

## ART OF BRAIN BUILDING

Prof. Elmer Gates and His Remarkable Experiments.

### CHEVY CHASE LABORATORY

Peculiarly Constructed Building Where He Proposes to Develop and Put Into Practical Application His Discoveries as to the Development of the Mind—Experiments on Animals Lead Him to Believe the Same Can Be Applied to Mankind.

An odd looking structure west of the circle in Chevy Chase recently attracted the attention of a Post reporter. It is decidedly colonial in style, and might be taken for a church, Friends' meeting house, a library, or a suburban "Temple of Justice." "It's a lavatory (sic), "said the conductor of the car, "and they calls it the 'Brain Building.' They tells me it belongs to one of these here professors who can look through your insides and tell you what you have had for dinner, if you have had any, and can look through your head in the morning and name the brand of beer you drank the night before. If we had any dishonest conductors on this road, it would be a thing for them of the company should get this professor to examine their pockets, which I suppose he could do without their knowing it."

With this valuable information in hand The Post man went over to the funny looking house and met Contractor James L. Parsons, who designed and erected the building. From him it was learned that the structure that has excited so much curiosity on the part of the residents and visitors to Chevy Chase was a scientific laboratory for the use of Prof. Elmer Gates, under whose direction it was built. It is a one-story frame house, 30 x 140 feet, with a double pitched roof covered with metal shingles, except where a break occurs, which is taken up with a skylight of generous dimensions. A recessed porch extends across the front, and the pediment is supported on four massive columns. The whole is painted a pleasing color, and from an architectural point of view, harmonizes with the handsome houses that surround it.

#### Rooms Dark as Erebus.

On entering one is ushered into an office room and just beyond a photographic studio. Two dark rooms adjoin. In the construction of these latter apartments, the greatest care was required, in order that not even the faintest ray of light might

penetrate to the interior. First a sheathing of tongued and grooved boards was laid on the frame work, and on these three thicknesses of heavy tarred paper were fastened, and this in turn was covered by another sheathing of boards, previously treated to a coat of heavy black paint. The floors and ceilings were made in the same way, and the entire surface was given several coats of dead black paint. Each of these rooms is inclosed by a wood partition, and can be reached only through a narrow rectangular passage.

The workshop and machine shop are located in the rear part of the building. The latter will be equipped with the best wood and metal-working appliances. The engine and boiler will be placed in an isolated building not yet erected. A developing and printing room, provided with a skylight, is situated in the upper part of the house. Novel apparatus for heating and electric lighting will be employed. Nearly all the scientific instruments to be used in the laboratory have been invented by Prof. Gates, who does not confine his inventive talents to this class of mechanism. He has just been granted letters of patent to a loom shuttle [US Patent Nos. 565446 through 565449], which by the aid of electricity, makes 1000 movements a minute, and at the same time dispenses with certain attachments in use on the old-style loom. New and improved photographic instruments, designed by Mr. William Dinwiddie, of the United States Bureau of Ethnology, will be erected by that gentleman, who will make experiments in original lines of photographic researches.

“The Laboratory of Psychology and Mind Art” is the present name of the institution, but inasmuch as the term psychology does not convey the true meaning of the scientific studies that will be followed here, Prof. Gates will probably adopt some other technical term more to the point. The present building is only one of a number, six or more, that will finally comprise the institution. There are to be substantial structures of brick and stone, of modern design, and furnished with all of the most approved appliances. The location of these buildings has not been determined.

#### Professor of Brain Building.

Prof. Gates was for many years in charge of the laboratories and school of psychology and mind-art in the Pennsylvania Museum at Philadelphia. Brain building, as the doctor calls his science, has been made his life study. At his handsome home in Chevy Chase, Prof. Gates outlined to a Post reporter the course of experiments and study that would be followed at the laboratory.

“Fechner, Helmholtz, and Wundt were the first scientists to study mind-art and to measure sensation. This was half a century ago,” said the Professor. “Their research in this hitherto unknown field was entirely experimental and limited. For some time I had

noticed that under certain environmental conditions my brain was more active than at other periods. For two years I made a careful study of myself and kept a faithful record. In one column I noted climatic and atmospheric conditions and meteorological phenomena; in the second column I recorded my personal physical state, and in the third my mental condition.

“I found that under given conditions my brain was materially more active. I could compose and write more intelligently, my inventive faculties were more in evidence, and I could study with better results, as my memory was more retentive. After making these deductions I worked only when environmental conditions were most favorable. I further concluded from this experiment that the art of mentation could be improved to a surprising degree. After further experiments, lasting through a year, I discovered a new method of psychological research. This was verified by giving animals an excessive training of one particular mental function.

#### Experiments on Shepherd Pups.

“In one series of experiments seven shepherd puppies were confined in a completely darkened room from the moment of birth until they were eleven months old. Triple doors, which guarded the darkness of the room, permitted the mother to go in and out without allowing light to enter the apartment. At the end of the time mentioned these puppies were chloroformed and their brains, spinal cords, and other ganglia were prepared and preserved for microscopic and chemical examination. Their eyes were also preserved. A second group of shepherd puppies of the same age were allowed to lead the usual life, normal to the average dog, and without deprivation or special training of the seeing functions. They were at the end of the period also chloroformed and the same portions of their anatomy preserved.

“A third group of the same kind of puppies were subjected to a prolonged training of the seeing functions. The hall leading into one room of my laboratory was covered with squares of metal, each square insulated from the others and colored. These squares were connected with an induction coil, with the exception of those of a certain color, which were not thus connected. It was so arranged that a dog might jump from one square to another of the same color, and thus pass through the entire length of the hall without getting an electric shock. To do this the dog had to discriminate between that color and all the other colors tinted on the squares. An attentive dog, after having been shown several times, would learn to avoid the slight shock which he would invariably get when he stepped on the wrong color. This enabled me to know whether the dog actually discriminated between

different colors, and also enabled me to compel him to practice this discrimination several times daily for five months. These experiments enabled me to cause the dogs to associatively integrate their color memories with definite color memories from the movements necessary to avoid getting shocks from certain colors on going through the hall.

“I varied this device somewhat by feeding the dogs from under inverted pans which they were compelled to turn over to get a mouthful of meat that had previously been placed under them. All the pans were rubbed with meat to prevent the dogs from selecting, by sense of smell, those with meat under them. Meat then having been placed under them, say the yellow pans only, the dog was shown where to get his breakfast. For several weeks they would indiscriminately turn over all the pans without reference to color. By and by they would gradually hunt out the yellow pans more frequently than those of another color, and after about six weeks of practice (being then five months old) some of them would turn over only yellow pans. Then the meat was placed under differently colored pans until the dog had again learned his lesson, and so on, until finally several dogs were able to discriminate between seven shades of red (not purple and red), several greens, and so on. The brains of these three groups of dogs were examined, and the following general results were established:

“The group which had been deprived of the use of the seeing function exhibited an undeveloped cortex in the occipital seeing areas; the second group, which had been allowed to lead the usual life, had a more highly developed cortex in this same region; it was thicker, more vascular with arteries, veins, and lymph channels, was more gray and had a greater number of brain cells. The former group could not be said to have brain cells in the seeing areas, so undeveloped and few were they, whilst the second group had well developed brain cells in the usual number (for a dog). The brains of the third group had a much more highly developed cortex than the second group; it was more gray, thicker, far more vascular, had a greater number of brain cells, and these were far more highly developed. These experiments made upon many other dogs besides these mentioned, and upon other animals, fully confirm these results.

#### Possible Effects Upon Man.

“In all cases deprivation of a mental function was accompanied by a lack of structural development in the corresponding part of the brain, and excessive training of that function was ever accompanied with extraordinary development of the special structural elements of that part of the cortex. Thus in the three groups of dogs just described there were ample evidences of brain

structure actually having been builded in the brains by the special training, and also of lack of usual development having been produced by deprivation of the opportunity to use a mental function. There are five other methods of research. This discovery of brain-building means the getting of more brain and scientifically using the mind. In the case of a child given to immoral habits or of criminal instincts, these bad memories can be supplanted by good memories. Here again comes into play the excessive training of a function which, when fully developed, has completely destroyed the evil tendencies.”

“How will this brain-building affect idiots?”

“If there is any existing cerebrum the mental condition can be immeasurably improved. Of course, there are idiots who possess no brain. In cases of mild mania the brain-building process can accomplish beneficial results. In the six buildings, which will be erected, the six methods of psychological research will be taught. As soon as I have assistants competent to take charge of the different departments they will be put in operation. When others are qualified they will be sent to colleges and other educational institutions throughout the country, where the science of brain-building will be taught.”