THE EXPERIMENTAL INDUCTION OF NEUROTIC REACTIONS IN MAN*

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The dream of the scientist in the field of psychiatry is to find an equivalent of Koch's postulates. His despair has been the impossibility of translating the voice and behavior of lower animals into anything comparable to the symbolic language of *Homo sapiens*. This has limited the significance of efforts experimentally to produce neuroses in laboratory animals; because language is necessary for the communication of ideas, without which nothing comparable to a human neurosis is conceivable. In the human neurosis, whether it be an obsession, a compulsion, or a phobia, a seemingly diffuse or unfocussed state of anxiety or depression, or a conversion symptom, the disorder in conduct and feeling is merely the sign-language of a system of ideas,—which forms the nucleus of the neurosis, and which may in turn become the source and focus of secondary disturbing emotions.

The experimentally induced disturbances in animals are quasi-neuroses, not in any true sense identical with human neuroses,—not unless we are to use this word to indicate something wholly different from that which the term means in human psychopathology. In the laboratory, what has been produced are primarily disorders of affects in the nature of more or less agitated depressive reactions and, although similar emotional states often occur in the course of neuroses, they arise as a product of the inhibitions and frustrations which result from the nuclear neurotic ideas and not as primary disturbances. In other words, more than one path can lead up the same mountain, and whereas a lower animal may be precipitated into a disturbed affective state by being forcibly confronted in the laboratory with problems which he cannot solve, a human being creates his own insoluble dilemmas by coming under the domination of unconscious conflicting ideas and impulses which he can neither resolve nor escape. These form the nucleus of his

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neurosis and not the emotional impasse which may result and which can be imitated so readily in the laboratory. Thus the imitation in animals of the emotional states which attend neuroses in man is not the experimental production of the essence of the neurosis itself.

The primary rôle of unconscious ideas in the production of human neurosis is not a theory, but a fact which has been demonstrated experimentally in human beings. It was first demonstrated many years ago in the crude early experiments with hypnotism. It has been demonstrated repeatedly in more recent years by more complicated and refined experiments which make use of the same technic. And, finally, it has been possible to demonstrate it in the course of psychoanalytic sessions. The earliest work with hypnotism can be traced far back; but the more objective recent period begins in the clinic of Bernheim at Nancy.[1] Under hypnosis Bernheim demonstrated the power of ideas, of which the subject was himself unconscious, to produce strange acts, strange dreams, and strange feelings,—and demonstrated further the subject's tendency to find reassuring explanations ("rationalizations") for conduct for which he could not account on any reasonable conscious basis. That numerous physiological disturbances could be induced similarly was also demonstrated; but all of these phenomena were only fragments of human neuroses, experimentally induced it is true, but still far from the production of a full neurotic picture.

This, however, has been achieved more recently and has been reported by Luria[4] in Russia, by Erickson and co-workers here,[3] and by Brickner and Kubie.[2] These experiments have been of two kinds: (a) Under hypnosis a subject was told a detailed account of some event just as though it had really happened to him; then he was awakened with the command to forget the whole fictional experience; and finally he was observed and tested for the evidences of this forgotten experience as it manifested itself in his speech and conduct throughout the succeeding days. By experimentally implanting in this way an unconscious "memory" of deeply disturbing "experiences," full-fledged neurotic pictures have been produced,—e.g., hypochondriacal states, obsessional ideas, anxiety states, depressive guilt reactions, etc. (b) The second type of experiment has been to give a hypnotic command which brings the subject into sharp conflict with some pre-existing prejudices or preferences, thus tum-

bling him into a state of tense inner conflict out of which neurotic symptomatology was precipitated. Some of you here in New Haven may have had an opportunity to attend Erickson's vivid demonstrations of such phenomena before Dollard's seminar some years ago. (An account of those experimental demonstrations of unconscious mechanisms is now in press.)

Finally, and most recently, it has been possible to precipitate similar and even more complex neurotic explosions during the course of an analysis. Of these I will present three brief illustrations:

(a) A woman of 49 had suffered from incredibly severe and almost continuous states of anxiety ever since her fourth year. Her illness first showed itself insidiously when as a child of 3 she would become panicky if her father went down the cellar stairs. It became outspoken when at 4 her hair was cut short "like a boy's," but it incapacitated her for the first time at the age of 4½, when she developed the idea that if she looked out of a certain window some awful object would leap into or out of a barrel. Thereafter she suffered constantly for over 40 years from anxiety of varying severity, in spite of which some inner strength made it possible for her to become a scholar, a musician, a gay and endearing hostess, and the wife of an eminent cleric.

Finally she came for treatment,—and slowly the discovery was made that out of states of relative calm she could be precipitated into one of two or three distinct neurotic states. Any gesture of coldness or of seeming rejection induced an almost complete dissociation of the personality. She would suddenly become a child of 4 or 5 (her father died when she was 5½) in voice, posture, and facial expression—her very appearance changed. On the other hand, warmth, friendliness, humor, could woo her back to her adult self. Suddenly, however, this would be swept away by waves of panic, by frantic fears, and obsessional needs to take ritualistic steps to ease the pressing excitement. These states proved to be replicas of her early upsets. They rested upon the same fantastic ideas, and they could be called out and resolved at will during the course of the analysis.

(b) Again, a young mother of 35 is eagerly and intensely discussing her own mother's health, her projected trip abroad, the dangers of war and of bombings, their relationship, the conflicts between them, etc. All the while, her left hand is tapping out a wordless, personal code on her face,—picking, scratching, plucking, squeezing. She had a skin-manipulating compulsion that had almost destroyed her quite exceptional beauty. It was closely linked to her hostility to her mother, and it long defied all therapeutic efforts. But if one puts a cigarette or a piece of bread into her right hand, unnoticed by the patient, her left hand drops to her side, and rests quiet and relaxed at her waist. Remove the oral gratification, and almost instantly the automatic

manipulations begin again. When after repeated observation this is described to her, she says incredulously: "My hand has been at my side all morning; but although I ate a big breakfast just before coming here, I've been wondering why every once in a while I suddenly kept feeling hungry and kept thinking of my Father." This is not mysterious when one knows that the main treat of her childhood was to go out to eat with her father, and that she would rub his cheeks and eyes with her finger tips lovingly when they were home together, or sit by the window at sunset watching for his return and running her fingers lightly over her own skin.

(c) Our third example is from the case of a young engineer,—healthy, successful, gifted, and happily married,—but under treatment because of sudden secret uncontrollably explosive homosexual debauches. Gradually it became clear that these debauches were precipitated by a certain characteristic situation, and that in the analysis whenever this pathological moment occurred, an explosion could be predicted. Any man who was his superior professionally, or his senior in age, or who merely had greater physical size and strength represented power and authority to him. Whenever such a man excited in this young engineer the faintest touch of anger, a slow rumble of obsessive homosexual fantasies would begin which gradually would roll up until at last an uncontrollable explosion would occur. Anger against women, or against younger men, never initiated this sequence of events.

The rôle of the patient's father as the source and object of these fantastic explosions of love and hate became entirely clear in the course of the analysis and as the neurosis itself began to disappear. The emotional conflicts which these explosions induced and the states of suicidal depression which followed were tragic and dramatic, but they were not the neurosis itself.

We have briefly presented these three observations merely as samples of a type of experience which any one can confirm and duplicate in the analytical laboratory every day. They illustrate the principle that patterns of neurotic behavior have a specific ideational source and content, that they are set off whenever these ideas are stirred into action, that under conditions of controlled observation their occurrence can often be predicted and even artificially induced, and that the emotional storms which then occur are secondary to the unconscious ideational content, and to its expression through symptomatic behavior.

In evaluating such experiences, Koch's basic principle must be borne in mind,—namely that no relationship is established as causal until an association or sequence of events can be shown to be invariable. This is true whether it be the implantation of a temporary neurotic pattern under hypnosis, or the prediction or the precipita-

tion or resolution of a pre-existing neurotic pattern under analysis, or their production by any type of physiological or physico-chemical or other organic procedure. By no such device has an invariable relationship been established as yet for any neurosis. Therefore, we can conclude only that by certain measures neuroses may be simulated or produced, not that these measures are the invariable predecessors of these neuroses. The types of possible causes are being made clear, however; and that is no inconsiderable gain.

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