affected in 5 cases. Fourteen cases showed atrophy, 2 none; in 10 there was no mention made of the condition. The duration varied from three months to fourteen in which complete recovery occurred. Unqualified recovery took place in 11, improvement in 7, death in 2, and the result was not given in 6 cases. It must be remembered, however, that many of these reports were probably made before the final result was known, and it seems likely that quite a fair proportion of those recorded as improved ultimately recovered.

POST-OPERATIVE NERVOUS AND MENTAL DISTURBANCES.¹

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ABOUT three years ago Dr. W. B. Kern suggested that he and I secure opinions of medical men whose observation and judgment would be valuable in estimating the potency of pelvic surgery—especially oöphorectomy—in causing nervous and mental disorders. We purposed accepting the data thus obtained as the basis of a report to our State Medical Association. Out of fifteen replies received, several denied its etiologic power, a few cited cases and denied its causative power, a few cited cases and were positive of its primary etiological importance, while the majority were sure of its power to establish nervous and mental disorders, but failed in giving evidence proving their assumption. Our intended paper was not written. When your program committee wrote the theme “post-operative,” without regional location on the body and notified me to try the case on its merits, I proceeded to secure testimony that would incriminate the surgeon. It seemed to me the evidence was adequate to convict surgery as the direct cause for many nervous wrecks and fit subjects for our insane hospitals. I heard Dr. Alfred Gordon read a paper on “Nervous and Mental Manifestations following Castration in Women,” in the Section on Nervous and Mental Diseases in the last American Medical Association meeting. The gist of Dr. Gordon’s paper, corroborated by its critics, commended surgery when the pathology demanded it and the recupera-

¹ I am indebted to the following list of physicians, also Audrey Goss, of John Crerar Library, Chicago, for personal opinions and abstracts which form the data for my conclusions: H. G. Brauerd, Los Angeles, Cal.; B. F. Bailey, Lincoln, Nebr.; Charles W. Burr, Philadelphia, Pa.; Edwin N. Brush, Towson, Maryland; Alfred Gordoo, Philadelphia, Pa.; J. T. Hay, Lincoln, Nebr.; A. F. Joons, Omaha, Nebr.; W. B. Kern, Hastings, Nebr.; William W. Richardsoo, Norristown, Pa.; M. G. Schlapp, New York; George Tilden, Omaha, Nebr.; W. A. Searl, Guyahoga Falls, Ohio; J. H. McBride, Pasadena, Cal.; G. H. Hardiog, Jr., Columbus, Ohio.

tive power of the patient justified establishing the conditions necessary by that therapeutic measure. The essayist and his audience were a unit in condemning surgery as a cure for existing psychic or neuritic conditions, and censured the surgeon who neglected or ignored the alienist, neurologist, oculist, and internist when deciding for surgery on any person of an unstable nervous system. I secured a series of abstracts from papers that were published in medical journals, both domestic and foreign, on the subject of post-operative neuroses and psychoses. Among the domestic papers the *American Journal of Obstetrics* contained an exhaustive article on alleged post-operative insanity cases. An analysis of the clinical histories there recorded failed to prove that surgery caused the mental or nervous symptoms in question. In this article was a clinical report of six cases by Dr. T. Gaillard Thomas in 1890, which attracted much attention to the subject of post-operative insanity in this country. Commenting on this report Dr. Landon Carter Gray ventured the opinion that Dr. Thomas had described a "new genus of insanity." As a matter of fact, Thomas had not described a single case with sufficient accuracy to prove that the psychic state admitted was not a logical sequence from causes other than surgery. For additional evidence to incriminate surgery as a primary cause for post-operative psychic and neuritic manifestations I obtained full abstracts from fifteen papers by German, French, Swiss, Italian, and English writers on the subject. A careful reading of all these abstracts revealed a uniformity of vagueness in their clinical reports. From a wearisome amount of testimony investigated the evidence did not prove more than a negligible percentage of post-operative mental or nervous disorders primarily traceable to surgery. One noticeable fact established by the evidence is the gradual disappearance of post-operative insanity since the advent of aseptic surgery. Cleanliness during a surgical operation is more easily obtained than we are sure will be maintained during all the after-treatment. Post-operative nervous and mental disorders are rapidly becoming an avoidable accident. Either sepsis, the administration of some drug, or poor judgment by the surgeon who operated on a patient ripe for a mental or nervous collapse caused them. Of these three possible factors the latter is probably the most frequent ultimate cause for post-operative psychoses or neuroses. If the pathology of the case warrants surgical treatment only the imminence of a mental or nervous disorder more serious than the affliction which surgery may relieve should weight against that procedure. An artificial leg may be preferable to a tuberculous joint; surgery effecting complete drainage of sepsis from a cavity, or enucleating a cancer that spells much suffering and certain death, may be more objectionable to the patient than a neurosis or psychosis from which recovery is possible. Any disorder of the nervous

system developing soon after a surgical operation is a complex affair evolving symptoms varying in degree and differing in type. It is questionable if the term post-operative insanity has any just claim as a clinical entity in medical literature. The fact that it appears in a few days or weeks subsequent to some surgical operation is alone responsible for its coinage. The same observation applies to traumatic neurasthenia, also the antepartum and lactational insanities. To that list may be added the post-typhoid neuroses and psychoses, for they are no less frequent than the post-surgical cases. The content of the nervous or mental syndrome incidental to a surgical operation, an accidental trauma or the parturient period, is not essentially different from nervous and mental symptoms evolved when no one of these conditions prevail. Removal of the germinal glands prior to the reproductive period of the animal prevents its complete masculine or feminine development, but facts are wanting to prove that it initiates nervous and mental disorders. If during the reproductive period the possibility of parentage is eliminated by gonococci or spirochetes the evidence of experience ineliminates them as primary factors producing nervous and mental disorders. The cases are numerous where surgery alone relieves the already barren women of destructive and painful conditions initiated by venereal infections. It is sometimes a mark of social distinction to have undergone a surgical operation. The surgeon's knife may easily become the "scape-goat" bearing silent testimony to ease the remorse and suffering directly due to moral turpitude. If from any cause the power to conceive—or power to impregnate—is destroyed prior to its normal termination the mental impress of lost parental power certainly tends to initiate nervous and mental disturbances. I think it possible and quite probable that in the majority of post-operative nervous and mental disturbances the forces making surgery necessary were more potent than the operation in evolving such conditions. Were we to balance the evidence in which surgery established relief from nervous and mental disorders against that proving it the direct cause of them, I think the advantages from the wise exercise of surgery would far exceed the disadvantages it may precipitate.

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A STUDY OF THE URINARY NITROGEN AND SULPHUR PARTITION IN A CASE OF RHEUMATOID ARTHRITIS TREATED WITH INTRAVENOUS INJECTIONS OF RADIUM SALTS.

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I. INTRODUCTION. It is of great interest to establish the effects of radium on metabolism. This paper contains a study of the effects of radium given intravenously on the urinary nitrogen and sulphur metabolism. But little work has been done from the metabolic standpoint. Gudzent¹ claimed to have found a disappearance of uric acid from the blood after inhalations of air containing 2 to 4 Maché units of radium per hour. He also claimed the emanation of radium caused an increase in the solubility of sodium urate. Kerb and Lazarus² found that radium emanation had no effect on the solubility of sodium urate. Kehr³ claimed that radium emanation caused a mobilization of uric acid in the body. Knaffl-Lenz and Wiechowski⁴ found no increase in the

¹ Berl. klin. Woch., 1911, xlviii, 2098; Zeit. f. klin. Med., 1913, lxxviii, 266.

² Biochem. Zeit., 1912, xlii, 82.

³ Arch. f. Verdauungs-Krankh., 1913, xix, 98.

⁴ Zeit. f. physiol. Chem., 1912, lxxvii, 325.