioned the incident. This ghastly experience had been completely repressed for eighteen years. Despite this discovery and the explanation to the patient she was not cured, for it was found by further analysis that the ramification of this early terror had permeated almost every sphere of psychic activity. Her dreams were hypno-analysed for the next sixty-two days, and every occasion revealed that the starting-point of bronchospasm returned to the original "agitating spot." Eventually the negro became replaced by a man with a black beard; he, in turn, by a white man with a swarthy complexion. At a later stage, as confidence was gained, the figure only attempted to frighten her, without assault. In the later stages a form of sublimation was attained, when, in the dream-fiction, she developed sufficient courage to kill her assailant. Once this psychic conquest over fear had been attained her asthma ceased to recur.

Ultimately dependent on the conditioned reflex, there emerge three other characteristics which we may find in the course of the syndrome: (1) purposive simulation; (2) hysterical habituation; (3) voluntary reinforcement.

Purposive Simulation

It must be recognized that in a considerable proportion of cases simulation by arbitrary reflex reinforcement is capable of development. In my opinion this is most frequently determined by parental reactions. The more

intense the emotional lives of its parents the more easily will the child energize the reflex paths with purposive intent.

Case 7.—This patient, a boy aged 11, had a history of eczema and cyclical vomiting, with asthma for three years; sensitized to egg, milk, and fish. After treatment he acquired a new poise in life, took a renewed interest in hobbies and physical recreation, and his physical appearance improved correspondingly. If, however, he received a reprimand or his wishes were in any way thwarted a change at once came over him. The pupils dilated, the shoulders hunched forward, and he threw himself into the posture of "expectant defence."

It must be emphasized, however, that this phenomenon is particularly noticeable when allergic imbalance is intensified, and tends spontaneously to disappear as effective therapy is instituted. The pattern of the reactions alters during treatment, and our psychotherapeutic invasion of the patient's psychical life will be modified in consequence.

Hysterization

A stage may be reached when attacks no longer depend on allergic catalysts. According to the personality reactions of the child, the habituation reflex may be used independent of its allergic origin. Perhaps primarily it is anticipatory. Emotional factors alone may be the "trigger" which excites an attack. It may also be employed as the explosive demand for sympathy, or as a way of escape from unpleasant or undesirable situations.

By extended associations the psyche becomes subjected to an increasing number of involved conditioned stimuli until great complexity and intricacy of behaviour ensues. This fact must be borne in mind when dealing with asthma, for not merely must the patient's allergic background be overcome, but social or environmental maladjustment may require to be corrected. It is perfectly true that removal of the offending allergens may alone enable the patient to attain psychical poise and readjustment, but it is important to stress early recognition and treatment to avoid the habituation reflex which so frequently results. Every time the nerve stimuli traverse a given path they facilitate the passage of later impulses.

Case 8.—A boy aged 12 had had asthma for eight years. His mother died six weeks after his birth. He was brought up in the charge of a devoted "nanny," for whom he cherished a deep affection. His father sent him to Leysin, where he had treatment for two years. He had no attacks in Switzerland, gained rapidly in height and weight, and was sent home assured that the asthma would not return. At school in the South of England he made rapid progress, taking a prominent part in sports. One day his father came to inform him that he intended to marry again. That night the boy had one of the severest attacks of asthma he had ever experienced. The "cure" at Leysin had not sublimated the latent emotional factor.

Arbitrary Reflex Reinforcement of Bronchospasm

This is a phenomenon which may appear in a greater or lesser degree in most asthmatics. It is seldom in evidence in the absence of an audience, is frequently observed in early chronic cases, and reaches its climax in the psychotics. It must be emphasized that its origin is entirely psychological. The more pronounced the latter factor the more readily will the phenomenon appear in emphasis. Its machinery of expression is through the accessory muscles of respiration.

In the presence of bronchiolar contraction these muscles are called into play to assist chiefly the distressed expiratory effort. Should the patient, however, in the presence of anxious relatives, be dominated by the urge

to emphasize the distressing nature of his condition he may arbitrarily reinforce the action of the accessory muscles. The expanded alae nasi may be contracted. The sterno-mastoids bulge in accentuated emphasis, the shoulder-tips thrust forward, and the thoracic spines curve markedly. The chest wall is compressed on a rigid diaphragm with compelling insistence. The inspiratory effort is correspondingly laboured with almost masochistic intent.

In this connexion the following case may be of interest.

Case 9.—A youth aged 17 developed asthma after leaving school at the age of 14. His parents had always considered him to be rather "queer." His father was an asthmatic. The patient had numerous jobs, which for unsatisfactory reasons he gave up in melancholy succession. Eventually his asthma incapacitated him from following any employment. For days at a time he would lie in bed wheezing, and he refused food. He became slovenly and untidy in his habits, withdrew more and more from the company of his friends, and developed a morbid introspection. One day I found him asleep; the breathing was quiet and regular. On being awakened he at once assumed the condition above described, and this continued till his lips were cyanosed and adventitious sounds filled the chest. He was sharply reprimanded and ordered to throw back his shoulders and to breathe slowly on command. The sterno-mastoids relaxed, breathing became slow and regular, the strident rales disappeared, and the dusky hue left his lips.

In other cases simpler forms of distraction may suffice to emphasize the fact that such reinforcement of respiration can voluntarily occur. The fixation of the patient's gaze on a bright object above the eyes and the suggestion of calm and quiet breathing displace the respiratory emphasis.

Psychotic Dissociation

In a small proportion of chronic cases (2 per cent.) the motivation is apparently derived from very old and involved complexes. In these cases it is, as a rule, difficult to trace an allergic inheritance, nor do the patients *per se* exhibit associated allergic conditions. Being autistic in temperament and well-nigh divorced from realism, with an intense ego-localization, they live at the level of mid-brain philosophy. The deep psychic values of the "retreat into illness" cannot be surrendered to any form of sublimation. I was not able to obtain the Prausnitz-Küstner reaction in those patients. They are non-hypnotizable, and the asthma appears to be of purely endopsychic growth. Psycho-analysis apparently aggravates the condition. Narco-analysis with sodium evipan has been tried unsuccessfully; dietotherapy and insulin injections have proved unavailing. Nor have I found these patients amenable to any form of therapy with which I am acquainted.

Case 10.—This patient, a girl aged 18, the daughter of an epileptic mother, had had asthma for twelve years. She had been bright at school until 10 years old, then became "queer." She believed that a gipsy had cast a spell over her and that she could never recover. Eventually she was placed in an institution. Cutaneous tests gave negative results. The Prausnitz-Küstner reaction was also negative. In my opinion the condition was entirely endopsychic in origin. No success attended therapy.

Nocturnal Asthma

Since most asthmatic attacks take place in the early hours of the morning it seemed feasible that the investigation of the psychological factor might be approached by an analysis of the dream-life of these patients. During sleep the vagus is active, and exhibits a tendency for easier reflex activity. Sleep is associated "with far-reach-

ing effects in autonomic activity," and the first undue prolongation of the normal bronchiolar ripples may be registered in the psyche with a potency denied it at other times. The autonomic centres may have freer play by the dulling of cortical consciousness. Bray suggests that since a child may sleep through a "wheezy" turn the psychological factor cannot play any part in its production. In this connexion the following case is of interest.

Case 11.—A girl aged 5 had had asthma for three years, and developed an attack which was alleged to have followed a reprimand at school. The attack lasted for the remainder of the day, and the child was put to bed and fell asleep with the asthma unabated. I saw her asleep; the wheezing could be heard in the next room. Going quietly up to the child, I whispered the suggestion that she would not awake, that her breathing was becoming quiet, and that she would pass into a normal, restful sleep. Similar suggestions were repeated at intervals of a minute. The laboured respirations began to fade away, the breathing became less audible, and within ten minutes the spasm had completely abated and the child was sleeping peacefully.

The relation of dreams to nocturnal asthma affords much valuable information in this respect. Many psychologists believe that mental mechanisms may be manifested as a purely endopsychic autonomy, while others subscribe to the view that their impetus and direction are initiated by physiogenic disturbance. From my investigations I believe that in asthma both conditions may apply at different times. Thus, hypno-analysis showed that in the early stages of treatment somatic disturbance usually stimulated the dream-pattern. In later stages the dream-fiction was more frequently endopsychic. The reason for this fact may depend upon the progressive stabilization of the vago-sympathetic balance. Thus McDowell concludes that when the body is at rest vagus activity is maximal. Pottinger asserts that potassium and, to a lesser extent, sodium are associated with vagus activity, whereas calcium is identified with sympathetic stimulation.

Undue departures from normal values place the asthmatic in a potentially spastic state. It is so frequently forgotten that cerebral tissue, whereby the psyche is made manifest, must correspondingly share in any biochemical disturbance. It is therefore a diagnostic fallacy to look in the early stages of treatment, except in a few cases, for a purely insulated endopsychic interpretation. Simon states: "If, during sleep, an organic apparatus is in a state of activity, stimulation, or disturbance, the dream will present ideas which correspond with the nature of the organic function performed by that apparatus."

In asthma these stimuli are wont to travel along certain established paths. Reaching the autonomic stations in the mid-brain, they are freed from the inhibitory influence of the cortico-thalamic fibres. A great deal more careful work requires to be done before we have positive evidence that the disinhibitory action of the higher centres in the asthmatic is dependent on a lack of synaptic buffering due to calcium deficiency, but it would almost appear that some such interpretation is feasible. The dreams associated with asthma are almost "pre-selected." Whatever be the artistic imagery woven into them they frequently return to the "agitating spot."

Investigation of nocturnal attacks shows that they fall into three main groups: (a) those of purely endopsychic origin; (b) the expectation of an attack on going to bed (affective unrest); (c) the arousal of the dream-pattern by somatic changes. Hypno-analysis of nearly a hundred dreams was carried out. By this method it was believed that it might be possible to assess with extreme accuracy

the onset and nature of the primary stimulus of the attack. In many instances the fear of suffocation or strangling was woven into the dream-pattern with amazing insistence.

(a) ENDOPSYCHIC STIMULUS

Case 12.—This patient's dream commenced at 2.15 a.m., and she states: "I was in a long, dark room. The windows were very small and high. Cobwebs were everywhere. The door was locked on the outside. A man came from behind a piano in a corner. He put his hands round my throat and began to choke me. I struggled to escape. I remembered I had a knife in my pocket. I clutched it and wriggled round and stabbed him. He fell to the floor, dying. I rushed to the door and beat on it and shouted. Everything seemed to go tight and taut. I couldn't breathe. I felt I was suffocating. I couldn't get out. I awoke with an attack of asthma." Questioned as to somatic sensations, the patient described that prior to the dream she was lying comfortably on her right side. There was no visceral disturbance and no cough. I interpret this, having respect to all the factors of the case, as a purely endopsychic stimulus.

(b) AFFECTIVE UNREST

The "occasion apparatus" suggested by Bleuler continues to function automatically once it is set in motion, provided an adequate stimulus is supplied. Many nocturnal attacks suggest that affective unrest on going to bed is apparently capable of determining the onset of an attack. Adler suggests that:

"This tendency is observed in early childhood; where there is organic inferiority it is of excessive growth. Very often this feeling occurs at the time immediately preceding sleep, and then it is not remarkable that a dream-fiction spurs further this effort of anticipation in a form to cause fear."

The following dream is of interest:

Case 13.—"I went to bed worried about the death of my sister. I didn't sleep for a long time. I fell asleep at 12.7 a.m. At 37 minutes after 1 I was conscious that my stomach seemed swollen. I coughed twice and turned from my left side to lie on my back. I remembered that coughing often brought on an attack. I began to dream that I was alone in an empty house. Plaster was falling from the walls. The roof began to sink in. I tried to escape, but couldn't find a way out. I heard my heart thumping louder and louder. Breathing was difficult. The dust made me cough more and more. I was being suffocated, and I awoke with asthma."

(c) SOMATIC CHANGES

The following is a dream illustrative of these:

"I was aware that I was wheezing at 2.5 a.m. I began to dream that I was bathing in the sea. I felt myself sinking, and began to struggle. My breathing was difficult and I felt myself choking. I attempted to fight to the surface, and woke sitting up in bed with asthma."

Summary

Summarizing the psychic factor in juvenile asthma we may accept the following features as common, in a varying degree, to nearly every case:

1. Intensification of emotion as an integral part of autonomic disharmony, by allergic or biochemical factors.

2. In a certain proportion of cases the psychological phenomena in asthma are entirely dependent on a disordered biochemistry.

3. If the latter factor is not adequately treated there tends to be a perpetuation of an intense emotional life, maximal when the allergic imbalance is upset, and the establishment of an habituation reflex the primary nuclei of which are grouped around fear.

4. According to the temperament of the child, this reflex may be used as "a retreat into illness" or a psychopathic way of escape from reality.

5. The sense of organ inferiority can energize emotion into a physical expression.

6. Frequent repetition of the original stimulus leads to diffuse psychic derivatives, which eventually permeate and colour the life of the individual, and can at any point lead to an attack.

7. This factor more than anything else explains the freakishness of asthma.

8. Where the psychic factor predominates therapy is prolonged and uncertain.

9. In a small but definite proportion of cases asthma is the expression of a definite psychosis.

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BLOOD BROMIDE INVESTIGATIONS IN PSYCHOTIC EPILEPTICS

BY

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Recently many articles have appeared on bromide intoxication in the neuroses and psychoses, but no investigations seem to have been carried out on the chronic epileptic population of mental hospitals who have been given bromide over a number of years. For this reason thirty-two epileptics (twenty females and twelve males) who had been having bromide for periods ranging from ten years to one year had their blood bromides investigated. It was found that if 90 grains of bromide a day were prescribed, at the end of ten years 6 cwt. of the drug had been consumed, and in this category there were seven patients, while the remainder had had the same daily dose of bromide over a period of four to seven years. In addition many of these patients were taking luminal or prominal.

Katzenelbogen (1932) raises the question as to whether the haemato-encephalic barrier plays a part in bromide intoxication in view of the fact that bromide intoxication may occur with low concentrations of bromide in the blood and, on the other hand, sometimes no signs of intoxication occur with high concentrations. He found in eighty-seven cases in an epileptic colony that the barrier permeability was increased in twelve cases, showed a moderate rise in twenty-four, and decreased in nine, while in forty-two the distribution ratio of bromide

between the blood and cerebrospinal fluid was normal. He also observed that there appears to be no relation between the mental state of an epileptic and his barrier permeability to bromide. Other writers (Walter, 1929; Weil, 1927) appear to have found no constancy regarding the permeability of the haemato-encephalic barrier in epileptics.

As will be seen later, many of the epileptics under investigation showed comparatively low blood bromide levels considering the amount of bromide which had been taken, and Quastel and Yates (1934) found that in all patients, independent of their mental states, the blood bromide rose markedly after oral ingestion of sodium bromide, and that the low bromide levels in certain psychotic patients could not be ascribed to lack of absorption of bromine into the blood stream.

The ages of the patients investigated ranged from 68 to 23 years, and the only instances of physical disease were in nine patients who suffered from arteriosclerosis and one who had chronic bronchitis. The highest blood bromide was 275 mg. per 100 c.cm. in a patient of 62 who had been on 90 grains of bromide a day for ten years. Two other patients, aged 64 and 68 respectively, who had had similar doses of bromide over a similar period, had blood bromides of only 150 and 125 mg. respectively. All these patients showed evidence of arteriosclerosis, while younger patients about 30 years of age who had had similar quantities of bromide, and who showed no signs of physical disease, had blood bromides of well over 200 mg. There were no marked signs clinically of bromide intoxication in any of these patients, who were all on similar diets and in whom the chloride intake could be assumed to be fairly general. This would appear to differ from the usual findings of most writers (Barbour, Pilkington, and Sargent, 1936) that older patients and those with arteriosclerosis, renal insufficiency, etc., tend to show early signs of intoxication.

Barbour (1936) states that the greater part of the bromide is excreted by the kidneys, and that the blood bromide level varies with the urinary output, which in turn depends on the fluid intake and renal efficiency. In those patients with arteriosclerosis there was evidence of impaired renal efficiency also, and the bromide was excreted more slowly than in patients who were physically well. This was shown by examination of the blood bromide levels taken at various times after the bromide had been discontinued and chlorides administered. In all cases sodium chloride, 30 grains thrice daily, was given to help in the elimination of the bromide.

Mental States

All of the thirty-two patients examined showed marked intellectual deterioration, with impairment of memory, emotional facility and instability, childishness, and irritability. Many of them were disorientated, suffered from paranoid delusions with auditory hallucinations, and were inclined to have attacks of violence. In addition they were restless, quarrelsome, and revealed the typical "difficult" behaviour of the epileptic. No patients presented in a typical manner any of the symptoms of a toxic confusional state usually associated with a bromide intoxication, nor were any neurological signs found. Although, as stated, several cases suffered from auditory hallucinations and disorientation, no evidence of visual hallucinations was observed. Bromide paranoid states have been reported, but the patients in our series who exhibited this type of reaction showed considerable deterioration also.