of the dominant hemisphere and not disturbed by comparable lesions in the subordinate hemisphere. The authors offer the hypothesis that a failure to acquire the usual degree of unilateral cerebral dominance lies at the back of many instances occurring in children and young adults of a specific inability to master the art of writing.

Among older children who have been given training in writing for several years, and yet have made very indifferent progress in it, several groups may be recognized : (*a*) Those with evidence of damage or injury to the pyramidal or extrapyramidal motor system, e.g., "birth injury", spasticity of Little's disease, etc. ; (*b*) obvious sinistrals who have met difficulty because of training unsuitable to their needs ; (*c*) a third and the largest group is composed of children whose difficulty in writing coexists with other problems due to failure in aquisition of clear-cut unilateral dominance. These cases are intergrades between dextrals and sinistrals.

Methods of testing for latent left-handedness are described, and illustrations given of cases with the results of such tests. There follows a description of the best method of re-training cases in the use of the hand controlled by the dominant hemisphere. J. L. FAULL.

A Study in Aphasia. (*Arch. of Neur. and Psychiat., vol. xxxi, p.* 1, *Jan.*, 1934.)
Weisenburg, T. H.

The author carried out a four years' research on aphasia. His material consisted of 314 patients, of which 234 were examined in detail. Of these, 60 aphasic patients were chosen for the study. Extensive mental tests were carried out. A control group of 85 normal individuals of the same social and educational class was used. The author came to the following extensive conclusions :

(1) Aphasic disorders never consist of simple losses in one form of language, such as speaking, reading or writing. There is always a more complicated and extensive change, and this is the natural result of the complexity of the language-process and the extent to which it permeates thinking.

(2) There are apparent in many cases psychological changes beyond those which can be ascribed to the specific language disturbances. The term "aphasia" must be understood to represent a group of disorders occurring with the cerebral lesion, the majority but not all of which are changes in the language process.

(3) The most satisfactory classification of the aphasic disorders is that based on four divisions—the expressive, the receptive, the expressive-receptive and the amnesic. Of these, the amnesic represents the only fairly clear-cut syndrome. The first three are each descriptive of groups of disorders. The disorders of the first two groups are only predominantly expressive or predominantly receptive ; in the expressive there is always some degree of limitation in receptive functions, and in the receptive there are always some defects in speaking and writing.

(*a*) The predominantly expressive disorders handicap speaking and writing more seriously than the receptive functions. They are characterized most obviously by defects in articulation and word-formation, but they may involve extensive changes in many language and non-language performances.

(*b*) The predominantly receptive disorders involve relatively serious defects in the understanding of spoken language or of printed material. Expressive disturbances also appear, but are almost always less prominent than the receptive—they consist largely of verbal and grammatical confusions.

(*c*) The expressive-receptive disorder is a severe limitation in all language processes, with or without considerable disturbance of non-language performances.

(*d*) The amnesic disorder is a fundamental difficulty in evoking words as names for objects, conditions or qualities, and is manifested in many language responses.

(4) Within the expressive, the receptive and the expressive-receptive groups there are great differences in the extent of the disorder in individual cases. In

some the relatively simple expressive mechanisms or receptive functions seem to be more disturbed than the higher and more complicated aspects of the language process. In the others, when there is more extensive and proportionate deterioration in all parts of the language process, non-language performances are well preserved in some and considerably disturbed in others.

(5) It is apparent that aphasia is not a unitary disorder, but a group of disorders representing different types of disintegration within the language process, and sometimes involving changes in mental functioning beyond the language process.

(6) (*a*) Apraxia the author limits to disturbances in familiar and more or less automatic acts, which do not depend on sensori-motor defects.

(*b*) Agnosia he limits to disturbances in the perception of formerly well-known objects, forms and sounds, when there are no sensory defects to explain the disturbances.

(7) There are two types of apraxia, one involving movements of the muscles of speech, and the other, familiar acts, such as manipulating an object or winking. The first type is the only apraxic condition which appeared in the clear-cut cases of aphasia. Some of the aphasic patients were unable to take positions of the lips, teeth and tongue at command or by imitation when the production of actual sounds was not in question. The apraxic symptoms of the other type appeared in cases of general deterioration with aphasia or in cases of bilateral lesion.

(8) Agnosic disturbances in the recognition of well-known sounds other than speech sounds, of objects or of forms, other than letter symbols, were not found in patients of the aphasic group. Probably agnosic disturbances, as defined, do not occur in clear-cut cases of aphasia. They may, like the apraxic disturbances of the second type, occur in cases of general or extensive cerebral deterioration.

(9) From the standpoint of localization there was definite evidence of the site and extent of the lesion in three cases in which autopsies were obtained, and some idea of the localization of the lesions in eleven other cases of tumour, and in seven traumatic cases. Analysis of the side where the lesions appear in relation to handedness shows that the dominance indicated by handedness is a criterion of the crucial hemisphere for speech in about 95% of the cases. The lesions were preponderantly in the anterior portion of the brain and to a less extent in the parietal and temporal zones. In the receptive cases as a group the neurological symptoms also indicate a preponderant implication of the anterior part of the brain, but less than in the expressive cases, and with a greater involvement of the parietal and temporal zones.

In the expressive-receptive cases the neurological symptoms point strongly to implication of the anterior part of the brain, but because of the patients' great language difficulties, little can be determined about the extent to which the posterior areas are involved.

In all the amnesic cases, the lesions consisted of tumours, four of which were large, slowly growing gliomas. These cases emphasized the fact that a relatively specific language disorder can occur with extensive lesions, and pointed to the importance of the nature of the lesion. Language disorders go far beyond the speech process; language is the result of the unified activity of the whole brain.

G. W. T. H. FLEMING.

The Argyll Robertson Pupil. (*Arch. of Neur. and Psychiat., vol. xxx, p.* 357, *Aug.*, 1933.) *Merritt, H. H., and Moore, M.*

The authors define the Argyll Robertson pupil as having (1) absence of reaction to light; (2) miosis; (3) imperfect dilatation in response to instillations of atropine and to painful stimuli; (4) absence of reaction to vestibular stimulation; and (5) active reaction on accommodation for near objects. These five features the authors consider as due to destruction of the pupillary light reflex fibres and the sympathetic fibres. These fibres run together for a short distance in the anterior end of the brain-stem just ventrally to the posterior commissure, so that a lesion at this point would explain the phenomena. Occasionally cases with gliomatous