

DECEMBER 16, 1968FRANK H. MAYFIELD, M.D.

I am going to try to tell you how the human mind works - not why it works, or what to do about it - but how it works, and then to suggest that you abandon any concerns you have for the human race as it is presently constituted, or may subsequently become, and devote your energies instead to personal preventive psychiatry. Please understand that I am not an existentialist, - indeed, I regard myself as a rather devout Christian, but as you will also note, I am also schizophrenic. Indeed, most religious people are schizophrenic, if one uses the word literally - a split mind, for the physiology of faith, whatever the creed, is just that, for by turning over to an almighty power all those things that we do not understand, we effectively turn the switch or blow the fuse that disconnects that part of our brain from which frightening impulses come, to the part that determines our behavior. Schizophrenia, truly - no less than that - not in the sense of a pathological classification of psychiatric disease, but as a physiologic fact.

Before this gets too deep, however, unless you wonder whether I am about to break the traditions of this club which prohibits one writing in his own professional field, let me hasten to say that the decision to speak in this vein came during the night of November 5, 1968 - election night, and was initiated by a telephone call from a prominent layman of my own church. Speaking on behalf of a group of elder statesmen of the church, who were also for the most part generous financial supporters of the church, he stated that his group, out of a profound sense of Christian and civic duty, were developing a series of lectures on crime and its prevention. They had already received acceptances from a prominent Jurist, from a Sociologist, and from a former Chief of Police of Cincinnati. I was advised that the minister would also participate, and that the minister and his group were unanimous in wanting me to give the first of these lectures, to explain in twenty minutes how the human mind works in order that the members might more accurately interpret what the others would subsequently say.

My ego, perhaps, was overwhelmed by the compliment of being recognized as a prophet in my own country, as it were, or maybe a sense of duty to the church, or perhaps the soft-sell of my friend who stated that the members, in recognition of my oppressive schedule - and parenthetically, I still don't know how they knew just what my schedule was - had granted him wide latitude as to the date, the hour, and indeed, the period within the hour, to determine whether the speech would be given before or after lunch, in the event that I could not come for lunch. Whatever it was that led me to accept, I did accept, but before the phone was on the hook, I knew that I needed a hole in my own head, so to speak.

It is not immodest, I hope, to state that I do know something about diseases of the brain, and hopefully of their proper treatment, but certainly my training and experience in neurology and neurological surgery does not necessarily qualify me as an expert in the behavioral sciences. Before the tortuous night of November 5th was over, I had a much better idea of what I should say, for basically the emotional experiences of the biological animal are properly divided into two very simple categories - one pleasurable and the other unpleasurable. Food and sex comprise the first category, and fear and rage the other. Long before morning I had experienced three of these emotions and could draw upon past experience for the other. You may think this classification too simple, but it is, I think, realistic. There is an area of the brain known as the reticula activating substance. The term is descriptive, for under the microscope the nerve pathways therein form a veritable network, and when stimulated the animal is aroused or activated, and when aroused, depending upon the portion of this very small area of the brain, he either wants to eat or make love on the one hand, which are both, by common agreement I believe, pleasurable experiences, or to run or fight on the other hand, which I believe all would agree are unpleasurable experiences.

Lest you challenge this simple, though I think reasonable classification, let me add that

comfort and kindness, for instance, are qualifying factors of the pleasurable emotions, and pride, for example is a qualifying factor of fear and rage. The pleasurable emotions, as you of course realize, are essential to preservation and procreation of the species, but the unpleasurable experiences - fear and rage - at best serve very limited beneficial purposes and seem to be thrown in by nature just for the hell of it except that fear comes from memory of pain, and pain is the activating signal to escape danger. Just what the justification for rage is has never been explained satisfactorily to me.

Early returns from the election showed Mr. Nixon in the lead in Kentucky, and my son leading in his race for the seat in the Ohio House from the 67th district. The information was not in the real sense a pleasurable emotion, it was more like taking off a tight shoe. Your foot feels much better than it did with the shoe on, but not as well as it did before putting it on. The good news really relieved me in part of the fear of my son losing, but, as you will note, in order for my favorites, including my son, not to lose, someone else had to lose, and there in lies the lust to kill which is the end product of rage.

Yes, emotions do get mixed, and like some foods, the end product of the mixture may not be good even though each individual ingredient is quite pleasant. I recall a limerick which sort of makes the point. As I recall, it read like this:

"I like peas and honey, and I've
loved them all my life,
It makes the peas taste funny,
but it keeps them on the knife."

A little later in the evening unfavorable reports about Nixon were coming from Illinois, and I began to wonder - would they steal that State again? Mr. Daley seemed so strong and good during the Democratic convention - but a crook, no doubt, and all the commentators seemed to enjoy my discomforture. Huntley and Brinkley seemed more prejudiced than usual and to actually gloat as the unfavorable

reports came in. Then the computer in Dallas broke down - "Damn Johnson," I thought, "couldn't we have an honest election just once!" Then a report from the 67th district - a brief announcement that my son's opponent had forged ahead for the first time and a tone of obvious satisfaction to the announcer. This was followed by a statement that this was the only race in which a Republican was trailing his Democratic opponent for a House seat in this area. Logic told me, of course, that these returns were from the strongly Democratic precincts of Walnut Hills, and that the next returns would in all probability reverse the trend, but suddenly I recalled a confession I made to the Literary Club on one occasion, in the paper of "Smart Jenkins," - a confession that as a child I had joined a mob which subsequently was guilty of lynching three Negroes. Though I had actually had no part in the crime itself, I was guilty by association - and suddenly, I wondered if someone had leaked this to the Negro community of Walnut Hills and this was in part a visitation of punishment upon me by voting against my son. The Bible does say that the sins of the father will be visited unto his offspring even unto the seventh generation.

Moreover, no more reports came on the race in the 67th district. Time after time we were reassured by the local announcer that after the next half-hour the House races would be reported, but time after time also, they would rejoin the national network just before the report about the local House races was to be made. The prejudices that had been so obvious in Huntley and Brinkley now seemed to have spread to all the other national channels in reference to the national races. Dial as one would, no sympathetic voice could be found on any channel, and now the local announcers had joined the conspiracy. The message that William Allen White sent to Republican headquarters in 1936 when Roosevelt was destroying Landon came to mind. You recall the message in a telegram - "For God's sake, send somebody down here - everybody's voting for whoever he damn pleases." I wanted to call someone - but who? - the Board of Elections, my son? "Let's wait," my wife said, and obviously we both were afraid to learn the truth, so we didn't call

anyone.

"Drive me down to the drugstore," she asked, "I need some cosmetics since we are leaving tomorrow for an extended trip." It was dark and the streets were so dangerous in Cincinnati, especially at night, that I not only drove her to the store, but accompanied her into the store even though we were able to park the car in a brightly lighted area directly in front of the store entrance. The hazards seemed unusually great tonight, and this was no night for a woman to be on the street unescorted even for the ten feet from the car to a well-lighted store.

While she shopped, I played a pinball machine. Scores were recorded in lights on a panel, the numbers being registered as the steel balls touched various posts as they rolled down the incline. I scored well on the first game, approached a perfect score on the second and third games, but game four was the killer. My last nickel was used - my wife was waiting - with the first four of five balls, all posts had been touched and scores lighted except for the last post at the bottom of the incline, and on this occasion as the steel ball rolled down, I leaned ever so slightly on the machine, and just as the ball touched the post that would have assured a perfect score, a loud bell rang, the scoreboard became dark and blank, and in bold red letters across the panel the word "tilt" appeared. Even the machine was unfair. Surely I hadn't violated its rules badly - or was the machine itself schizoid, defensively protecting itself from the humiliation of surrendering a perfect score to a rank amateur playing the game for the first time. But the word "tilt" which so boldly exposed my lack of sportsmanship, suddenly recalled to my memory the relationship which I had had with Chiropractors throughout my professional career. This relationship had begun when I was a second-year medical student. A teacher had suggested that I report to a Chiropractor for examination to learn personally how charlatans, from whom it would always be my duty to protect people, really worked.

Dutifully, and with a feeling of contemptuous disdain for these unlearned and dishonest people, I reported and registered my fictitious complaint of pain in the region of the thoracic spine. After a few questions as to history of the complaint, I was told to disrobe and lay on the examining table. Lighting in the examining room, especially on the far side, was subdued, and in that dimmed area was a black panel not unlike the scoreboard of the pinball machine. He then began a systematic examination of the surface of my body with an electric probe. At least I presume it was an electric probe, since it was attached to a wire which disappeared into the darkness at one side of the room. By now in the dimmed room I could read the large but dimly lighted label on the machine - diagnostograph. As this mechanical divining rod was moved systematically over my lower limbs and the lower trunk, for a time nothing happened, and then as the instrument came closer to the area of my complaint, lights began to appear on the heretofore blackened panel. At first they were subdued and still, then they became brighter and began to move in a whirl, and by the time the area of which I had specifically complained was reached, the panel was a frenzy of whirling psychedelic colors. Then the movement began to slow down and the lights began to go out, so that finally only one small red strip remained lighted. I had to rise from the table and move closer to read the word "arthritis" written in the lighted strip. Actually, the place which I had alleged to have been painful did begin to hurt. I paid the \$3.00 without waiting for treatment and left, and thereafter, for nearly fifteen years, I was convinced that these therapists were charlatans. It never occurred to me to doubt that they knew it - not quacks - charlatans. I did what I could to limit their efforts in order to protect the people from their sinful ways.

This point of view changed rather abruptly when the wife of a prominent local practitioner of the art was brought by court order from the Palmer Institute, the Aesculapian temple of this sect, to my service on petition of the wife's brother, with a presumptive diagnosis of brain tumor.

Court order or no court order, I would not consider treating this patient against the husband's will under any circumstances, and in this particular situation my firm ethical stand was reinforced by the husband's stature (a strapping 6'4"), who, though gentle of manner, seemed quite capable of handling himself well in the event of any physical altercation. When he learned, however, that I was not joining the brother in damning his professional efforts or his confidence in chiropractic, and when he was convinced that I might have some interest other than financial in the treatment of his wife, he became cooperative and grateful, and it was apparent thereafter that he did indeed love his wife and family, and had been and was seeking the best for her in taking her to the institution where he himself had been trained. It was immediately obvious that the patient's illness was indeed due to brain tumor and that already the lesion was advanced. The husband recognized that I could not extend to him professional courtesies that one would to another physician, a member of whose family was being treated. Indeed, he appeared humble and grateful when his wife was awake the following morning and could talk to him lucidly and clearly.

It was necessary to advise him that the tumor was malignant and would probably recur within two to three years, but that in the interval she could be expected to be relatively free of symptoms. He was then instructed in detail as to what symptoms might be expected when the tumor recurred, and further, that if she were brought in promptly, it might be possible to again extend her life on a palliative basis by further surgery. I saw both the patient and her husband regularly for several months and reiterated these instructions carefully on many occasions. My relationship with the patient and her husband was always cordial and their manner was one of deep gratitude. But what do you think happened when her symptoms did recur on almost precisely the date predicted? - Back to the Palmer Institute she went for adjustments and it was nearly three months later when she was transferred again to my service, this time too late to hope to modify the course of the disease and death followed promptly.

This case report is significant to you only because since then I have never regarded Chiropractors as charlatans - they are wrong, yes, their concepts baseless, but they believe them to be true, and I knew thereafter that one could not correct their errors by punishment.

But the election returns were more important. We hurried back to the house and back to the TV screen. News of Nixon and Saxbe were both bad. Ribbikoff, whom I have never admired very much, was winning in Connecticut, but from the 67th House District - nothing. The results of every issue and every race in every Middlesex village and farm from Ripley to Lawrenceburg I had heard often enough to commit to memory, but nothing from the 67th district. It had to be a conspiracy, and God, as I became upset, I became hungry and repeatedly went to the refrigerator for food. Finally I went to bed without knowing the progress of the race in the 67th district, and afraid to call and find out. In an obscure place in the Enquirer the next morning the results were reported - the news was good - my son had won by an overwhelming margin, and many other important races had turned out well.

Then I was possessed with a feeling of sympathy for Mr. Humphrey, whom I had not wanted to be President, but whom I had always rather liked, and also for my son's opponent whom I had never met, but who couldn't be as bad as he seemed to be during the night. Strangely enough also I came to realize that the manner of the broadcasters had not been as prejudiced as I had thought a few times.

The question is: How could this flight of ideas and thoughts have been set off in my mind by the anxiety of waiting for news of a fact that was already determined and about which I could do nothing if it turned out unfavorably, and in which my son, and perhaps Mr. Nixon, would have been better off if it had been unfavorable. To understand these confusing thoughts, and to get down to the point of understanding the human mind, one has to go pretty far back to the protozoa, the one-celled

animal, exemplified by the amoeba, the animal that lived before the egg - that's what protozoa means - before the egg. The amoeba, for instance, lives in his little one-room trailer, so to speak. If he touches something that he likes, he engulfs it; if he dislikes it, he withdraws, but for some reason he could not remain in this complacent and self-sufficient state but had to begin to evolve and became a two-celled animal, then multi-cellular, and then finally multi-systemed. Life became really complicated when he became a two-celled animal, and really confusing by the time you reach the human level. When he became a two-celled animal, the problems of communication and supply came. If one cell acquired the food, he had to have a canal to transfer the proper portion to the other cell. Moreover, if one cell happened to run into something that was noxious, there would not be enough time to hold a conference for the cell which had been touched to say to the other, "Get the hell out of the way, I'm leaving." No, both had to react instantly and take off at the same time. Hence, a nervous system was necessary. The problem comprised by the lack of communication has been depicted very amusingly in cartoons, one especially which shows two camera hunters facing a charging rhino. One said to the other, "Wait until the last minute, and then take a step to one side." The next cartoon shows the two hunters colliding as they took a simple step toward each other, and the next frame shows the two of them spitted on the horn of the rhino. No, it was much more efficient to build a nervous system so that both cells would know simultaneously that trouble was at hand and could take off in one direction together.

As the evolutionary process continued the problem of biological engineering were progressively compounded. To support and to move the larger mass of living tissue required more energy, and energy produces heat; heat requires a cooling system, so we got both systems, and a system to turn on the right one at the right time and place. It would be absurd for the animal to have to stop and consider whether he should sweat or breathe, so the thermostat was connected to both the skin

and blood vessels and to the lungs, and automatically the biological BTU are kept within reasonable ranges.

Eventually the organism became so complex that simple division was not reasonable, and rooting as with plants, or growth from sectioning as with worms, wouldn't do, so the egg laying process was developed. And if one laid the egg, another had to lay the one who laid the egg, or else the species would become extinct. But finding one another at the appropriate time then became the problem. This was solved by the smell system. The female in heat emanates an odor which not only stimulates the sexual portion of the males reticular activating substance, but tells him where the area from which the odious aphrodisiac emanates, and simultaneously initiates certain physiological change in order to prepare him for procreation. Without the latter being automatic, the receptive female might well change her mind on her season, before the other partner was ready. Indeed, it is highly unlikely that the population explosion would have beset us, or the profits from the pill would have been amassed, or that the Pope's present problem with his pastors would have reached such monumental proportions. But the smell system did in fact become the heart of operation search and conceive. Whether the commercial perfumes now sold as exotic contain any of the natural ingredients, I do not know, but unfortunately, it was decided by Mother Nature, in the interest of economy, to use the smell system for the additional purposes of finding food and of receiving messages by E.S.P. Please note that the cat's whiskers do indeed receive impulses through the air, and I would ask you to recall how your own nose itches when the barber trims inside, or how your wife's nose - or at least my wife's nose - itches when relatives are coming.

When the sound and visual system of search and alarm was tied into the smell system, the chances for short circuits, or of jamming the circuits as the result of excess currents were increased, and the energy demand simultaneously multiplied, a new control system had to be added

on not only to conserve energy but to apply it where it was needed and when it was needed to the correct part. This distributor system is known as the limbic system, or ring around the activating substance, and is still very simple, electronically speaking. Its mission was indeed simple - a direct response to a direct stimulus, even though supporting energies were at times needed. Single purposeful acts, even functions of the motor system or movement, in many instances are simple. For instance, repetitive synchronized movement, as in walking, is not a complex physiologic problem. If you want to snatch an apple from a store shelf, the planning is necessarily quite complex, but walking would be impossible if you had to stop and make a decision with each step as to whether you would move the other leg. However, with so many impulses using the same circuits - for example, taste, smell, sound and touch - the simple circuits had to be supported by a storage tape, as in a computer, and for those biological specimens that stopped evolving at this level, little happened. The creatures, with surprising accuracy, seemed to scan all of the experiences of a lifetime stored in their computer known as the temporal lobe, and to be able to draw correctly what was needed most of the time. When the opportunity for mating was at hand, they mated; if food was needed, they found it; when danger was at hand, they ran. Only occasionally would they get confused and show rage, and then the reaction was brief, and not carried over. When not activated to one or the other of these moods, the animal went to sleep.

Then man came along, with his newly added frontal lobes, presumably added in order to reason, and began to tamper with nature's mechanisms, not only in the lower animals but in his own, and from now on you may follow me down the Pavlov path of the conditioned reflex, or take yourself down the Freudian concept of subconscious behavior. The end product is the same but there is a chance that you will understand the Pavlov principle, if you do not already understand it, but it would surprise me if you did understand the Freudian language and concepts. At least, no Psychiatrist has been able to make me understand it, and I wonder if they do.

Pavlov's simple experiment on the gastric juices of dogs is well known. A tube was placed through the abdominal wall into the stomach. It was possible then to show that the sight or smell of food caused the gastric juices to flow, but if one rang a bell or flashed a light simultaneously with the showing of food, and did this repeatedly thereafter, the juices would flow when the bell rang or the light flashed. Obviously this perversion of the natural process left the limbic system a little bit confused, for one could then change the pattern further by exposing, for example, a female in heat and simultaneously with the bell or light, gastric juices would flow so that eventually the odor of the female alone would produce gastric juices. Now isn't that a revolting development! This principle, indeed, is used by the Veterinarians who collect artificial semen from the bull. As the bull attempts to mount, he is forcefully diverted to a rack and ejaculates into an artificial container. When this is repeated long enough, strange as it may seem to this virile group, thereafter the bull prefers the rack to the natural process. He is, in fact, a pervert. The stimulus of the pleasurable experience is a false one, but nevertheless it gets the job done.

As I have said, you may now follow this simple Pavlovian principle of the conditioned reflex, or the Freudian concept of the subconscious as you like, but the fact is that our frontal lobes have not caught up with the rest of our brain inefficiency, evolutionally speaking, and frequently a false signal pulls forth garbage from our computer, garbage in the literal sense as well as in the new computer language. Our frontal lobes, for example, have assumed the role of programmer for our computer without having been trained for the job. We function with a fundamental error in assuming that all of us are born equal whereas no two of us are alike at all. As Emerson put it so well, the day each of us is born, or indeed, conceived, something new is created in nature. There has never been anything like it before, and there will never be anything like it again. Therefore, it is absurd to expect any two of us to behave alike under the same conditions, and certainly not under varying

conditions. We recognize this in physical achievement and wouldn't think of matching bantam boxers against Joe Lewis, for instance; we give handicaps in golf even to equalize skills, but in the social and intellectual fields no quarter is given. For example, mothers, presumably in the best interest - or at least they think it is in the best interest of their young - force them at each other at ages when the true meaning of sex could not be known or experienced, and also, after having stimulated them to excel by outdoing all others in intellectual achievement, we become exasperated when the neighbor's kids score higher. Meanwhile moral law insists that all things that are fun and natural, are sinful, yet we wonder why fear does not go away when we tell our children that there is nothing to fear, when in fact, personal fear is responsible for the parents pushing their children into unnatural states.

It is no wonder then that the limbic system gets confused and in many instances does not know whether to tell you to eat, to make love, or to run, and not being able to decide, may try all three, and frequently does, whereas even I know that all cannot be done at once successfully. The result is, neurotically speaking, very nauseating or unpleasant, for it is far from pleasant, for instance to have a cold sweat as one approaches the mating process, or a rapid and squeamish pulse, or to want to eat when you should be running. The usual result from mixing all three is that the painful part is turned off automatically or the individual becomes angry - schizophrenia again.

The word has been so firmly or repeatedly impressed in our own memory as an indication of insanity, which no family or person at this time could comfortably admit to, that we are prone to deny its existence. That we find it difficult to recognize the word as an expression of a normal and useful physiological principle is surprising, for applied to our utilities we see the principle frequently in action but call it a short circuit or hot fuse and do not question it.

The blackout in New England last year

was a good example. The utilities of New England and those of parts of Canada were connected in order to share, for economy's sake, peak production and load of an energy that cannot be stored, but the kilowatts needed in New England during that particular period grew larger and larger until it began to draw forcefully on Canada's supply. The Canadian system, like my pinball machine, couldn't stand the humiliation of failing its own customers and cut off New England by crying "tilt." New England, already oversold, then for a time was unable to function alone and blacked out. A very small and inexpensive switch in Toronto did the job. It seems to me that that's the way it is with the human mind - if the switch is thrown completely, you become an inmate at Longview, and no longer suffer but live in a world of pleasant phantasy. If only a few of the painful parts are cut off, you become aggressive and probably an effective administrator or politician or both.

It should not surprise you that the relations between Oedipus and his mother were unusual or a little queer, or that some should become homosexual, as a case in example, or in other ways abnormal, if indeed, behavior that varies from that which education has set as a mean is abnormal. But the tortuous fear of not keeping up with the Jones's is a real one. Life is like a game of leap-frog - one acquires a position that he likes and squats over it to preserve this as his territory and to insure his territorial imperative, and to do this, each uses every maneuver that he can, including pride of ancestral record. The others behind, dissatisfied with the unpleasant exposure, jump over him to establish their own territory, and immediately defend it from others, even if it requires alliances with the one whom he has just jumped over, and engaging in war with the next comer.

But the way one responds depends in large measure on the degree of the stimulus and the response, as it has been imposed on our computer. Race relations are a good case in example. Without considering any such lofty emotional soups as justice, let us admit that "Black is Bad" has been

the signal throughout history, and that "White is Good." Now our frontal lobes say that this is wrong and that we druid correct it, but unfortunately, there is no magnet to erase the record as with a magnetic tape. Indeed, the only effort that can be made which offers hope of promise is to stop adding to the record, and this has been done, and if it were possible to stop there, a few generations would probably put it in the category of lost records. But the limbic system is a tricky gadget, and when unused is apt to search around for other signals, and now there are those who having suffered, as they think, so long, have taken a jump and cry out that "Black is Beauty" and "Whitey is a Pig". Hency time cannot erase the suffering. Instead, a computer soup more nauseous than peas and honey is being brewed, and so far as I can tell, it does not serve a purpose such as keeping the peas on the knife, or keeping the human race and civilization on the tract. Indeed, it is rather a witches' brew, for it is spawning a false history known as Black Culture, for what is missing from the record is made up, not as it is, but as the proponents wish it had been.

Unfortunately, you cannot correct these errors by punishment or at least by a single punishment, for like the Chiropractor, the most militant believe what they say and do, and a single punishment only enhances that belief.

So what is the end? I remind you that I undertook to tell you only how the mind works, not why, or what to do about it. Let me state that though logic tells me that with the beginning of falsifying history, or assenting to it being falsified, that we begin the cycle which leads to book-burning and back to the Dark Ages, or another period of Dark Ages. I am nevertheless an optimist - one has to be these days - and can be with a good balance of schizophrenic switches built in, and I will try as I can to convince the human race that children should be taught to compete only with themselves, since there is no other fair match for them in this world, and that promiscuity in sex and drugs and other things is not a sin, but

unwise, and that we should impose punishment for errors of wisdom so that violations of wisdom evoke unpleasant responses rather than pea and honey soup, to the end that we can keep the peas on the knife if we don't tilt it, and can eat the honey from a spoon, so that each can be enjoyed, with the thought that civilization be kept on an even keel until our frontal lobes complete the course in computer programming and we no longer have to be concerned for it.

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