INABILITY IN DELIRIUM TO NAME THE PHYSICIAN'S VOCATION ON COMMAND, WITH RETENTION OF THE ABILITY TO NAME IT SPONTANEOUSLY: AN ILLUSTRATION OF HUGHLINGS JACKSON'S LAW OF "REDUCTION TO A MORE AUTOMATIC CONDITION".

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IN talking to delirious patients I have observed a curious and characteristic phenomenon: the patient, in spontaneous conversation, addresses me as "Doctor", yet when the very next moment I ask him my vocation he cannot answer correctly. I propose to show that this is not merely a capricious phenomenon without meaning, but that it demonstrates the soundness of one of Hughlings Jackson's most important principles. I have observed the phenomenon in no less than nine cases of delirium, and more than once in several. Three cases will serve as examples.

CASE 1.—A woman in a bromide delirium told me there were people in the cellar looking for her. When asked how she knew, she replied reproachfully, "Doctor, do you think my ears are *that* bad that I can't hear what's going on?" I next asked her what my work is; she replied, "Salesman".

CASE 2.—In an interview during a bromide delirium the patient many times addressed me as "Doctor", yet when asked my vocation invariably misnamed it, taking me for a "painter and decorator". For example, seeing that she looked worried, I asked what was wrong; she replied anxiously, "I don't know, Doctor, he (husband) didn't seem to be *very* sick, did he?" When I then asked what my work is, she said, "As far as I know, you're a decorator". A striking instance occurred a few minutes later when, in reply to the same question, she said, "I wouldn't know, Doctor, is it painting and decorating?" Here she addressed me automatically as "Doctor" *in the very sentence in which unsuccessfully she sought to name my vocation*. (Further examples of this extreme nature will be given in Case 3.) Later in the same interview, when I had again asked what my work is, she replied with good-natured impatience, "I told you *before*, I think you do house-painting". Thus she was aware of the frequency with which I had asked her this, but had not guessed the reason.

CASE 3.—A patient in a senile delirium gave many examples; the illustrations will be limited to those instances when she addressed me as "Doctor" in the very sentence in which she unsuccessfully tried to name my vocation. On one occasion, when asked what my work is, she replied, "I don't know, Doctor, you take receipts and things". On another occasion she greeted me, "How do, Doctor?" After

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a brief question about her health I asked, " What work do I do ? " She replied apologetically, " I never found that out, Doctor ". (What do you *think* I do ?) " You're a lawyer or a bookkeeper." On a third occasion, after saying that people had been talking of cutting her throat, she complained, " I'm *just* so unstrung, Doctor ". I immediately asked what my work is ; she replied doubtfully, " Why I *did* know it yesterday, but I forgot ; I *did* know it yesterday, Doctor ". The question was repeated, and she answered, " I *had* it yesterday, Doctor, but I'm so unstrung I forgot it ".

The seemingly incomprehensible phenomenon illustrated by these cases will become understandable when compared with a similar one seen in aphasia. An aphasic patient, as Jackson showed, is characteristically unable to repeat on command words which he utters freely in conversation. For this reason Jackson emphasized that it is not words which are lost but certain uses of words. Taking " no " as an example, he said there are three ways in which it is used (II, 134).* (1) A man may shout "No!" angrily when his child is about to make mischief, or anxiously when the child is about to make a misstep, or incredulously on hearing some astonishing news. These illustrate the " emotional " use of the word. (2) He may say it in reply to a question calling for a negative answer (" propositional " use). (3) He may say it when requested to do so (" volitional " use). Jackson observed that in aphasia the volitional use of words is impaired most, the propositional use less, and the emotional use least of all. Thus in one case (II, 134, footnote ; 177) the patient could not say " No " on request yet said it in reply to the question "Are you ninety years old ? " and shouted it angrily when his child misbehaved.

The foregoing sequence, from emotional to propositional and then to volitional utterance, is a sequence from most automatic (least voluntary) to least automatic (most voluntary).† The automaticity of a function may be measured by its independence of the subject's attention. Those functions are most automatic which take place even when his attention is far removed from the function in question. When a man shouts " No ! " on seeing his child about to touch the fire, his utterance obviously is highly automatic ; he does not stop to choose his words but speaks " without thinking ", his thoughts being not on his words but on his child. When he says " No " to a question calling for a negative answer, the utterance again is highly automatic (though less than in the previous instance) ; in ordinary conversation one does not pause to think of the simpler words one uses, but one uses them automatically ; one thinks less of the words to be used than of the thoughts to be expressed. When, by contrast, a man says " No " because he has been asked to, his act is highly voluntary ; at the moment in question he has forgotten all else and the saying of "No" is at the centre of his attention. It was one of Jackson's

* Bracketed figures refer to volume and page of the *Selected Writings of John Hughlings Jackson*, 1931–32 (Hodder & Stoughton, London).

† "Automatic " and " voluntary " are inverse terms. See my paper, " Degrees of Automatic Action : Some Psychiatric Applications of Hughlings Jackson's Concept of ' Reduction to a More Automatic Condition ' ", *Journ. Neurol. and Psychopathol.*, 1936, xvii, p. 153.

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major achievements to have shown the greater vulnerability of the more voluntary as compared with the more automatic functions. He coined the phrase " reduction to a more automatic condition " to signify loss of the more voluntary functions with retention of the more automatic.

It may seem inexplicable that a man can say " No " automatically but not voluntarily. It is inexplicable only if one takes too narrow a view of the pathways utilized in the saying of " No ". It is a mistake to assume that these pathways are limited to fibres originating in motor centres. The utterance should be regarded not simply as a muscular act, but as a reflex involving a response to a stimulus (the stimulus consisting of the " total situation " that prompts one to say the word). To take an analogy, no one, in the study of pupillary function, would make the mistake of assuming that the same pathways are excited when the eyes are exposed to light as when they are accommodated for near vision, notwithstanding that both situations produce the same result—pupillary constriction. Pupillary constriction involves not alone certain nuclear constrictor fibres, but also those pathways whose excitation stimulates these fibres to action. Similarly, there is not just one substrate for the utterance of " No ", but innumerable substrates—as many as there are situations which evoke the response " No ". These innumerable substrates, to be sure, converge into a final common path, which begins in those lower nuclei which more directly govern certain muscles. But save for this, each substrate is distinct from all the rest. Moreover, since lower centres are more automatic than higher centres, it may be assumed that the innumerable substrates in question are so arranged that the most voluntary are uppermost and the most automatic lowermost.* For example, it may be assumed that the substrates for the most voluntary utterance of " No " pass through those frontal centres whose destruction gives rise to aphasia, while the substrates for its most automatic utterance are situated too low to be interrupted by such a lesion.

Applying these principles to delirium, the patient's inability to name the physician's vocation though he spontaneously addresses him as " Doctor " is plainly no mere caprice of Nature, nor may it be " explained " as a lapse of memory, but, on the contrary, it reveals the working of a law of neurophysiology. As in the case of " No ", so in the case of " Doctor ", the word is more or less automatic, depending on the occasion when it is uttered. (1) The utterance is most automatic when employed emotionally, as when the patient in distress implores the doctor for help. (2) It is less automatic when employed as a salutation in the simple give-and-take of ordinary conversation. (3) It is least automatic (i. e., most voluntary) when the patient replies " Doctor " or uses an equivalent expression when asked the interrogator's vocation. Here he says " Doctor " with forethought, while in the previous instances he

* This is meant as an anatomical and not a morphological statement; see Jackson's distinction between these (I, 239, footnote; II, 155, 473).

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says it " without thinking ". In being unable to name the physician's vocation while at the same time he addresses him by his proper title, the delirious man clearly exemplifies Jackson's law of " reduction to a more automatic condition ".

The examples given thus far pertain to verbal behaviour, and it is well to point out that other examples could be given in the sphere of non-verbal behaviour. Two instances will suffice. (1) Jackson (II, 153) alluded to a patient (with aphasia) who could not protrude the tongue on command yet protruded it after drinking, when she licked her lips. (2) Patients with hysterical astasia-abasia may be unable to walk under ordinary conditions, yet may walk or run perfectly in escaping from danger. This example is of particular interest, as it affords an exact analogy to the case of the word " No ". From the standpoint of its automaticity there are three varieties of locomotion. (*a*) One may walk or run in escaping from danger. This corresponds to the emotional use of " No ". (*b*) One walks in the ordinary situations of life, where no powerful emotions are in question, as when one crosses the room to get a pencil. This corresponds to the propositional use of " No ". (*c*) One may walk during a physical examination when asked to do so by the examiner. This corresponds to the volitional use of " No ". The hysterical patient runs from a fire when he cannot walk on command for precisely the same reason that the aphasic patient shouts " No ! " at his child though he cannot say it when told to ; the reason is the same notwithstanding that, in the terminology of some physicians, aphasia is an " organic " affliction while hysteria is only " functional ".

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