

creted by the intestinal mucous membrane, bile, sweat and kidneys.

Luton has found the drug of value in the treatment of suppuration and in incipient phthisis. He advises the following formulæ: $\mathcal{R}$ Neutral copper acetate gr. 1-6; sod. phosphat. crystall. gr. 5-6; licorice and glycerine enough to make a pill. Also, $\mathcal{R}$ Neutral copper acetate gr. 5-6; sod. phosphat. crystall. gr. 8 1-2; acacia mucilage and water, of each two ounces. He gives the following formula for hypodermic use: $\mathcal{R}$ Freshly prepared copper phosphate 1 part, water and glycerine each, $2\frac{1}{2}$ parts. These are to be mixed just before administration.

Liégeois also thinks that the toxicity of copper is much overestimated. He believes it to be a tonic alterative nervine. He finds it of great value in chlorosis given as advised by Luton.

Many Chicago physicians use it now with wonderful success, especially in the present adynamic form of scarlet fever and diphtheria. Intubation or tracheotomy is rarely needed. Paralysis in diphtheria seldom occurs when cuprum is given early. These effects have been erroneously attributed to the fact that only mild cases not the malignant are seen. Cuprum is doubtless an alterative and antiseptic of the highest order—safe, sure and prompt, when used with the proper indication. Mercury, salicylic acid, carbolic acid and salol are most excellent antiseptics, but are not safe in asthenic conditions as they may do irreparable harm before the contra-indications are recognized. In the neurasthenic types of infectious diseases cuprum appears to prevent sepsis and secure the mild course. It has been surmised that it may carry ozone into the system as iron carries oxygen. The typical indication for cuprum is generally grayish complexion, sunken features, small, soft, wiry pulse and very acid urine, which usually is rather light colored and often full of urates, and the early appearance of severe nervous disorders, convulsions, hallucination, delirium, prostration, etc. * * *

If the urine by copper becomes darker and alkaline, anemia is indicated and iron is the remedy. * * *

In acute cases cuprum is the sovereign remedy and preferable to other stimulants as it does not excite the heart or brain like most of those though it fulfills about the same indication (while zinc, termed by Rademacher "mineral opium," differs essentially, as in electricity, and acts more like the bromides). Cuprum accelerates suppuration more than anything else, both internally and externally; quinsy, mastitis, felons, parametritis, boils, buboes, etc. In carbuncles I have seen it revitalize the entire lump most wonderfully. In syphilis intolerant of mercury, it has often acted like a charm.

For tapeworm it is a very efficacious remedy. I have frequently seen it act with great certainty after other well-tried remedies had failed. I here generally subscribe: Cupri oxid. nigr. 2.0; ext. gent. q. s. ft. in 30 pills; S. 1 pill four times daily. I prohibit acid food and drink during the week. The worm is then completely expelled, mostly without being observed. The sulphate I usually prescribe as follows: Tr. cupri acet., 5.0; aq. font., 150.0; syr. aurant., 25.0; one tablespoonful every two or three hours for adults, while for children commonly: Tr. cupri. acet., 2.0 to 5.0; syr. aur., 10.0; aq., 100.0; teaspoonful at a dose. When I can not obtain it I use cupri sulph. in very small doses. For external use I prescribe mostly black oxide of copper, 1.0; lard, 30.0 (not cosmoline). I very seldom see any nauseating effect from it and hail this as a good sign of vitality.

Dr. Geo. Taylor Stewart, Chief of Staff, reports 665 patients treated at the W. L. Hospital during October, with a death rate of 2.44 per cent. For the ten months ending October 31st, 4,137 patients were treated, with a death rate of 5.54 per cent.

PHYSIOLOGIE PSYCHOLOGIQUE.*

Un calculateur prodige, Inaudi, par I. M. Charcot, de l'Institut.

Jacques Inaudi was born at Onviato (Piemont) in 1867. His early life was passed in minding sheep. At the age of six years he showed, for the first time, a passion for figures, which has steadily continued. The majority of precocious children who begin to calculate at early life, and before learning to read and write, usually count upon their fingers, or in some other simple way. But the young Inaudi did not represent in this way the combination of figures or numbers which he carried in his head. He was taught by his brother, who recited them to him, and in this way he retained them. It was by this curious circumstance that the processes of calculation produced their effects upon him, as will be indicated further on, and, thanks to his prodigious aptitude in this way, he made rapid progress. In 1880 he was presented to the Anthropological Society of Paris by M. Broca, who, after analyzing his methods of calculation, added: "He does not know how to read or write. He carries the figures in his head, but can not write them. Under the influence of continual exercise, he has enlarged his sphere of calculating operations. At twenty years of age he learned to read and write, and, although his tardy instruction still continues rudimentary in a great many respects, he yet exhibits a bright and lively intelligence, and his character and demeanor are amiable and modest. He is now twenty-four years of age, of small stature, but robust and of general normal conformation. The cranium, "plagiocéphale," presents in front a slight right frontal projection, laterally, a similar left parietal protuberance, and at the posterior part of the inter-parietal suture there is a longitudinal crest formed by the elevated right parietal bone. His ears are symmetrical and project slightly from the head; face somewhat symmetrical, the right side being smaller than the left; facial angle (89°). The other cranio-facial measurements present no remarkable anomaly. Careful examination of both vision and hearing discovers neither alteration nor deficiency of these organs." The commission was particularly desirous of throwing light upon the psychological powers by which Inaudi was enabled to solve complex problems by a purely mental operation—that is to say, without having recourse to either reading or writing. Doubtless the memory must, under such circumstances, fill the principal rôle, without its being the faculty for calculation, for it is necessary that he should retain the details of the problem, and its partial solution until a definite solution is reached. Then it seemed to the commission that its first care should be directed to the investigation of Inaudi's memory. In the category of extraordinary partial memories, the hypermnesia, or acute recollection of figures or numbers, occupies in some respects the first plane. It is that one, at least, which, by reason of its apparently simple conditions of appreciation, most attracts the attention of observers. Of this Inaudi furnishes a most remarkable example. The interrogations and experiments to which he has been subjected have clearly shown that in him the memory of colors, forms, events, localities, music, etc., is but moderately developed—indeed, to a less degree than normal.

He does not appear to present any special aptitude, except for figures and numbers, for which latter he exhibits such a remarkable memory. He often dreams of figures, of numbers, and of calculations, and sometimes during sleep solves problems which he is incapable of solving when awake. These are the only dreams of which, on awaking, he has a distinct recollection, while those of the ordinary events of life make but a transient impression. In order to ascertain the extent of Inaudi's memory for

* Translation from "Le Progrès Médical," by J. A. Carmichael, M. D.

figures, and to compare it with some other memory, viz., for letters or words, he was requested to repeat a certain number of such of them as were pronounced in his hearing, and he showed himself unable to reproduce more than five or six, nor could he recall, after hearing them, two lines of prose or poetry. But he could, without fatigue or hesitation, and with absolute precision, repeat a long series of figures, varying, for example, from 25 to 30, and which had been only once announced to him. He reproduced the series at will, whether in the order in which they had been given to him or in an inverse order, and, if desired, could recollect them for many weeks. At the end of a meeting of the commission, during which many problems had been proposed to him, Inaudi could repeat, without the slightest error, all the figures and the order in which the problems had been arranged. The figures reached to 232, and at another meeting to 400. The extent, the precision and the versatility of his special memory for figures have given rise to experiments, too numerous to detail, which have clearly demonstrated that, as respects his memory, Inaudi is equal if not superior to the wonderful calculators who have preceded him. A single example will suffice to give an idea of his facility. Cauchy, in his interesting report, relates an experiment of calculation to which a commission had subjected the calculator Moudeux, and which took him five minutes to solve. Inaudi performed the same feat, purposely more difficult, in exactly twenty-nine seconds. Another question relating to the memory for figures, has engaged the attention of the commission, and it relates to the nature of the mnemonic images employed by Inaudi to represent the numbers in his operations. The investigation of this psychological process has yielded an important result which should modify current ideas upon the methods of great calculators. If one consults some of the biographical reports of the most celebrated calculators of the present day, and which may be found in a recent article by Mr. Scripture on "Arithmetical Prodigies," it is seen that calculators, from their own testimony, employ as the principal basis of their own mental operations the visual memory. At the moment that the details of the problem are announced to them, they perceive an internal vision, as it were, of the numbers announced, and these numbers, during the whole time necessary to the operation, remain before their imagination as though written upon a fictitious tablet before their eyes. This was the visual process employed by Moudeux, Colburn and all who have explained clearly their method upon this subject.

Bidder, another eminent calculator, has written in his memoirs, that he could not comprehend the possibility of a mental calculation, without this faculty of representing the figures as though they were seen. It appears moreover, from the researches of M. Galton, that many calculators operate by visual images, in which figures are written in lines or groups, whose forms vary in different individuals. Number forms. Inaudi does not appeal to mental vision, but to mental audition. His own testimony, and the attitude he assumes during his calculations and the different proofs to which he has been subjected, leave no doubt in this respect. When interrogated by the commission as to his own subjective impressions, he answers, without hesitation, thus: "I hear the numbers, and my ear retains them. When I make an effort to remember them, I hear them resounding within me with the same tone as my own voice, and I continue to hear them the best part of the day." On a subsequent occasion, the commission returned to this important question, and Inaudi repeated his first assertion with much clearness and intelligence. "I do not see the figures," said he. "Indeed, I would say that I have much more difficulty in recollecting numbers and figures when they are communicated to me by writing than by speech, I find myself embarrassed in the first case, and I do not like to write

figures, for to write them would not help me to remember them, I much prefer to hear them spoken." On another occasion Inaudi made this remark—useful to retain—that having learned to read and write only since four years, he could not, before that time, represent to himself the written figure, for he did not know it. The commission has verified the truth of this assertion by many trials. It is certain that Inaudi calculates with more facility when the details of a problem are communicated to him by speech, than when written and placed before his eyes. The sight of the written figures embarrasses him, and then returning to his natural methods, he recites to himself in a high or low tone, the numbers which he desires to retain in his memory. It is observed, too, that when a series of figures is repeated to him, it is necessary for him to articulate them in a high tone of voice, so as to fix and keep them in his memory, and while engaged in so doing, as also while calculating, he is heard to mumble, with great rapidity, the numbers of the figures. Articulation of the numbers forms an integral part of his processes of calculation, and every artificial experiment that interferes with the movement of articulation impedes the calculation, and makes it less exact. The conclusion arrived at is, that Inaudi differs from the majority of calculators by not employing the visual memory in his mental operations, but has recourse to auditory images, and the motor images of articulation. Which of these two elements predominates? Is it the motor or sensory? It seems very probable that the articulation or enunciation of the figures only serves to reinforce the internal auditory phenomena, which necessarily take precedence, this is the opinion of Inaudi himself. The commission after having determined the precocious characteristics of M. Inaudi, and the ability for calculation exhibited in the histories of celebrated calculators, asks the question as to the influence of the anthropological conditions under which this young calculator came to be developed. It is well known that in certain cases where individuals have appeared to be endowed with remarkable aptitudes or powers, that other members of their families have shown either analogous abilities—as, for example, in the families of distinguished musicians—or the phenomena manifested by a neuropathic heredity. The inquiry opened by the commission upon these important questions, has unfortunately given negative results in a great measure. The heredity, although carefully investigated, revealed only certain unimportant peculiarities and irregularities of character in the paternal ancestor. It does not appear that the brothers of M. Inaudi, or other members of his family, have ever shown special aptitudes of any kind whatever. His personal antecedents have no special interest, and the anthropological examinations to which he has been subjected, have only brought to light, as we have seen, a few, and unimportant indications. The commission expresses the hope that the attention of observers may be awakened to the future solution of these questions, and careful consideration given to all family, and other influences that can aid in the development of abnormal and remarkable psychic faculties.

Removing Superfluous Hair.—Dr. Van Allen highly recommends the following prescription for removing superfluous hair (*Med. Record*, Sept. 19, 1891):

Powdered air-slacked lime..... 3 i.
Orpiment (arsenic trisulphide, As_2S_3)..... Gr. ij.

Add water enough to form a paste, and mix. Apply to the hairy surface about a quarter of an inch thick. Allow the paste to remain for fifteen or twenty minutes, when it will be dry. Remove; and the surface which before was hairy will be as smooth as the palm of one's hand, the hair coming off with the paste. The skin may or may not be slightly reddened, but this redness will pass away within an hour or so. After a few days the eaten-off ends of the