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Elmer Gates, Wizard
The Puzzling Philosopher of Chevy Chase

Some of the Wonders One Sees in His Laboratory—Half the World Thinks Him Scientist—Half Believes Him Charlatan—But All Admit His Amazing Power to Stimulate the Imagination—The Man Himself and What He Is Doing—Burdened with a Half-Million-Dollar Debt He Works On Confidently

By John L. Mathews

It was no less an immortal than Professor William James who turned on me suddenly one morning last winter in Cambridge and interrupted sharply:

"Gates? Do you know him? Then sit down and tell me all you know about him. To me he is a most interesting personality. I have heard that he had done wonderful things; I have heard that he was nothing but a charlatan, and I never found any agreement about him anywhere. What I have seen about him in the papers has disgusted me. But you are the only man I know who has actually seen and talked with him. Now what is lie?"

What I could tell him then was but the result of a half day observation in the famous Chevy Chase laboratories six years before, a half day from which not a moment, scarcely a word has escaped memory—so thoroughly does the personality of Elmer Gates and all associated with it stamp itself upon the mind—and that visit at a time when I did not even know there was a question about Gates. It was, therefore, with somewhat more than my principal errand of seeking the solution of a problem in psychology that I presented myself, by appointment, at the door of the Wizardry one Sunday afternoon recently and confronted the scientist himself.

THE ABSURD STORIES ABOUT HIM

Elmer Gates! Who is there who has not heard his name—and in connection with absurd and fabulous stories? It was only the other day that there went the round of the papers a story with big headlines—"Gates says that Sin is Pink"—and a later edition which declared him sponsor for the notion that "Every thought has a Color; the well-equipped mind is a rainbow or a spectrum." In the Congressional Library in Washington his names appears as author of a mystical pamphlet in which are the most astounding

untruths and the most chaotic imitation of reasoning. Now and then he appears in the legal news as the defendant or complainant in a patent suit, sometimes winning, sometimes losing; and so often is he blazoned forth in the press in connection with blatant nonsense that his fellow scientists, forgetting how Osler was misrepresented and how they themselves have been misquoted, actually come to believe that in some way these loud noises represent the misfit thoughts of Gates himself. Yet as a matter of fact there is no quieter, no more retiring man in their profession, and no one to whom such ill-fitted advertising more quickly gives an attack of what he calls "photophobia." But it is better to tell who he is and what he is than to attempt to tell what he is not.

One comes out from Washington by way of U street to the Chevy Chase car line, which runs out the newly extended Connecticut avenue over the wonderful hills and deep dales of that part of the District of Columbia which is just beginning to be Washington's most fashionable suburb. The Bureau of Standards stands up there on a level piece of the tumbled ground. About a mile beyond the garden the car climbs up along hill to be confronted at the top by a pergola, set in a grassy circle about which the tracks divide, and a block away across the circle, just over the line in Maryland, behind beautiful privet hedges a handsome house and a series of laboratory buildings of various sizes. Over this route, some years ago, came every Sunday a number of scientific men connected with departments of the government at Washington. One of them was Professor Hazen of the weather bureau. On a certain Sunday while they were gathered there, rain fell in torrents. The weather man had predicted fair weather. Naturally his fellows poked fun at him.

HOW HE CONVINCED PROF. HAZEN

"This is all very well for you fellows," quoth he, "because you are all working in something which is positive. You can reproduce in the laboratory and examine under the microscope all the phenomena with which you have to deal. But with us it is different. We see the phenomena of meteorology being developed about us on a magnificent scale, but we cannot control, reproduce, alter or in any way affect them. We can only guess at their causes and sequence, and having guesses as nearly as we may, predict upon such a basis. If you will only give us a laboratory basis for a science of weather we will be able to do better."

"What is the main fact upon which you base your predictions," asked another.

"On the cyclonic, or low pressure area—a region of low atmospheric pressure, accompanied generally by electrical phenomena, and marked by a precipitation of moisture often so

great as to render it impossible that the water should have been held in suspension in that limited area or have been brought in by any known air currents. Given such an area we can generally predict its course and its action."

"Is it not probable that it is an electrical disturbance?" queried Mr. Gates.

"No—we think not. The electrical disturbance seems to be an effect, not the cause."

"Let us try the laboratory," said the Chevy Chase man. They went out into one of the well-equipped rooms and there found a glass globe of considerable size, having attached a tube and stopcock. With the stopcock open this was placed between the poles of a powerful electric machine. After a time the cock was closed and the machine removed to another room, in which the same conditions of atmospheric pressure and temperature prevailed, and there the end of the tube was placed in water and the cock opened. Instantly a quantity of water was sucked up the tube and into the globe—not merely the slight amount due to capillary attraction, but enough to show that under electric tension the air had been rarified. In other words, there had been a low pressure area created by electrical disturbance—not an electric disturbance created by the low pressure.

From this the scientists went to a whole series of things, showing that electric tension would induce the movement of water vapor through the air, and in fact laying the basis for a new science of meteorology. So impressed was Professor Hazen that he resigned his Government position, sent his books to the laboratory and was preparing to spend the next few years in Chevy Chase developing this line of inquiry when he was struck by a bicycle and killed. His notes, his books, and the written records of twenty-six wonderful experiments are still filed away a Chevy Chase waiting a day when some observer will come to take up the work again.

A LITTLE BIOGRAPHY

It is this set of laboratories that crown the hill at the opposite side of Chevy Chase circle. How they came there is a long story. Briefly, they were built by Elmer Gates, an Ohio man, son of German parents, whose life has been at variance with those of men about him. At four years of age he was left an orphan with considerable money. A governess who had charge of him, instead of sending him to school, took him to the fields and taught him there to observe minutely and to study and comment on everything he saw. From her care he passed not into any college, but into a series of studies which he mapped out for himself. Thus, to acquire chemistry, he went to Ann Arbor, set up a laboratory of his own, and employed the professor of chemistry to come each

afternoon and spend a couple of hours performing experiments with him and teaching, rapidly and concisely, what he knew of science. Thus acquired, he moved on to another college, equipped a physical laboratory, and employed the professor of physics. Thus he devoted himself to one thing at a time, in his own way, sometimes laughed at, sometimes rebuffed, as often ardently admired, and at last felt competent to combine his laboratories under one roof at Philadelphia, and begin a career of investigation.

Later Mrs. Phoebe Hearst became interested in him and, his money being exhausted, she agreed to endow laboratories for him at Chevy Chase. He came to Washington, and having acquired a small amount of money from her, began the foundation, but they soon quarreled, he repaid the money, and there ended her connection. He sought other sources for endowment, and in the end succeeded in erecting his present working plant, which has cost, probably, somewhere between $400,000 and $1,000,000. Within a spacious enclosure, well kept, with soft lawns and handsome shrubbery, are his house, and a series of frame buildings which enclose laboratories equipped with apparatus for all manner of scientific research in every department. There are rooms so arranged that day after day they may be retained at a constant registration of thermometer, hygrometer and barometer, in order that one working in them may feel to influence of atmospheric variation. There are rooms for experiments without light, enclosed in successive layers of zinc, black felt and paper, with triple lock-chamber doors so that no vagrant light may be borne in by investigators. There are cold rooms and hot rooms, power plants, big batteries, aquaria, everything at hand for the most widely varying researches. There is even a kindergarten, in which long ago the children of Chevy Chase tested the value of the Gates idea in education.

PRIMARILY A PSYCHOLOGIST

Gates is, in fact, a psychologist. But with him psychology is not one of the sciences—it is The Science. Psychology is the study of the mind—its method of acquiring and keeping and using knowledge, its mode of work, its possibilities—everything which concerns the mind; therefore, says Gates, it is properly material for the psychologist. The proper routine of education, he says, is first to learn how to use the mind, properly, according to its own laws, and then to use it that way in acquiring the other sciences. But as the instruments through which the mind acquires its information are the sensory nerves, Mr. Gates begins his educational work with the training of the senses in earliest childhood. I remember the kindergarten—now outgrown by all the available material—in the old days contained a half a dozen youngsters, some of them still on

their knees, some six or seven years old, and all in [the] charge of a young woman who worked under the scientist's direction. They were all busily and happily engaged throughout the day in playing games, the first purpose of which was to train sight, hearing, touch, taste, and smell to nicety of perception and certainty of judgment. Discrimination of minute differences in size, shape of projecting keys permitted the one who saw first and best to put the proper block through the proper hole. Quickness of color perception enables a four-year-old to sort out half a dozen shades of red where my eyes saw at first no difference except between extremes. And instrument after instrument, sounded in the course of the games got up for the purpose, brought out instantly decisions either as to the relative or the absolute pitch as was required. These were merely games, preliminary to study, and designed to so improve the sensory nerves that every sensation recorded would be right beyond peradventure, and that the knowledge acquired through them might be trusted.

But the sensory training is only a small part of the Gates idea. He believes that the mind works in a certain logical and orderly manner, and that we should follow this order in our mental work. We acquire sensations through our sensory nerves. We discriminate between two of these, compare them, and perceive a difference. From this we rise to the conception of things and from this to ideas about them—and from ideas again, by comparison and differentiation to higher idea of laws. The mind works logically, from step to step. It works like a machine. It is a Gates idea that just as the stomach acquires a habit of taking care of food at twelve o'clock and receives according to habit its proper blood supply for caring for the food at the time, and makes known its demand by hunger, so any part of the mind given up, say, to arithmetic, can be made to follow a similar habit and to become avid for work at say nine o'clock or eleven o'clock in a day, and will work better at that hour. He believes—and we all know it to be true—that differences of barometer, or moisture in the air and of temperature affect the working of the brain. Accordingly he plans that in acquiring any science, as chemistry, the student shall work at certain hours each day, in a laboratory thoroughly equipped to maintain constant conditions. There without a suggestion of theory or hypothesis he shall perform all the known experiments in chemistry which have educational value, these having first been arranged for him according to their mental value, the simplest first. Thus he will gradually acquire and store up all the sensations upon which a knowledge of chemistry is based. Then going over them a second time, comparing them with each other he will begin to form conceptions, studying which he will rise to ideas and later to a knowledge of the laws of science. And beyond these—so Gates

believes—this logical mind, working under these logical conditions will begin to see newer and higher relations between these laws, higher laws of which we have now no knowledge and which will take the place of hypothesis and assumption with which we now have to be content.

In the old days Gates was a socialist and a dreamer. He has had many hard knocks and many setbacks and I do not know whether he still keeps to this same old idea. But it was his plan then that he should endow in the end a university consisting of a series of schools of psychology in each of which the content to be studied should be a single science, to be mastered thus; and an equal series of schools of "psychurgy," or mental work, in which the graduates of each of these schools labor to turn his acquired knowledge to account in the practical things of every day life—inventing. In fact, new appliances to make life easier and better, as fast as knowledge went ahead. In between these and central to them all was to be the central laboratory or school, through which as through a clearing house the latest appliances of the psychurgists were to be distributed to the psychologists, and the newest knowledge of the latter passed on to the workers.

HIS MANY INVENTIONS

In making such a short and bald statement one runs the risk of injuring Mr. Gates by making him seem unpractical. Nothing could be further from my intention, for in the plan as he outlined it, while there was a deal of Utopia there was also common sense, and this common sense is illustrated daily in the laboratories of which he is the head. There stands in one of them a cabinet filled with patents, no one of which represents any other purpose on the inventor's path than to demonstrate by entering a new field of investigation the sufficiency of his mode of training to make a man competent. They are endless in variety. Thus he spent six months acquiring the art of spinning and weaving in a factory and four months of laboratory study afterward. Thirty-six patents on electrical weaving represent that period. A row of cumbersome machines represent the days when he turned aside and studied the magnetic separation of metals from each other—and best of them all is one which draws gold particles out of a stream of sand and turns them up sparkling into a vessel of water. There is the microscope which won him membership in a national society. There is apparatus almost without end, apparatus of every sort illustrating periods in which he has studied himself under new conditions.

Half a million dollars in debt, with all these patents tied up as security, unable to market one till he clears them all, Gates still labors on hoping to save these fruits for his ultimate college. In order to provide the material for a trial class in a single science he has had the existing volumes on the science searched—a labor of years for his aids—every experiment listed and classified according to its mental complexity, and is now nearing the time when he can invite a number of young men into the laboratories and set them at work.

A VICTIM OF REPORTERS

It is not my purpose, nor would I trust myself, to say how far the results of Elmer Gates's work are to be credited. It is not out of the way, however, to say here what everyone who knows of him should know, that he is not the author of the only book which bears his name. It is a collection of maudlin notes pirated by a reporter from some of his public lectures and issued by an irresponsible company which had no assets which he could collect for libel. Nor did he assert that thoughts were colored, nor that sin was pink. These were the "Oslerisms" if reporters who sprang the sensational lines for the sake of a story without regard to the real utterances of the lecturer. A few contributions to scientific papers represent his published statements and he still labors as he has for several years, upon his magnum opus.

THE MAN HIMSELF

Personally he is a large-framed man of pleasing appearance, piercing eye, and direct attack. He is a fascinating speaker. For three hours, on a Sunday afternoon, I listened spellbound while he detailed in minute precision the progress of his work since we had met before, and then, turning to the complications of his own affairs explained how he hoped to bring things straight. One after another he described a series of improvements in household appliances, on the patents for which he relies to lift his debts and set himself free, so that at last he can have a chance to test his work and acquit himself from the common charge of charlatanry. He is not ignorant of the charge. He told of one occasion on which a student at Columbia was refused permission to read a paper on "An Afternoon at Chevy Chase," and of another, when a famous biologist visiting Washington refused to allow himself to be brought out to meet one whom he firmly believed to be a quack. I told him in return of the interest his name aroused at Cambridge, and picking up a copy of "Pragmatism," which lay at hand he exclaimed: "I would rather meet James and have his good opinion than win over anyone else I know of. I have just read his book.

No matter whether you agree with him, it is the most logically thought out, the most delightful thing of the sort in modern times.

Some day perhaps they will come together. I would like to be there to see. It would be a meeting to remember. And in the end perhaps one could answer finally the mooted question: Is Elmer Gates the man he sees himself, or the man some other scientists see him?