3. *Retrospect of Normal Psychology.**

By Havelock Ellis.

German Psychological Laboratories.

The first psychological laboratory was established by Wundt at Leipzig about fifteen years ago. There are now four in Germany, sixteen or more in America, two in England, while France, Italy, Switzerland, Belgium, Holland, Denmark, Sweden, and Roumania each possess one. M. Victor Henri has recently been examining the present position of the German laboratories ("Les Laboratoires de Psychologie Expérimentale en Allemagne," "Revue Philosophique," Dec., 1893). Wundt's, founded in 1878, is still the most important. It consists of eleven rooms, and is fully supplied with instruments for the investigation of the various forms of sensation, the duration of mental processes, the time-sense, etc. Wundt's assistants are Külpe and Meumann, and last year there were 22 students. The laboratory is always open (except on Sundays) all the year round, and the student spends six or sometimes twelve months familiarizing himself with the apparatus and serving as a subject for experiment before himself undertaking any investigations. An original investigation seldom occupies less than six months, usually over a year. The results are published in Wundt's "Philosophische Studien." During the past year there have been studies made of colour perception and quantitative relations of colour contrasts, of geometric illusions, of the appreciation of distance by movement of the arms, of the sensation of taste, the time-sense, the influence of rhythm on the pulse and respiration, on associations, on the production of vibrations from one ear to the other, and on some aspects of the æsthetic emotions.

The Göttingen laboratory was founded in 1879 by Müller. For some years it was Müller's private property, but is now subsidized, as is Wundt's laboratory. There are five rooms, and so far as apparatus is concerned the laboratory is even better off than that at Leipzig; but there are very few students, only two last year. This is attributed partly to the difficulties made at Göttingen over receiving a psychological thesis for the doctorate, and partly to the fact that this laboratory is still little known. Investigations carried on here are published in "Pflüger's Archiv" and in the "Zeitschrift für Psychologie u. Physiologie d. Sinnesorgane."

* The remarkable progress which is now being made in psychological investigation by strictly scientific methods is tending to bring psychology into line with psychiatry. The psychologist's work is, therefore, constantly becoming of greater interest to the psychiatrist, and it is proposed to summarize from time to time some of the current work in normal psychology.—[Ed. "J. M. S."]

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The Bonn laboratory was established in 1888 by Martius, to whom it belongs. There are seven excellent rooms, and the apparatus are the same as at Leipzig; in fact, the laboratory, on the whole, resembles that at Leipzig, though on a smaller scale, and its work is published in the "Philosophische Studien." There are, however, not many students, for the same reasons as at Göttingen.

The Berlin laboratory was founded a few years ago by Ebbinghaus. It has no regular subsidy, and is chiefly organized for psychological demonstration. There were eight students last year, but no original work has yet been done. Ebbinghaus hopes that the laboratory will soon be extended, and that original work will be produced.

Psychology in America.

Dr. Henry de Varigny, an accomplished biologist whose scientific interests are by no means confined to his own special department of biology, has lately published an attractive volume concerning the matters that drew his attention during a visit to the Chicago World's Fair ("En Amérique: Souvenirs de Voyage et Notes Scientifiques," Paris: Masson, 1894). Being already acquainted with the United States, he had a keen eye for novelties, and one of the matters which chiefly impressed him was the recent advances in experimental psychology. He devotes an interesting chapter to the laboratory of experimental psychology at the Exhibition. This was under the management of Professor Jastrow, and to some extent indicates the psychological resources of Professor Jastrow's own University of Wisconsin. The laboratory contained a full supply of psychological apparatus, which was exhibited in action for anyone who desired; M. de Varigny was especially interested in Jastrow's automatograph. This is a glass plate resting on three metal balls, thus rendering it extremely mobile, and prolonged to a vertical point, which registers every movement on smoked paper. The subject places his hand on the plate, and the slightest unconscious movement of the hand is then registered. This apparatus has already yielded many interesting results regarding the influence of mental action in producing involuntary movement. The laboratory was not, however, set up at Chicago merely to exhibit instruments, but to obtain a valuable body of psychological data, with the help of those members of the general public who were willing to submit themselves to tests of their tactile sense, muscular sense, memory, rapidity of perception, muscular skill, etc. In a few months' time Professor Jastrow will probably have worked out his results, and they will be of considerable interest, both to the student of normal and of abnormal psychology.

Another French writer has also lately published a detailed description of one of the leading American psychological laboratories (Marcel Baudouin, "La Psychologie Expérimentale en Amérique,"

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"Archives de Neurologie," July, 1894). This time it is the laboratory which forms the chief part of Clark University, Worcester, Mass., as it at present exists, and which Baudouin compares to the great anthropological laboratory at Paris. It is presided over by Professor Stanley Hall, who, while not an active psychological experimenter like Jastrow, has a very distinguished reputation for originality and initiative, and has done more than anyone to guide the new psychological movement in America, more especially in the applications of psychology to education; he has also taken great interest in criminal anthropology. The psychological department of Clark University was founded in 1889, and is here described as a model of its kind. It consists of four sections:—(1) Laboratory of neurology, with two rooms; (2) laboratory of anthropology, with two rooms; (3) educational museum; (4) laboratory of psychology proper, consisting of four rooms. It is richly supplied with instruments of all kinds, and there is an excellent library. There were 18 students during 1893; they remain three years, and eventually become professors of psychology elsewhere. Many valuable studies have come from this laboratory, and, as is well known, the "American Journal of Psychology" is edited by Stanley Hall, and issued from this University. The programme of the psychology course for 1893 included anatomy and physiology of nervous system (Hodge), experimental psychology, including reflexes, sleep, hypnotism, automatism, memory, attention, etc. (Sanford), morbid and abnormal psychology, including idiocy, criminality, genius, insanity, hysteria, etc. (Donaldson and Hodge), anthropological psychology, including religion, primitive arts, childhood, old age, etc. (Chamberlain and Boas), æsthetics and ethics, including music, painting, literature, and the laws of motility and will (MacDonald and Gilman), the history of psychology (Stanley Hall), and the applications of psychology to education and co-education, moral and mental hygiene, etc. (Burnham and Hall). Professor Stanley Hall fully realizes the connection between normal and abnormal psychology, and although these courses are intended primarily for students of normal psychology he takes his students every week to the lunatic asylum. Is it too much to hope that the time is not far distant when no one will venture to enter upon the psychological study of the insane without giving some attention to the normal psychology of the sane? Mental phenomena must be approached from both sides to be rightly understood, and the psychologist has led the way which the alienist must sooner or later follow.

The Psychology of Emotion.

It is only within recent years that a sound and coherent physiological theory of emotion has become possible. Until recently it has always been taken for granted that an emotion is primarily a psychic process which may produce some secondary physical disturbance. Even introspection and self-examination are enough to

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show that this cannot be taken for granted; in a sudden shock or start, so brief that the phenomena can be analyzed immediately, for instance when one unconsciously approaches a large mirror in the dusk, it will be found that there is first a brief vague period of uncertainty, then a bound of the heart concomitantly with the feeling that a stranger is in unpleasant proximity, followed by the recognition of one's own reflection. The whole process may take place in about a second, and it is practically impossible to decide whether the feeling of emotion or the cardiac disturbance comes first; all that can be said is that they seem to be synchronous. According to a theory which is now rapidly gaining ground, and which is of the greatest interest to the alienist, the psychic emotion does *not* come first, the vaso-motor and motor disturbance follows directly on the perception, and the emotion in consciousness is a secondary result. The physiological investigations of Mosso with the plethysmograph, etc.—showing that external impressions produce vaso-motor disturbances so delicate that in their slighter forms they never reach consciousness—have chiefly paved the way for what is now usually called the vaso-motor theory of emotion, although Mosso did not himself formulate it. This was done about ten years ago by Professor William James, of Harvard, and Professor Lange, the Danish physician, working independently of each other, but both stimulated by Mosso's researches.

In "Mind," where Professor James first stated the theory, a criticism of it has lately appeared (D. Irons': "Professor James' Theory of Emotion," January, 1894). Unfortunately, however, for the writer of it, the problems of modern psychology require something more than a merely logical equipment; they require a very considerable physiological and even pathological equipment, of which Mr. Irons is obviously innocent. He takes for granted that "coarse" physical disturbances cannot produce "delicate" emotions, regardless of the fact that the physical disturbances may be too delicate for the psychic apparatus to register. And he also assumes, without even question, that melancholia has no physical basis. It is evident that a writer with such notions is not competent to discuss the nature of emotion. Something else is required than mere logical quibbling.

Of far greater value, because experimental in character, is a contribution to the same subject by Dr. Paul Sollier, the author of the remarkable book, "Psychologie de l'Idiot et de l'Imbécile" ("Recherches sur les Rapports de la Sensibilité et de l'Emotion," "Revue Philosophique," March, 1894). Dr. Sollier, after briefly describing the theory of James and Lange, refers to a case of general anæsthesia which he has had the opportunity of investigating. According to the vaso-motor theory, as James recognized from the first, any extensive degree of anæsthesia should diminish emotionality. This case was that of a man with bad nervous heredity, who had been gradually invaded by anæsthesia until

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there was complete abolition of tactile sensibility on the skin and mucous membranes, analgesia, complete loss of muscular sense, loss of feeling in stomach, rectum, and bladder, disappearance of cutaneous and tendinous reflexes, and an advanced degree of paralysis of movement and speech. Sollier found that psychic apathy was extreme; the absence of emotion was, indeed, almost absolute, and had developed parallel with the anæsthesia. Nothing gave him either pleasure or pain; even the assurance that a cure was possible produced no sort of reaction. He loved nobody and hated nobody. The sight of his wife entering the ward alone gave him a fleeting emotion—"a blow in the stomach," as he expressed it—but this immediately passed, and he was indifferent to her presence. It occurred to Sollier that the investigation of an artificially suggested anæsthesia might throw fresh light on the question, and with this object he carried out several series of hypnotic experiments on two subjects, at the same time taking pneographic tracings of their reactions to emotion under various conditions of suggested anæsthesia. This article is chiefly taken up with a full account of these experiments, with a reproduction of the respiratory tracings. Some of the replies, Sollier found, were absolutely similar to those given by the man with general anæsthesia. He did not attempt to abolish the whole of the visceral sensibility, as there might possibly be risk of stopping the heart and respiration, but suggested that the organs should continue to act, but that the subject should not feel them. He found in one subject that when sensibility was completely abolished she was no longer capable of experiencing emotion; in the other subject the anæsthesia produced was less deep, and a slight degree of emotional susceptibility persisted. Peripheral sensibility was found to be of far less importance in the causation of emotion than visceral sensibility. Sollier here recalls those hysterical cases with visceral phenomena, especially anorexia (involving anæsthesia of the stomach, etc.), in which, also, there is great loss of emotional susceptibility. He finds that his experiments "fully corroborate the opinion that the part of organic visceral sensibility, better called cœnæsthesia, predominates in the production of emotion." Sollier finally suggests that there is identity of mechanism between emotion and the muscular sense. One is the conscious perception of voluntary movements, the other of involuntary movements. The whole paper should be read, although it must be borne in mind that such experiments with hypnotized subjects, while very suggestive, are always too uncertain to carry much weight, taken alone.

Finally Mr. James, in a very fair and moderate paper ("The Physical Basis of Emotion," "Psychological Review," Sept., 1894), sums up the present state of the question, duly considering all the arguments which have been brought for and against the vasomotor theory. More facts are needed, and the alienist, by

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bringing forward careful observations of pathological emotional states, and the organic conditions—sensory, vasomotor, visceral, etc.—associated with such states, is probably in the best position to supply the evidence required.

Hallucinations among the Sane.

The latest publication of the Society for Psychical Research ("Proceedings," Part xxvi., Aug., 1894) opens with the address by the President, Mr. A. J. Balfour, an admirable plea for the scientific study of the psychic phenomena which he regards as rudimentary beginnings of senses, "beginnings never developed and probably never to be developed by the operation of selection." The greater part of the volume (not less than 400 pages) is devoted to the "Report on the Census of Hallucinations" by the committee appointed at Paris in 1889, and presided over by Professor Henry Sidgwick. The report deals with 17,000 answers obtained by 410 collectors. All the precautions possible in the case of a census so extended were adopted. A considerable proportion of the collectors were trained psychologists or medical men; it was found that the more scientific collectors obtained a percentage of affirmative answers somewhat over the general average, not, however, as regards visual hallucinations, but auditory and tactile, showing that the difference was merely due to their care in inquiring for the more trivial phenomena. The committee have carefully considered the circumstances of each case wherever possible, and transferred over 500 affirmative answers to the negative side. After these and other corrections it is found that the percentage of affirmative answers is 9·9 (men, 7·8; women, 12·0). Visual hallucinations are in a great majority, the auditory much less numerous, while the tactile form only a small proportion. In most of these respects (but not in the preponderance of visual phenomena) the census agrees with the results of a much less extended investigation carried out by Mr. Gurney some years ago. An attempt has been made to exclude hallucinations occurring in the course of disease, but a very large number remain in which the subject was suffering from worry or anxiety, or a certain degree of ill-health; these cases were sifted by Dr. Myers. So far as possible, also, pseudo-hallucinations (*i.e.*, those not fully externalized) and *illusions hypnagogiques* (in the half awake state) are excluded. It was found that hallucinations tend to assume familiar forms, and that a state of repose (like lying in bed) predisposes to their appearance. The committee conclude that the great bulk of hallucinations are central and not dependent on the condition of the sense-organs. It should be added that a considerable portion of the latter part of the report deals with phantasms of the dying and similar phenomena, and the committee "hold as a proved fact" that (as they emphasize it)

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"*between deaths and apparitions of the dying person a connection exists which is not due to chance alone.*"

It cannot be expected that all these conclusions will carry general conviction. It is to be regretted that the committee was not so constituted as to carry weight with the profession which until recently cherished the idea that hallucinations came exclusively within its own sphere. The only medical member (Dr. Myers) died before the report was completed. Some degree of searching medical inquisition (though the difficulty of this in most cases must be admitted) would have added to the value of the cases. Persons known to the collectors as once within an asylum have been excluded, but there are many insane persons in the community who in their own opinion, and often in that of their friends, are in good health. It would be interesting to know what connection, if any, there may be between hallucinations and the condition of puberty, menstruation, the menopause, etc.—points not once mentioned. In reading these cases one constantly desires more precise information regarding the physical and mental condition of the subject at the time, information which is usually difficult to obtain.

The report is admirably drawn up and a large part of the evidence on which it is founded is reproduced; it is full of interest and suggestion to everyone who is concerned with either normal or abnormal psychology.

Paramnesia.

Paramnesia or false memory—the illusion that the experience one is now passing through had happened to one before—has recently been much studied by psychologists, though it has scarcely yet received any satisfying and definite explanation.

Lalande ("Des Paramnésies," "Revue Philosophique," Nov., 1893) found of 100 persons interrogated, 30 knew the phenomenon in a form which seemed to exclude any confusion with a mere imperfectly recognized resemblance to a real experience. He does not regard it as pathological. The key is to be sought in a double perception, at first unconscious, then conscious. He thinks the first perception may sometimes be an unconscious telepathic impression.

Dugas ("Sur la Fausse Mémoire," "Revue Philosophique," Jan., 1894) brings forward a number of cases from life and literature, and after expounding one or two theories which he had adopted and then found insufficient, he concludes that we are still ignorant, and must be content to bring forward new facts. He does not believe that the phenomenon is pathological, but he adds that it seems to be allied to neurosis. He has usually found it in persons whose intelligence is above the average, persons with a strain of originality, and it sometimes appears to be hereditary.

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