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PSYCHIATRIC IMPLICATIONS OF NEUROPHYSIOLOGICAL RESEARCH

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Why is the world we live in different for each one of us? How does the brain handle sensory information during wakefulness and during sleep? How do we fall asleep and how do we awaken? What is the difference between hypnosis and sleep? How can dreaming be explained?

Research into the neurophysiological basis of normal and abnormal behavior, in which I have been engaged for more than a decade, will eventually answer some of these fundamental questions.

Sensory perception is the final result of integration of sensory signals originating in sensory receptors and traveling along the central nervous system. At the present time, it is well established that afferent signals arising in sensory receptors travel not only along the classical sensory pathways up to the cortex, as was traditionally assumed until a few years ago, but that afferent signals of all modalities converge and travel along many structures extending from the spinal cord up to the cortex (including the gray substance of the spinal cord, the central core of the brain stem, the hypothalamus, septum, hippocampus, the subthalamus, part of the thalamus, etc.) which may be termed the Polysensory System (Fig. 1). In order to have a complete view as to how sensory perception takes place, it is necessary to know how sensory signals are transmitted throughout the awake brain.

It has been known for a long time that we cannot perceive all our surrounding stimuli at any given moment. In other words, there is a limit to the span of sensory perception which is the result of a limitation of the

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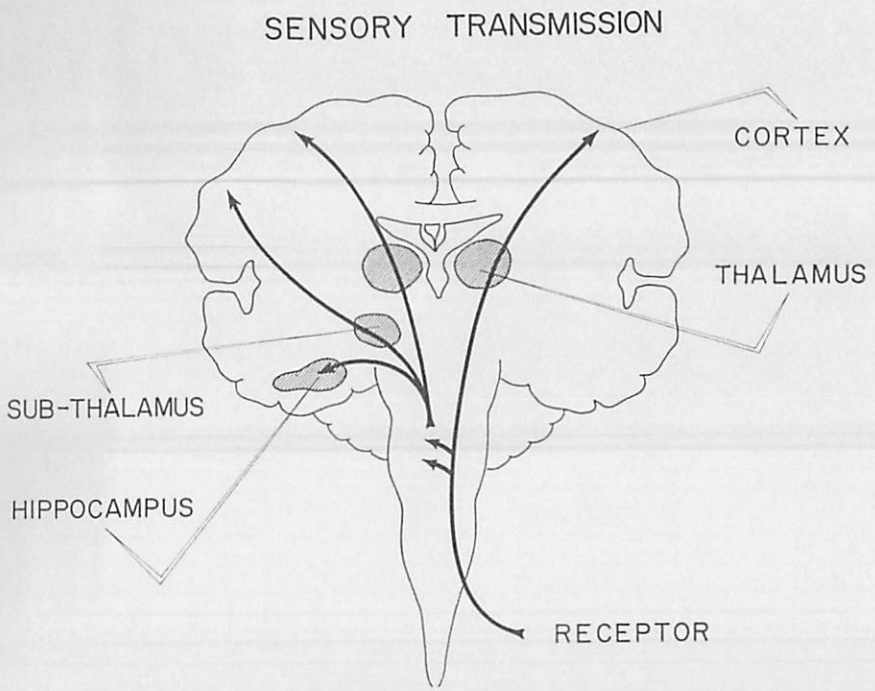

Fig. 1. Oversimplified diagram illustrating the specific and the polysensory pathways activated by impulses originated in sensory receptors.

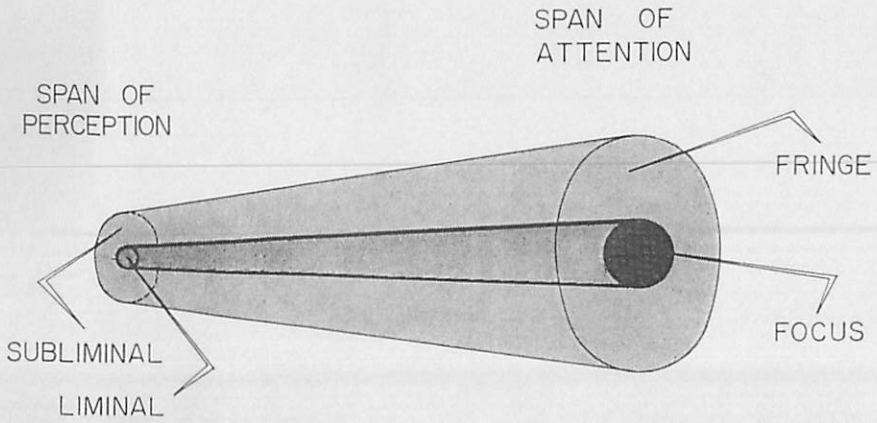

Fig. 2. This diagram illustrates the concept of the span of attention with a circumscribed focus corresponding to well-defined perceptions (liminal) and a peripheral fringe corresponding to ill-defined perceptions (subliminal).

span of attention. Attention is a necessary process underlying sensory perception, the importance of which cannot be overemphasized. Attention may be compared to a beam of light in which the central brilliant part represents the focus surrounded by a less intense fringe. Only the items located in the focus of attention are distinctly perceived whereas we are less aware of the objects located in the fringe of attention (Fig. 2). The conclusion seems warranted that the brain must have some mechanism filtering sensory information before it is consciously perceived. Therefore, two main questions arise: (1) where does sensory filtering occur? (2) which are the central structures responsible for sensory filtering?

There are several varieties of attention which can be classified according to origin, development, and object. According to its origin, attention can be classified into nonvoluntary, passive, or reflex, and voluntary or active. I have proposed the terms extero-evoked and auto-evoked attention which refer simply to phenomena evoked outside or inside the brain.[14] According to its temporal development, attention can be immediate or direct, and derived or indirect. According to its object, attention is sensorial when it is focused upon a sensory stimulus, and ideational when it is focused upon mental processes as ideas or memories (Fig. 3).

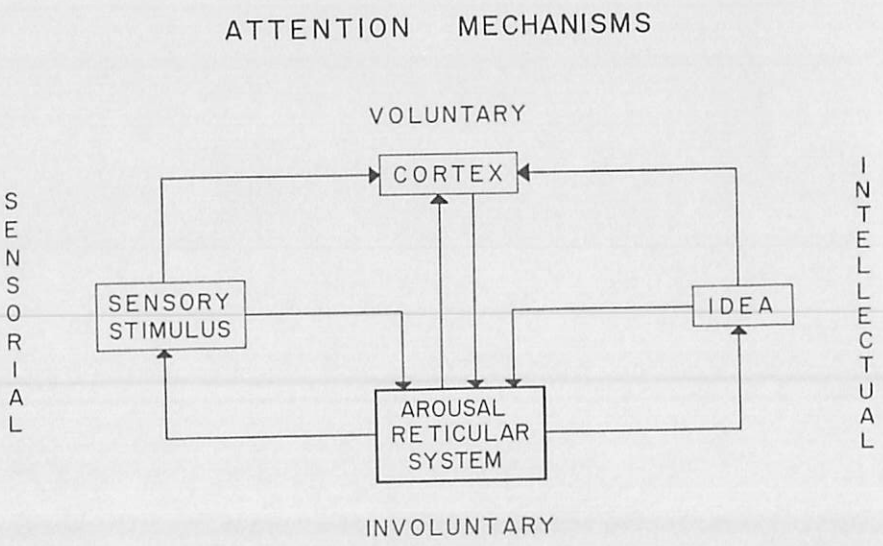

Fig. 3. Central mechanisms of attention. While involuntary attention requires only an activation of the arousal reticular system, voluntary attention involves corticoreticular circuits.

Some experimental data which explain the origin and the mechanisms responsible for the above-mentioned types of attention will be discussed now. What happens in the transmission of afferent impulses along the classical specific sensory pathways when attention is directed toward a stimulus of a different sensory modality? It is a common experience that when we are attending to a very interesting reading, we may not hear a loud noise behind us. Therefore, I wondered what happens in the transmission of sensory impulses in the auditory pathway when attention is directed towards a significant visual stimulus. The finding that electrical stimulation of the midbrain reticular formation inhibits somatic afferent impulses at the first sensory synapse[8, 22, 30] led me to choose the cochlear nucleus as the site of recording, because it represents the first synapse in the auditory pathway where the impulses coming from the auditory nerve enter into the brain. The potentials evoked by clicks were recorded in cats with electrodes permanently implanted. Those potentials had a stable magnitude when the animal was relaxed. A couple of mice were then presented to the cat, and, when the latter appeared very attentively looking at them, the same clicks evoked much smaller potentials which recovered after retiring the mice from the cat's sight.[29]

These experiments indicated that there is a central mechanism which can block the entrance of sensory signals to the brain at the first synapse of the auditory pathway. Therefore, it became important to know whether attention is associated with blocking at the first synapse of other sensory pathways. Other experiments provided a positive answer to this question. Bipolar electrodes were implanted in the lateral column of the spinal cord for recording afferent volleys in the spinothalamic tract.[10, 18] The tactile stimulus was a single shock of mild intensity applied to the corresponding skin area. The shocks were felt by the experimenter as a slight stroke. It was observed that when the cat was relaxed, the potentials had a consistent magnitude. But when a rat inside a jar was presented to the cat, the tactile potentials were significantly reduced or completely abolished. A few seconds later, after retiring the rat, and when the cat became relaxed again, the potentials recovered their original magnitude. It is evident that, whatever is the site where the integration of sensory impulses results in sensory perception, the cat did not feel the tactile stimulus when he was attentive to the rat because the corresponding sensory impulses did not ascend beyond the spinal cord.

The same blocking effect was produced when the attention of the animal

was focused upon a stimulus of a different sensory modality. The tactile potentials recorded from the spinothalamic tract were practically abolished when the cat was very attentively sniffing fish odor blown through a tube to the interior cage. Therefore, it is obvious that the animal did not feel the tactile stimulus at that moment. Other experiments showed a blocking effect at the spinal cord when the animal was attentive to a scratching noise in the wall of the cage or when he was licking himself.[18] Sensory blocking has been observed in the visual pathway at the retinal level by recording photic evoked potentials in the optic tract (which represents the axons of the ganglion cells of the retina). Again, the photic evoked potentials were of stable magnitude when the cat was relaxed. However, when fish odor was introduced into the cage, the potentials were reduced as long as the animal was sniffing. As soon as sniffing ceased and the cat became relaxed, the photic evoked potentials recovered their previous magnitude.[37] Therefore, it can be stated that when attention is focused upon some olfactory or auditory stimulus, visual impulses are partially blocked at the retina.

The generalization can be made that *when attention is focused upon a stimulus of any given sensory modality, transmission at the first synapse of other sensory pathways is partially blocked.* Sensory blocking cannot be total since selective discrimination can occur within the same sensory modality. For instance, when we are attentively looking at a movie, we do not perceive the frame of the screen even though it occupies part of our visual field. The experimental demonstration of selectivity in sensory filtering was provided by the following experiment.[37] After recording photic evoked potentials from the optic tract in the cat during relaxed wakefulness, a white rat which did not interfere with the intensity of the flashes of light was presented to the cat. As long as the latter was attentively looking at the rat, the retinal potentials diminished, especially the late waves. When the cat became inattentive to the rat, although the latter remained in the same position, the potentials recovered their previous magnitude. The conclusion seems warranted that *a selective blocking occurs in a sensory pathway when attention is focused upon a significant stimulus of the same sensory modality.*

Attention involves not only the blocking of certain sensory signals elicited by objects located out of the focus of attention, but there is a simultaneous dominance of the sensory experience produced by the object of attention. Therefore, it is logical to think that besides the centrifugal inhibitory in-

fluences taking place at the level of the first sensory synapse, similar centrifugal facilitatory influences would favor the transmission of the sensory signals evoked by the object on which attention is focused. This hypothesis was tested by using the Pavlovian conditioning technique in order to produce a selective focusing of attention upon the experimental stimulus. Photic evoked potentials were recorded from the optic tract. The conditional stimulus consisted of four flashes of light applied at a rate of one per second. The potentials evoked by the third and fourth flashes were smaller than the potentials evoked by the first and second flashes. After a control period, a painful electric shock was applied to a leg of the cat during the fourth flash. After several associations, the potential evoked by the fourth flash was enhanced. These results demonstrated that *by Pavlovian conditioning it is possible to increase retinal excitability facilitating sensory transmission at the retina itself.*

Another example of centrifugal facilitation of lower sensory neurons was provided by experiments in which the electrical activity of the olfactory bulb was recorded in unrestrained cats with implanted electrodes.[23] When the cat was awake but relaxed, a low voltage electrical activity was recorded, but as soon as the cat was alerted by a stimulus of any sensory modality, bursts of rhythmic activity appeared in the olfactory bulb. This activity increased in parallel with the state of alertness. Centrifugal alerting facilitation of the olfactory bulb in macrosmatic animals such as the cat may be related to the importance of olfaction for exploration of their environment.

The oscillating nature of the sensory centrifugal influences can be seen by recording simultaneously the electrical activity of various sensory pathways. This has been done[31] in the olfactory bulb, the spinal fifth sensory nucleus, and the cochlear nucleus. Single shocks applied to the skin of the face evoked potentials from the bulbar relay of the trigeminal afferents. Auditory potentials were evoked by clicks in the cochlear nucleus. After having a control record during relaxed wakefulness, a mouse was presented to the cat. As soon as the cat became alert, there was an increased activity of the olfactory bulb, the trigeminal potentials were facilitated, and the auditory potentials diminished. A few seconds later, when the cat was attentively looking at the mouse, the electrical activity of the olfactory bulb was further increased, but the potentials of the spinal fifth sensory nucleus were practically abolished, and the potentials of the cochlear nucleus were further reduced. Therefore, *during alertness, some sensory pathways are facilitated and others are inhibited.* After retiring the mouse, the activity in all three sensory pathways recovered their previous magnitude.

In addition to these transient changes in sensory transmission related to shifts of attention, there are more enduring changes occurring also at the level of the first sensory synapse which are related to learning and to the significance of the stimuli. By recording auditory evoked potentials from the cochlear nucleus, we[28] observed that after repeating the clicks a certain number of times, the potentials diminished in amplitude and sometimes disappeared. This phenomenon is a manifestation of habituation similar to other decremental behavioral responses. Evidence that the blocking of sensory transmission was related to lack of significance of the stimulus, was provided by the following experiment: after the animal was habituated, an electric shock applied to a paw of the cat was associated with the clicks. Following a certain number of associations, the clicks became significant to the cat, and the potentials from the cochlear nucleus reappeared. The reinforcement by the electric shock was then stopped, repeating again only the clicks; after presenting some stimuli, the potentials from the cochlear nucleus disappeared again.[26] Therefore, when the clicks became nonsignificant to the cat, sensory transmission was blocked at the level of the cochlear nucleus and when the clicks regained significance, sensory transmission was facilitated.

A similar phenomenon has been observed in the olfactory pathway. Activity was evoked in the olfactory bulb by blowing fish odor to the cat through a cannula permanently implanted into the nose introduced through the frontal sinus.[11] After blowing fish odor many times, the evoked activity in the olfactory bulb diminished and practically disappeared. If the cat was then given fish to eat, the next blow evoked a distinctive rhythmic activity. However, if unrewarded blowing was repeated, the evoked activity decreased again. Therefore, it appears that *the entrance of sensory signals to the brain is related to the significance of the stimulus.*

Which are the brain structures responsible for filtering of sensory signals occurring at the level of the first sensory synapse? Since the rostral part of the brain stem is essential for wakefulness, it is likely that the filtering mechanisms acting during attention are related to this region. In fact, blocking of sensory signals at the first sensory synapse is elicited by electrical stimulation of the mesencephalic reticular formation.[13] In the experiment to be described, electrodes were permanently implanted in the spinal fifth sensory nucleus, in the face area of the somatic sensory cortex, and in the

mesencephalic reticular formation. Afferent volleys were recorded from the bulbar relay of the trigeminal afferents and from the cortical end of the trigeminal pathway when the cat was relaxed. Then, the brain stem reticular formation was stimulated electrically producing a state of alertness. At this particular moment, the potentials diminished both at the spinal fifth sensory nucleus and at the cortex. Some seconds later, when the cat became relaxed again, the potentials recovered their previous magnitude. Therefore, *the blocking effect observed during physiological attention can be reproduced by electrical stimulation of the reticular system in the brain stem.* The olfactory bulb can also be activated by electrical stimulation of the mesencephalic reticular formation.[23]

The objection can be raised that electrical stimulation is a nonphysiological stimulus. However, stronger evidence for a physiological nature of the inhibitory influences would be provided by lesions if effects opposite to those of electrical stimulation are obtained.

In order to test this hypothesis, we[27] recorded the potentials evoked in the spinal fifth sensory nucleus by single shocks applied to the infraorbital nerve when the cat was awake. Following a lesion in the mesencephalic tegmentum which rendered the cat unconscious, the potentials became remarkably enhanced. Therefore, *during unconsciousness more sensory impulses entered into the brain than during wakefulness.*

From the foregoing experiments the possibility cannot be ruled out that the influences responsible for sensory inhibition at the first sensory synapse come from the cortex or other high levels of the brain. In order to test whether the brain stem is a source of inhibitory influences, the following experiment was performed: in decerebrate cats with the brain stem transected at the mesencephalon, we[17] recorded tactile evoked potentials from the lateral column of the spinal cord. Almost immediately after a high transection of the spinal cord, a remarkable enhancement of the tactile evoked potentials was observed. This experiment showed that *the tonic descending inhibitory influence comes from the hindbrain.* The diagram illustrated in Figure 4 shows the centrifugal influences coming from the central core of the brain stem and acting at the first sensory synapse of almost all sensory pathways: the olfactory bulb, the retina, the cochlear nucleus, the gracilis and cuneatus nuclei, the spinal fifth sensory nucleus, and the first sensory synapse of the spinothalamic tract in the spinal cord.

In addition to inhibition and facilitation of sensory transmission, there are also changes of excitability in nonsensory brain structures during alert-

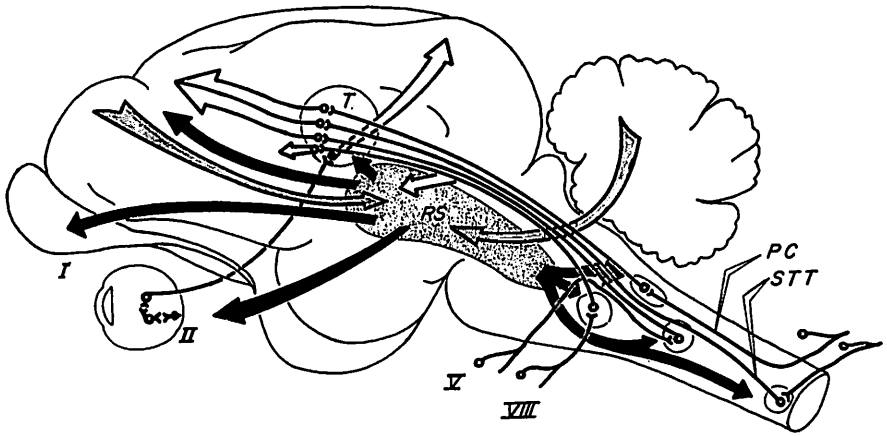

Fig. 4. Reticulofugal inhibitory and facilitatory influences acting at the first sensory synapse of the spinal cord, the gracilis nucleus, the spinal V sensory nucleus, the cochlear nucleus, the retina and the olfactory bulb. (P.C., posterior column; S.T.T., spinal thalamic tract; T., thalamus; R.S., reticular system.)

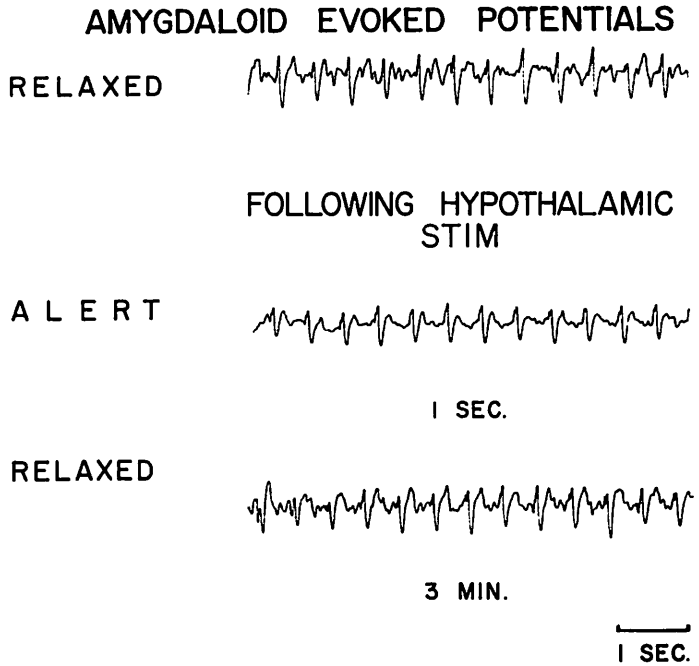

Fig. 5. Reduction of amygdaloid potentials during alertness induced by electrical stimulation of the posterior hypothalamus. The potentials were serially evoked by single electric shocks applied 1 mm. away from the recording site in the basolateral complex of the amygdala.

ness. For instance, evoked potentials recorded from the lateral part of the amygdala (Fig. 5) and the thalamocortical recruiting responses are reduced during alertness. There are ascending and descending reticulofugal influences arising from the arousal or vigilance system located in the rostral portion of the brain stem which regulate the excitability of the whole central nervous system. Those influences are facilitatory and inhibitory, but the latter are probably more extensive than the former at any given time. In my opinion, *during wakefulness there is more inhibition than facilitation in our brains.*

The results obtained in cats have been extended to man. We[21] recorded photically evoked potentials with implanted electrodes in the optic radiations of some patients in which ventriculography had to be done. The potentials evoked by flashes of light were significantly reduced when the subject was concentrated on an arithmetic problem. When the subject solved the problem, the potentials recovered. This experiment was repeated several times in each subject. Therefore, *subcortical sensory blocking occurs not only when attention is focused upon an external stimulus but also when attention is focused upon a mental process.* That this blocking effect is related to the degree of concentration of attention was shown in experiments in which the subject was presented with arithmetic problems of different degrees of difficulty. Difficult problems always produced the largest reduction of the evoked potentials. Obviously, sensory blocking was related to the degree of concentration of attention, and this degree varies in different subjects according to their previous experience. Decreased evoked potentials were also recorded when attention was focused upon a recalled past experience. In a patient who had visual hallucinations, I asked him to recall those hallucinations. At that moment, the evoked potentials were reduced as compared to the potentials recorded before and after that situation.

Since it is not easy to find an opportunity for recording directly from the human brain, it has become necessary to use a technique which permits recording sensory evoked potentials from the scalp. This is possible with a photo-electronic averaging technique which summates the evoked activity, and diminishes the random background activity.[9, 36] We[15] have found that in normal subjects, the tactile potentials recorded during relaxed wakefulness practically disappeared when the subject was engaged in a conversation of interest to him. When the conversation was over, the potentials recovered again. Repetition of tactile stimuli of low intensity was accompanied by rapid habituation of the evoked potentials. Figure 6 shows a progressive and very significant diminution of the sensory signals arriving at the cortex by monotonous repetition of the same nonsignificant stimulus.

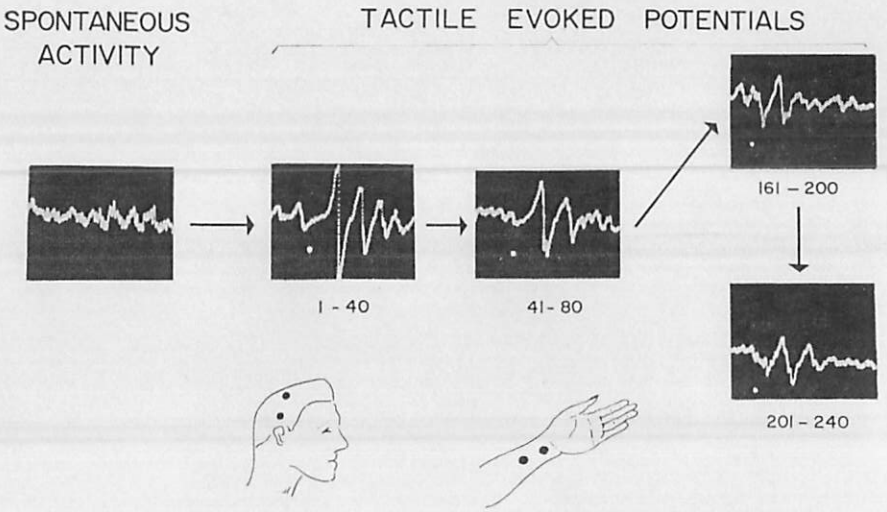

Fig. 6. Habituation of tactile averaged evoked potentials recorded from the scalp of a normal subject with a photo-electronic technique. Each picture represents the average of 40 consecutive potentials evoked by single shocks applied to the skin of the contralateral forearm at a rate of 1/sec.

With this method, we[16] have made preliminary studies of sensory transmission in mentally retarded subjects. Mentally retarded subjects cannot maintain their attention upon a given stimulus for a prolonged period of time as normal people do. Therefore, we wanted to know which are the disturbances of the neurophysiological mechanisms of attention in mentally retarded subjects. Contrary to what we found in normal subjects, the first potentials in the mentally retarded subjects were usually small, but as the stimulus was repeated, the potentials grew and became larger. Only later, the potentials decreased and became habituated as occurred in normal persons. Distraction and attention produced long latency effects in the mentally retarded subjects. In the experiment illustrated in Figure 7 the subject was distracted by asking him a question. The first effect was an enhancement of the evoked potentials, *i.e.*, an effect opposite to that found in normal subjects. Only after a minimum of 40 seconds, the potentials were reduced, in comparison with the potentials recorded during relaxed wakefulness. When the subjects were asked to pay

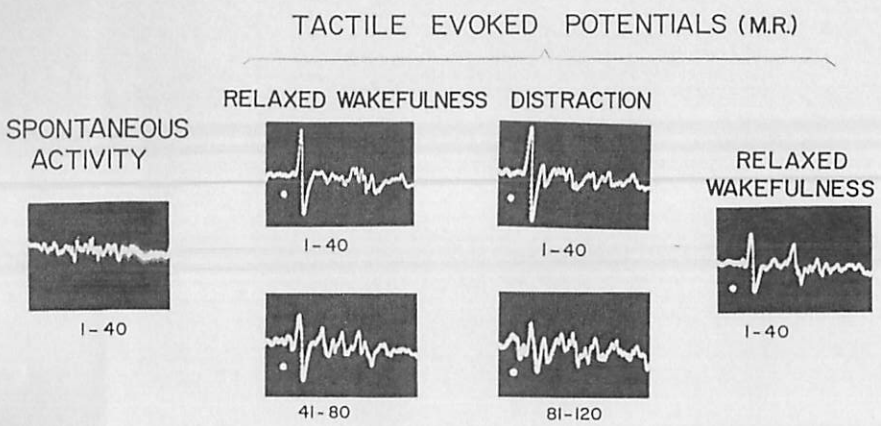

Fig. 7. Delayed effects of distraction on the tactile averaged evoked potentials recorded in a mentally retarded subject 16 years of age.

attention to the tactile stimulus, a lag of at least 40 seconds elapsed before the potentials were enhanced.

Which are the brain mechanisms responsible for voluntary attention? It is well known that the vigilance system of the brain stem can be activated both by sensory impulses coming from collaterals of the specific sensory pathways and by impulses coming from certain areas of the neocortex.[7] These cortico-reticular projections are probably involved in voluntary attention. The various types of attention (voluntary, involuntary, sensorial, ideational) require the activation of the reticular system which is connected in both directions with the cortex. The reticular system influences the cortex, and, in turn, the cortex can influence the brain stem arousal system. The sensorial and the involuntary attention require only the activation of the brain stem arousal system by the sensory stimulus, producing changes in sensory transmission at subcortical levels. Voluntary attention would involve cortico-reticular mechanisms, which in turn modify sensory transmission in the specific sensory pathways as well as the excitability of the neuronal circuits concerned with memories and with the formation of ideas (Fig. 8).

Since it is well known that our sensory experiences can be modified by suggestions, an important question is whether verbal suggestions can modify sensory transmission. In two very suggestible subjects with electrodes implanted in the optic radiations, we[21] tested the effects of verbal suggestions upon photic potentials evoked by flashes of light. Those potentials were reduced when the subjects were told that they would receive less

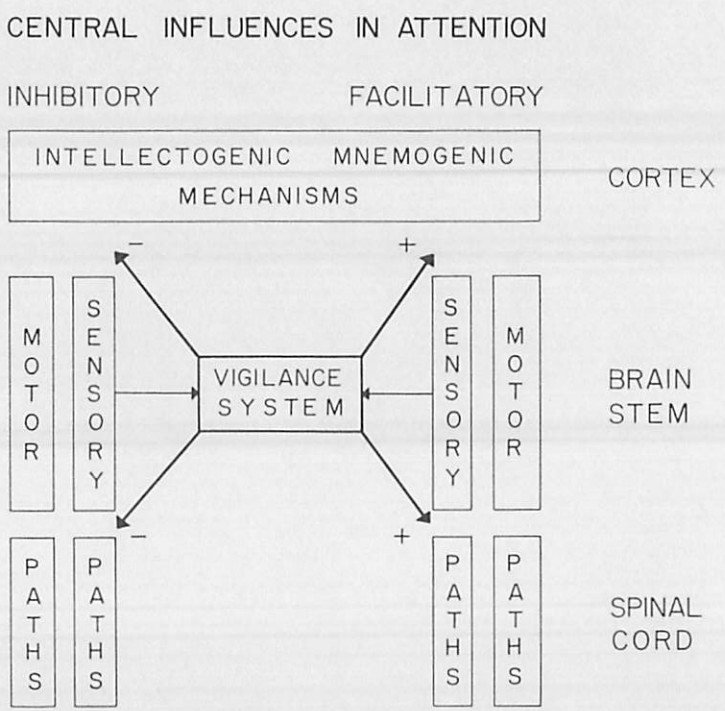

Fig. 8. This diagram illustrates the inhibitory and facilitatory influences exerted by the vigilance system during attention at different levels of sensory, motor, mnemogenic and intellectual mechanisms.

intense stimuli. Likewise, when the subjects were instructed that the light was going to be more intense, the evoked potentials were facilitated as compared to the potentials recorded before and after the verbal suggestion. Therefore, *verbal suggestion is capable of modifying sensory transmission at subcortical levels of the brain.* Since suggestion is maximal during hypnosis, it seemed convenient to me to explore possible subcortical sensory changes during this state. We[32] found that the flexor spinal reflexes evoked by single shocks applied to the skin of the forearm were significantly decreased during suggested anesthesia of the forearm, recovering during posthypnotic wakefulness. These experiments showed that *a selective decrease of excitability at the spinal level can be elicited by hypnotic suggested anesthesia.*

Are there alterations of sensory transmission in hysterical patients with sensory disturbances? It has been proposed that hypnotic and hysterical sensory manifestations are similar phenomena. In a hysterical patient (a

15-year-old girl) who presented analgesia of one arm, we[20] recorded somatic evoked potentials through the scalp using the photo-electronic averaging technique mentioned above. Single shocks of the same intensity were applied first in the normal arm, and later on in the anesthetized arm. While clear-cut evoked activity was detected by stimulating the normal arm, no distinct potentials were evoked by stimulating the anesthetized arm. In order to test whether the observed sensory blockade was the result of a descending sensory inhibition similar to that found in the cat, Kemithal was intravenously injected. During light barbiturate sleep, distinct evoked potentials appeared by stimulating the anesthetized arm. These results indicated that *in hysterical anesthesia there is a functional blockade of sensory transmission which is released by barbiturates.* Since it is known that hysterical symptoms disappear, or at least, are eliminated transiently by a painful stimulus, alcohol was injected intramuscularly to this patient in another session. As was observed with Kemithal, evoked potentials were then evoked by stimulating the anesthetized arm.

It is possible that consciousness might be subserved by a lower Vigilance System located at the mesencephalic and upper pontine level, and by a higher Vigilance System located in the diencephalon including the lower part of the thalamus. The lower Vigilance System would regulate sensory transmission at the level of the first sensory synapse and would be responsible for secondary consciousness, whereas the higher Vigilance System located more rostrally would regulate sensory transmission mainly at the cortical level.

A conception of the neurophysiology of the different states of consciousness would be incomplete if the mechanisms responsible for the onset of sleep are not considered. Although it has been usually assumed that sleep is a passive phenomenon resulting from reduced activity of the arousal system,[2] recent evidence supports the view that sleep is an active phenomenon which can be produced by localized electrical or chemical stimulation of the brain. Hess[33] was the first investigator to produce sleep with low frequency stimulation of the medial thalamus. More recently, it has been found that sleep can also be produced by electrical stimulation of the brain stem reticular formation[38, 39] and of many limbic structures.[3, 4, 12, 19, 40] The most effective region appeared to be the lateral preoptic region.[40]

Since synaptic transmission within the brain is probably determined by the release of chemical substances at presynaptic terminals, it is of paramount importance to know which are the chemical transmitters involved

in the Arousal and in the Sleep Systems. In order to gain a preliminary idea about the chemical nature of the substances involved in different patterns of behavior, during the last two years, with several collaborators, I have been applying minute crystals of some chemical agents through cannulae permanently implanted in the brain of cats.[12, 19, 24, 25] The results may be summarized as follows: cholinergic stimulation of a pathway extending from the preoptic region into the medial pontine tegmentum along the medial forebrain bundle, the interpeduncular nucleus and Bechterew's and Gudden's nuclei, elicited behavioral and electrographic manifestations of light and deep sleep. The cat fell asleep shortly (twenty seconds to two minutes) after a small crystal of cholinergic substances was introduced in this circuit. Some minutes later (half-hour to three hours) the cat woke up. Other experiments have demonstrated that parenteral administration of atropine prevents sleep otherwise produced by electrical stimulation of the preoptic area.[12, 19] Furthermore, local application of atropine in the caudal end of the hypnogenic circuit prevented sleep otherwise produced by cholinergic stimulation of the rostral segment of the sleep pathway.[41] It is likely that acetylcholine is the chemical transmitter within the hypnogenic circuit mentioned above.

Sleep is more complex than it has been usually thought. Simultaneous recordings of the electrical activity of the cortex, of the muscles of the neck, and movements of the eyes have shown two characteristic patterns during light and deep sleep (Fig. 9). When the cat is lightly asleep, there is tonic activity in the neck muscles, slow, large waves in the cortex, and very rarely some eye movements. When the cat is deeply asleep (measured by the intensity of the auditory stimulus necessary to arouse the cat), the electrical activity from the neck muscles practically disappears, the electrocorticogram becomes desynchronized, and a great number of fast eye movements appear. According to Dement and Kleitman,[6] dreams appear during the latter phase of sleep. Therefore, an understanding of the neurophysiological mechanisms of dreaming requires more knowledge about the deep phase of sleep.

Unpublished experiments of Allison in my laboratories have shown that sensory transmisson is modified differently in the specific sensory systems and in the polysensory system during the two phases of sleep. During light sleep, thalamocortical transmission in the specific somatic path is increased, and is further increased during deep sleep. If deep sleep results from extensive inhibition of the arousal system of the brain stem, one of the

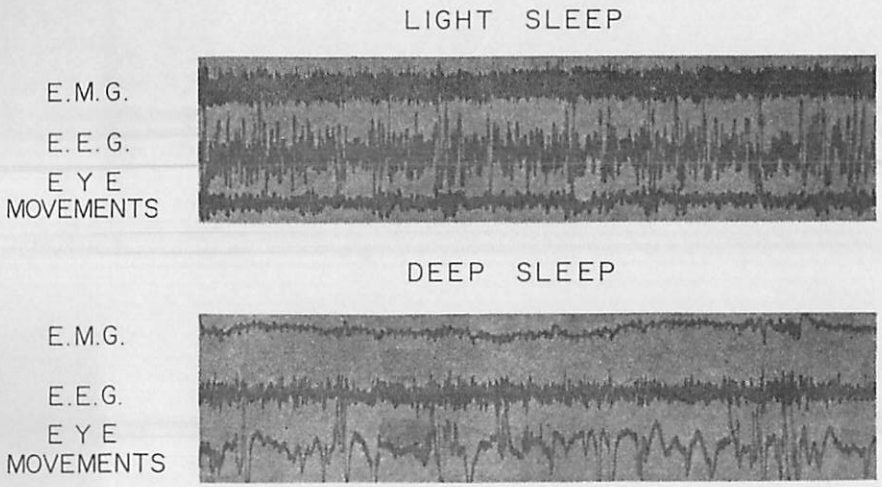

Fig. 9. Electrophysiological characteristics of the light and deep stages of sleep. Recordings from a cat with implanted electrodes. (E.M.G., electromyogram of the neck muscles; E.E.G., electrical activity of the cortex.)

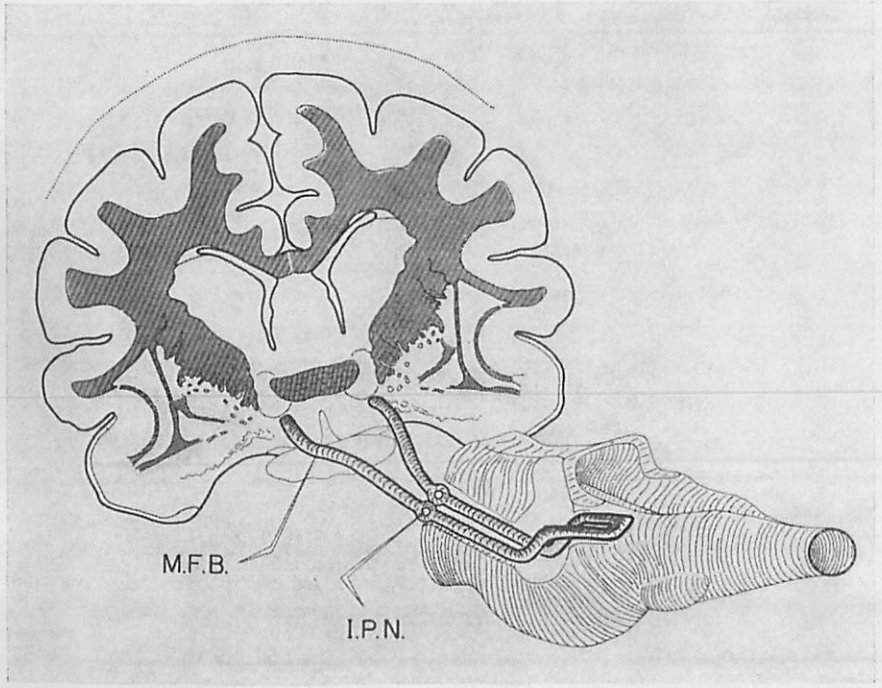

Fig. 10. Phantom diagram illustrating the trajectory of the cholinergic hypnogenic circuit extending from the forebrain to the hindbrain.

consequences is a release of the descending reticulofugal tonic inhibition on the specific afferent pathways. Contrariwise, transmission in the polysensory system is reduced or inhibited during deep sleep. These results support the view that during deep sleep some polysensory structures are inhibited while the thalamocortical segments of the specific sensory pathways are disinhibited.

The Sleep System extends from the forebrain to the hindbrain (Fig. 10). Since the caudal part probably acts directly upon the Vigilance System, it is not surprising that a transection at the midpontine level produces a permanently awake brain.[1] It has also been proposed without direct evidence that the neocortex participates in sleep.[5, 34, 35] In my own view, *sleep results from direct active inhibition of the reticular arousal system* located in the rostral portion of the brain stem. Hypnogenic impulses descend along the circuit previously described. The Arousal and Sleep Systems would be in dynamic equilibrium. The Arousal System would inhibit the Sleep System and, in turn, the Sleep System would directly inhibit the Arousal System (Fig. 11). Therefore, wakefulness and sleep result from the dominance of the Arousal or of the Sleep System at that particular moment.

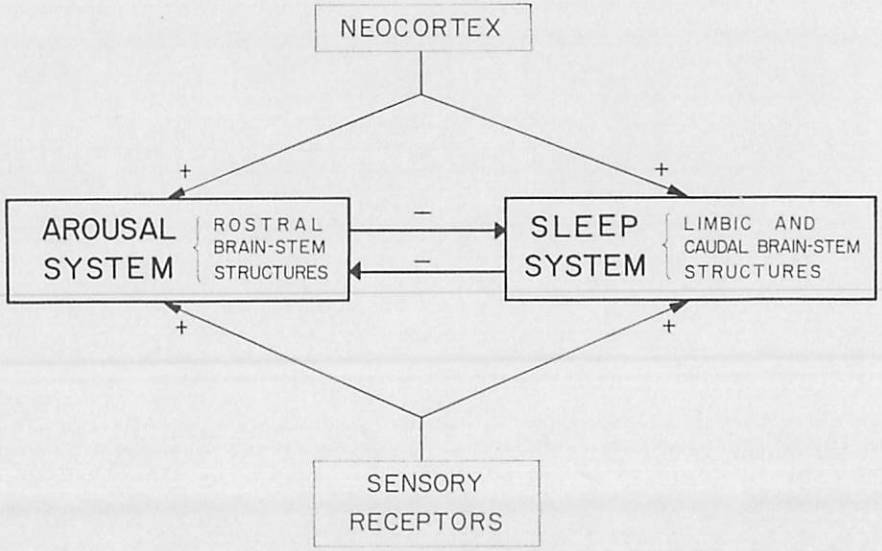

Fig. 11. Reciprocal inhibitory connections between the arousal and the sleep systems. The balance can be shifted by excitatory impulses arriving to each system from the sensory receptors or from the neocortex.

The two systems in equilibrium can be activated by impulses coming either from sensory receptors or from the neocortex. It is known that arousal can be produced by any kind of sensory stimulation, and also that sleep can be elicited by certain parameters or sensory stimulation. For instance, monotonous rhythmic stimulation usually leads to sleep. On the other hand, it is known that we can wake up at will at a given moment if we want to, and on certain occasions we can also fall asleep voluntarily. According to this view, the dynamic equilibrium would be unbalanced by an excessive bombardment from sensory receptors or from the neocortex.

Finally, I would like to propose a hypothesis for explaining dreaming. Dreaming is probably the result of activity within a special neuronal system that may be termed the Dreaming System. Although the anatomical substrate is at present completely unknown, it must involve structures related to memory such as the temporal cortex, the hippocampus, or both. The Vigilance System is inhibited by the Sleep System and, in turn, the Vigilance System would inhibit the Dreaming System (Fig. 12). When the Vigilance System is extensively inhibited by the Sleep System, as occurs during deep sleep, the Dreaming System would be released, and the activity in this neuronal system would be increased in a disorganized fashion which makes fragments of past experience appear unreal.

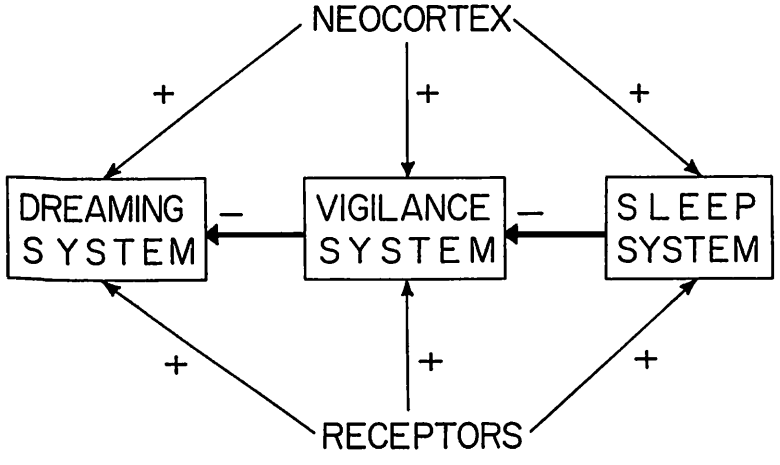

Fig. 12. Postulated mechanisms for explaining wakefulness, sleep and dreaming. The maximal activation of the sleep system results in a maximal inhibition of the vigilance system which in turn releases inhibitory influences upon the unidentified dreaming system. Each system can be activated by sensory or corticofugal impulses.

These three systems (the Sleep System, the Vigilance System and the Dreaming System) can be activated both by impulses coming from sensory receptors as well as from the neocortex. It is a common experience that dreams can be triggered by certain types of sensory stimuli, and sometimes we can continue at will an interrupted dream. In testing this hypothesis, future neurophysiological research may provide a scientific basis for a more efficient handling of unconsciously stored sensory information.

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THE INFANCY OF PSYCHIATRY*

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Psychiatry did not begin in the late 19th century in Vienna, nor even a century earlier in Paris. The recognition of mental disease and the efforts to treat it go back to the beginnings of mankind. It is impossible to find an actual starting point because it must lie in preliterate times. But if we study the earliest existing records, whether they be artifacts, epic poems or religious texts, or the subsequent medical treatises that have come to light, we become aware that mental disorders have changed little in their various forms and manifestations; and that there have always been individual physicians who thought such illness important enough to merit description and even attempt at alleviation.

In order to appreciate the ancient approach to mental healing it must be realized that many ancient descriptions of strange states of mind clearly spell out mental disease only to the modern reader. To the original recorder the pathological nature of the behavior problem often remained completely hidden. Even in those cases where the medical observer was aware that he was describing a diseased mind, his writings reveal that he was content to observe or, at most, to direct his therapeutic effort to the symptoms and not to the cause of the aberration.

The reason for this attitude can be stated simply: In early medicine causes were not studied. Disease, and especially mental disease, was held to come from outside, to have been sent by the gods as punishment, by evil spirits as an annoyance, or by humans with supernatural powers as revenge. In consequence, any attempt on the part of the healer to probe too deeply into aberrant mental processes was considered as meddling with forces better left alone.

At the same time the assigning of superhuman responsibility for mental disease brought about very definite reactions in the patient, his family and the doctor alike. If, as in the earliest civilizations of the past, in the Middle Ages, and still in some less advanced societies of today, mental disease was regarded as a divine punishment for a known or suspected

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misdeed (perpetrated by the victim himself, or by some member of the family), such disease became a visible token of sin, and thus a disgrace. With the recognition of hereditary factors in some forms of aberration, which occurred quite early, social ostracism was applied in these situations which often dogged a family for generations and made it imperative to keep mental disease a family secret. The attitude of family responsibility and family shame, which still survives and often causes considerable delay in treatment, may be partly attributed to an unconscious memory of such older considerations.

Strangely, there were certain behavioral disorders which were not considered to fall into this class; the afflicted person was thought to be an instrument of the gods for the transmission of divine wishes to the people, and his aberration a token of special grace. Among such disorders were epileptic seizures, trances, temporary assumption of different personality traits, and hallucinations. This concept naturally led to hesitation and delay in seeking treatment, a fact which often prevails even today in bringing persons "blessed with visions" under psychiatric observation.

Early attention was given only in one category of the mentally afflicted, namely to those who were deemed to be suffering from supernatural "possession." Here the therapy incidentally anticipated to some extent the modern method of shock treatment although for totally different reasons. The patient was subjected to physical maltreatment, with no idea of punishment but to make his body an unpleasant abode for the intruding demons and evil spirits. The attempts at healing do not seem to have gone beyond such efforts and, when they failed, the patients were simply put away and neglected, a most deplorable practice which carried over well into the nineteenth century.

There was one period in antiquity, however, that contrasts sharply with the earlier days and also with the Middle Ages that were to follow. It was the period of classical antiquity during which intensive investigations were made into the *natural* causes of disease. This search began with the physicians of the Hippocratic period; and it is in the *Corpus Hippocraticum*, the writings that are generally attributed to the greatest of the Greek physicians, that the natural origin of disease is first discussed.

Since it bears on our subject, a few words should be said about Hippocratic medicine and its founder who is revered as the "father of the art of healing." Strangely enough, almost nothing is known about this most venerated of all physicians. We know that he existed, for several of his

contemporaries mentioned him in their writings; we know that he traveled much, for his presence was reported in many distant spots; we know that he lived in the fourth century B.C., for that is the date of his contemporaries. He is said to have been born on the island of Cos. Nothing else is known about Hippocrates—there is not even a bust of him to perpetuate his likeness. He is reputed to have lived longer than one hundred years, but this we must interpret as a compliment to the great physician; historically, it cannot be verified.

We are not even certain how many of the 70 books that bear his name were written by Hippocrates himself. It is evident that they were the work of many authors, that they were written over several centuries and by men of divergent points of view. And yet, while we cannot call them the works of Hippocrates, we can speak about the *Corpus Hippocraticum*, for there is one unifying principle throughout all the books: It is the firm belief in the natural cause of disease and the complete absence of any divine or superhuman influence on human health. There is yet another important factor that emerges in all Hippocratic writings: It is the fact that the brain was recognized as the center of the senses and the sensibilities, and as the organ of thought and emotion. Both its composition and function were unknown; it was believed to be a gland, like all other glands of the body. As such, its function was to secrete fluids and to distribute them throughout the body; retention of these fluids in the brain would produce apoplexy, delirium, epilepsy and all the other mental afflictions which were then known.

The role of the brain, however, as the source of emotions was recognized and superbly described:[1] "And men ought to know that from nothing else but thence (from the brain) come joys, delights, laughter and sports, and sorrows, griefs, despondency, and lamentations. And by this, in an especial manner, we acquire wisdom and knowledge, and see and hear, and know what are foul and what are fair, what are bad and what are good, what are sweet, and what unsavory; some we discriminate by habit, and some we perceive by their utility. By this we distinguish objects of relish and disrelish, according to the seasons; and the same things do not always please us. And by the same organ we become mad and delirious, and fears and terrors assail us, some by night, and some by day, and dreams and untimely wanderings, and cares that are not suitable, and ignorance of present circumstances, desuetude, and unskillfulness. All these things we endure from the brain, when it is

not healthy, but is more hot, more cold, more moist, or more dry than natural, or when it suffers any other preternatural and unusual affection."

The Hippocratic Corpus does not contain special sections on mental disease; for that matter, not until the very beginning of the 19th century do we find authors who concerned themselves solely with this field of study. But throughout the writings we find references to diseases of the mind, to phrenitis, mania and melancholia, and to other states for which there were no specific names.

The most frequently mentioned of all emotional disorders is melancholia which was believed to be caused by a superabundance of black bile from which substance it derived its name (Greek: *melas* = black and *cholé* = bile). But regardless of the etiological theories, the condition and its manifestations were described with much clarity and there was also an explicit understanding of the merging of several conditions, or the transformation of one into another. Melancholic patients were known to develop temporary states of mania, and hysterical patients were observed to turn melancholy. Rather than seeing each as a separate disease they were recognized to be different phases of the same disorder.

Hysteria or "uterine suffocation," with dramatic symptoms of fits and paroxysms, was frequently observed. It was attributed to a temporary dislocation of the uterus (Greek: *hystera*), and treatment was directed toward the return of this wandering organ to its normal place. Marriage and pregnancy were considered especially useful for this purpose.

Depression with suicidal tendencies was discussed, as was alcoholism and acute intoxication. Alcoholic delirium was believed to be caused by a swelling of the liver and the pressure of the liver on the diaphragm. In acute states the patients were described as seeing snakes and fighting goblins; and they were treated with emetics, hot applications, bleeding and pure wine. Simple advice is given in the words that "it is good to vomit after drunkenness."

The clearest statement on the natural causes of disease appears in a Hippocratic treatise on epilepsy which was popularly believed to be of divine origin and known as "the sacred disease." It must have been with a certain amount of irony that this designation was used as the title for the famous Hippocratic treatise:

On The Sacred Disease

"It is thus with regard to the disease called Sacred; it appears to me to be nowise more divine nor more sacred than other diseases, but has a

natural cause from which it originates like other affections. Men regard its nature and cause as divine from ignorance and wonder, because it is not at all like to other diseases. And this notation of its divinity is kept up by their inability to comprehend it, and the simplicity of the mode by which it is cured for men are freed from it by purifications and incantations. But if it is reckoned divine because it is wonderful, instead of one there are many diseases which would be sacred; for, as I will show, there are others no less wonderful and prodigious, which nobody imagines to be sacred. . . . Neither truly do I count it a worthy opinion to hold that the body of man is polluted by god, the most impure by the most holy; for were it defiled, or did it suffer from any other things, it would be like to be purified and sanctified rather than polluted by god."[2]

This rationalism, admirable as it was, was not entirely satisfactory to the large majority of the ancient Greeks, most of whom were still close to the gods. They saw that rational medicine, while effective in many instances, turned away a great number of patients who suffered from obscure or chronic diseases. Also, the Hippocratic physician, while theorizing about the origin of the dream, did little to utilize this ever-present phenomenon for the purpose of healing. The Greek world was dream conscious; political and personal decisions were based on dreams. A healing cult, based on dreams and under the auspices of a deity, combined the two elements dearest to all but the most learned. Thus it was that the temples of Aesculapius, the god of medicine and the son of Apollo, came to serve as centers of healing.

Aesculapius[3] is one of the younger gods in the Greek pantheon and there are many legends concerning his birth and early existence on earth. It seems probable that like Imhotep, the Egyptian god-healer, Aesculapius was also originally a highly respected priest-physician. In that office he interceded with the gods on behalf of the people's health, but eventually divine powers were attributed to him directly. The time of this gradual deification is not known, but it seems that the cult had existed for many centuries before it reached Athens in the 5th century B.C. The most important centers of the cult were in Epidaurus, Cos, and Pergamos. Two centuries later, by the time of Alexander the Great, several hundred such temples flourished all over Greece and Asia Minor.

Judging by the excavations it is obvious that the temple architects were very much aware of the healing effect of pleasing surroundings. Some of the temples were built near mineral or hot springs. The layouts of the *Asklepieia* near Epidaurus and Cos reveal that the priests endeavored to divert the patients' minds from their ailments, for close to

the temples there were theaters and gymnasia and playgrounds for festivals and sports.

The nature of the worship of Asklepios is revealed in a collection of inscriptions dealing with some 40 cases of healing. They are engraved on stone tablets and originally formed a part of a colonnade which was found in 1883 in the remains of the Asklepian temple at Epidaurus. These inscriptions indicate that the patient was brought to the temples as a suppliant and was required to fulfill certain preliminary rites, probably consisting of ablutions, fasting and the making of sacrifices. Afterward he was taken to the *Abaton*, a sacred place within the temple, where the incubation, or temple sleep, took place, and eventually, it is said, he awoke completely cured. The inscriptions further reveal that Aesculapian medicine contained elements of what is now known as psychosomatic therapy and that the priests made ample use of suggestion and impersonation of the god, perhaps even by means of hypnosis. The following quoted case histories[4] illustrate the procedure.

Inscription 3

A man, whose fingers with the exception of one were paralyzed, came as a suppliant to the god. While looking at the Tablets in the temple, he expressed incredulity regarding the cures and scoffed at the inscriptions. But in his sleep he saw a vision. It seemed to him that he was playing at dice below the Temple, and was about to cast the dice, (when) the god appeared, sprang upon his hand, and stretched out his (the patient's) fingers. When the god had stepped aside it seemed to the patient that he could bend his hand and (he) stretched out all his fingers one by one. When he had straightened them all the god asked him if he would still be incredulous of the inscriptions on the tablets in the Temple. He answered that he would not, (and the god said to him:) "Since, then, formerly you did not believe in the cures, though they were not incredible, for the future your name shall be 'Incredulous.'" When day dawned, he walked out sound.

Inscription 4

Ambrosia, of Athens, blind of one eye. She came as a suppliant to the god. As she walked about in the Temple, she laughed at some of the cures as incredible and impossible that the lame and the blind should be healed by merely seeing a dream. In her sleep she had a vision. It seemed to her that the god stood by her, and said that he would cure her, but that in payment he would ask her to dedicate to the Temple a silver pig, as a memorial of her ignorance. After saying this, he cut the diseased eyeball, and poured in some drug. When day came, she walked out sound.

Inscription 5

A dumb boy came as a suppliant to the Temple to recover his voice. When he had performed the preliminary sacrifices, and fulfilled the usual rites, the temple priest who bore the sacrificial fire, turned to the boy's father and said: "Do you promise to pay within a year the fees for the cure, if you obtain that for which you have come?" Suddenly the boy answered, "I do." His father was greatly astonished at this, and told his son to speak again. The boy repeated the words and so was cured.

The emphasis on payment and donations is extremely interesting. Indeed, they seem to have been an almost indispensable adjunct to the healing rites. Two inscriptions tell of blind patients who had regained their vision, but lost it again when they refused to pay the prearranged fee.

There is little doubt that all the above-mentioned patients were suffering from hysterical impairments of various types. The following cases appear to be of a similar nature.

Inscription 18

Alketas of Halika. This blind man saw a vision. He thought that the god came up to him and opened his eyes with his fingers. The first things he saw were the trees of the Temple. At daybreak he left the Temple restored to health.

Inscription 16

Nikanor, a lame man. While he was sitting wide-awake, a boy snatched his crutch from him and ran away. But Nikanor got up, pursued him, and so was cured.

These are just a few of the many instances of healing that have been recorded in the inscriptions. They throw an interesting light on the attitude of the patients, particularly upon those who doubted the healing power of the temple. It is particularly noteworthy that they were not afraid to voice their skepticism even in the presence of priests. There is, of course, the possibility that those who formulated the inscriptions exaggerated the element of disbelief in order to make the cures appear all the more miraculous.

But if it was true that there were persons with grave afflictions who came to an Asklepian temple with unconcealed doubt—why then did they come at all? Why did they not go to one of the profane healers who abounded in ancient Greece? This question is difficult to answer and yet various suppositions come to mind. Obviously, these patients were attracted to the temples because of the great reputation the Asklepian priests had acquired during the centuries of their practice; they may have used their skepticism to fortify themselves against disappointment in case of failure of the treatment. But it is also possible that the patients came to the temple because they had already visited other healers without being cured by them. And, finally, it is entirely conceivable that other physicians had declined to undertake the treatment.

Although dreams played such a significant part in temple diagnosis and therapy of disease, there was little uniformity of belief in ancient Greece as to the place of origin of those dreams and of emotions in general. Hippocrates, as has been shown, placed the origin of dreams, emotions and feeling in the brain. Others wondered at the seat of the soul and variously thought it to be in the brain or the heart. Traces of the last-named belief are still part of our daily speech; we refer to "love with all one's heart," to "the heartless person" and to a "hearty appetite." And even Plato's and Galen's views proposing the existence of a "tripartite soul," distributed over heart, brain and liver, have left their vestiges in our modern vocabulary.

Galen who flourished in the second century A.D. was one of the greatest medical scientists of his era. Yet it was possible for him to believe that a part of the soul was housed in the liver, for in his day neither the structure nor the function of the human body had been fully explored. Galen himself carried out a number of important physiological experiments, some even of a neurological nature; but his freedom of research was hampered by the prevailing taboos against the dissection of the human body, and he had to carry on his investigations on animals, specifically on pigs and apes.

While Galen was one of the few who were actively engaged in neurological and neuropsychiatric researches, many other physicians of his era were called upon to treat various forms of insanity, which also included febrile disturbances and temporary psychotic states accompanying physical illness. Because of the absence of any knowledge of disease entities, there existed no technique of keeping apart various types of mental afflictions. The only valid differentiation known in antiquity was that between chronic and acute disease. This differentiation was also maintained by Soranus of Ephesus, a Graeco-Roman physician of the 2nd century A.D. and his Latin interpreter, Caelius Aurelianus, who flourished around the 5th century A.D. Soranus may be called the first psychiatrist, for in his great book *On Acute Diseases and on Chronic*

Diseases he included detailed and brilliant descriptions of the diagnosis and treatment of mental disorders.

Among *Acute Disease*, he listed: Satyriasis, Phrenitis and Lethargy. The last-mentioned is described in great detail and characterized in the following manner: "Lethargy is a swift or acute attack of stupor with acute fever and a large, slow and hollow pulse. It is more common in old people, for impairment of the senses and depression are more characteristic of old age."

Phrenitis was considered to be an aggregate of symptoms which included acute fever, mental derangement, rapid pulse, and the plucking of straws and hairs. It is particularly the description of the mental derangement which is so extraordinarily interesting and reveals such astute observation that it must be quoted verbatim. The mental derangement may take the following forms:[5]

> ". . . quiet or loud laughter, singing or a state of sadness, silence, murmuring, crying or a barely audible muttering to one's self; or such a state of anger that the patient jumps up in a rage and can scarcely be held back, is wrathful at everyone, shouts, beats himself or tears his own clothing and that of his neighbors, or seeks to hide in fear, or weeps, or fails to answer those who are not present but with the dead, as if they were in his presence; and asks for neither food nor drink, or when he does take food falls violently upon it and gulps it down unchewed, or else chews it but does not swallow it, keeping it in his mouth and after a while spitting it out. And he shuns light or darkness, experiences continuous sleeplessness or short troubled sleep; his eyes are bloodshot, the blood vessels being distended: his gaze is fixed without any blinking, or else keeps wandering about with constant blinking; sometimes he puts his hands before his eyes as if seeking to catch or remove some object which he thinks has become stuck in his eye or is flying in front of him."

Both lethargy and phrenitis were accompanied by fever and seem to have been of physical origin. Soranus held both to be so frequent and important that he listed as follows the specific points to be considered in each of the maladies:

I. Are there Signs of the Coming of Phrenitis?
II. The Symptoms of Persons on the Verge of Phrenitis, Whom We Have Called "Slipping into the Disease."
III. How to Recognize Phrenitis.
IV. Diseases Resembling Phrenitis and How They are Distinguished from It.
V. How to Distinguish Between Cases of Mania in Which Fever is Present and Phrenitis.

VI. How to Distinguish Between Patients with Phrenitis Who are Asleep and Those Who are Passing into Lethargy.
VII. The Different Types of Phrenitis.
VIII. The Locus of the Affection in Phrenitis.
IX. The Treatment of Phrenitis.

In connection with hydrophobia, which was, of course, also considered an acute disease, Soranus grapples with the significant questions "Is hydrophobia a disease of the soul or the body?" "Is hydrophobia a new disease?"

Under *Chronic Diseases* the following are listed: Chronic headache, Scotoma (Blurring of the eyes, dizziness), Incubus (Nightmare), Epilepsy, Madness or Insanity (Mania), Melancholy and significantly, a chapter on *Effeminate Men*, also called *Pathics*. References to homosexuality were quite rare in the Graeco-Roman medical literature. Soranus and his interpreter Caelius Aurelianus are also among the very few authors of the period who revealed an emphatically critical attitude of the practice and yet are realistic enough to consider the disposition irreversible. The passage reads in part:

> "People find it hard to believe that effeminate men or pathics (Greek *malthacoe*) really exist. The fact is that, though the practices of such persons are unnatural to human beings, lust overcomes modesty and puts to shameful use parts intended for other functions. That is, in the case of certain individuals, there is no limit to their desire and no hope of satisfying it; and they cannot be content with their own lot, the lot which divine providence had marked out for them in assigning definite functions to the parts of the body. They even adopt the dress, walk, and other characteristics of women. Now this condition is different from a bodily disease; it is rather an affliction of a diseased mind. Indeed, often out of passion and in rare cases out of respect for certain persons to whom they are beholden, these pathics suddenly change their character and for a while try to give proof of their virility. But since they are not aware of their limitations, they are again the victims of excesses, subjecting their virility to too great a strain and consequently involving themselves in worse vices. And it is our opinion that these persons suffer no impairment of sensation. For, as Soranus says, this affliction comes from a corrupt and debased mind. Indeed, the victims of this malady may be compared to the women who are called *tribades* because they pursue both kinds of love. These women are more eager to lie with women than with men; in fact, they pursue women with almost masculine jealousy, and when they are freed or temporarily relieved of their passion . . . they rush, as if victims of continual intoxication, to new forms of lust, and, sustained by this disgraceful mode of life, they rejoice

in the abuse of their sexual powers. So the pathics, like the *tribades,* are victims of an affliction of the mind. For there exists no bodily treatment which can be applied to overcome the disease; it is rather the mind that is affected in these disgraceful vices, and it is consequently the mind that must be controlled. For no man has ever overcome bodily lust by playing the woman's sexual role, or gained relief by contact with a penis."[6]

But above all, Soranus' greatness lay in his therapeutic measures for those conditions which he deemed curable, and here, perhaps, he was most in advance of his times. The following are his suggestions for the treatment of Mania:

". . . To begin with, have the patient lie in a moderately light and warm room. The room should be perfectly quiet, unadorned by paintings, not lighted by low windows, and on the ground floor rather than on the upper stories, for victims of mania have often jumped out of windows. And the bed should be firmly fastened down. It should face away from the entrance to the room so that the patient will not see those who enter. In this way the danger of exciting and aggravating his madness by letting him see many different faces will be avoided. And the bedclothes should be soft. . . .

"Do not permit many people, especially strangers, to enter the room. And instruct the servants to correct the patients' aberrations while giving them a sympathetic hearing. That is, have the servants, on the one hand, avoid the mistake of agreeing with everything the patient says, corroborating all his fantasies, and thus increasing his mania; and, on the other hand, have them avoid the mistake of objecting to everything he says and thus aggravating the severity of the attack. Let them rather at times lead the patient on by yielding to him and agreeing with him, and at other times directly correct his illusions by pointing out the truth. And if the patient begins to get out of bed and cannot easily be restrained, or is distressed especially because of loneliness, use a large number of servants and have them covertly restrain him by massaging his limbs; in this way they will avoid upsetting him.

"If the patient is excited when he sees people, bind him without doing any injury. First cover his limbs with wool and then fasten with a bandage. Now if there is a person whom the patient has customarily feared or respected [such as the physician], he should not be brought into the sickroom repeatedly. For this frequent repetition gives rise to a lack of regard. But when circumstances require it, as when the patient does not submit to the application of a remedy, this person should then be brought in to overcome the patient's stubbornness, by inspiring fear or respect. And if you observe that the light is upsetting his mind, shade his eyes but let the rest of his body be touched by the light."[7]

Such therapeutic advice is timeless in its wisdom. Yet it raises a problem that has often been discussed in connection with modern psychotherapy, namely that effective psychiatric help was designed predominantly for the wealthy. Clearly in ancient Rome, only those of sufficient means could afford to keep the many servants which were required in this regimen. Only the wealthy could afford the soft bedding and the choice of a sick room that was best suited for their condition, not to mention the costly diversions, extending even to ocean voyages. On further reflection, however, one becomes aware of the fact that, so far as its literary documentation is concerned, all of medicine appears to have been for the wealthy, for only the ideal and hence often the costliest treatment was being recorded. Whatever therapy was given to the poorer and less fortunate classes has seldom found its way into print.

With Soranus of Ephesus, ancient psychiatry had reached its apex and its end. During the first few centuries of the Christian era, occasional efforts were made to revive and apply the teachings of the great Roman physician; but the enlightenment and reason of his work were too foreign to the spirit of the Middle Ages. Nearly seventeen centuries had to pass before mankind was again able to attain similar heights.

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SPREAD IN ADJUSTMENT TO DISABILITY*

BEATRICE A. WRIGHT, Ph.D.†

The terms "spread" and "spread phenomenon" are used in this paper to refer to the tendency of persons perceiving one characteristic of another person (such as lameness or physical beauty) to develop other perceptions about that person which tend to be positive or negative according to the attitude generated by the first impression received. The "halo phenomenon" is another term used to describe the positive aspects of this process. Thus if one is favorably impressed by the pleasing appearance of a person, it is easy to believe that he has other positive attributes such as good character and intelligence. The same phenomenon may occur with a negatively toned trait. If the person's appearance is viewed as displeasing or disturbing, as is sometimes true if he has a disability, then the observer's tendency may be to infer other negative attributes, such as emotional instability or intellectual limitation. The spread phenomenon is difficult to escape because it seems to be cognitively easier to integrate like-sign attributes than an admixture of positive and negative ones.

The spread phenomenon becomes manifest not only in the perceived effects of disability. It may extend to a negative concept about the cause of disability. It is as though there were some kind of "requiredness in cause-effect relations" whereby an effect which is perceived as negative and unwelcome "requires" a cause which is also perceived as negative. For example, one of the difficulties in relating the blindness associated with retrolental fibroplasia to the use of oxygen for the premature infant may well have been due to the fact that oxygen, the provocative agent, had almost always, in the past, been seen in positive contexts. Oxygen did not evoke the negative affects, the antipathy, which were aroused by the disability of blindness.

It is also necessary to recognize that the spread phenomenon occurs not only with respect to the perception of others, but also with self-perception. In the discussion that follows, the target or object of this spread will not be specified when the process has relevance for both self and interpersonal perception.

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The Power of Physique in Spread

Physique, more than many other characteristics of the person, wields an enormous power in bringing about the spread phenomenon. Using Asch's conceptualization,[1] we may say that physique is a highly central characteristic of the person.

There are two basic reasons for this. First: Physique is intimately connected with the identity of the person. Very early in life, one's physical attributes become intricately a part of the "I," the self-concept. Moreover, other people recognize a person by his appearance. His identity is established by his physique even though his behavior may be highly variable. A person may startle others by acting unexpectedly or in unaccustomed ways. He may then be excused for "not acting like himself," but he is not viewed as "being someone else." On the other hand, if an individual's behavior remained characteristic and unchanged, but his appearance were markedly altered, recognition would be difficult. Although time makes for many changes in appearance, physical features are generally among the most stable of the dispositional characteristics of a person.

A second reason for the potency of physique in generating the spread phenomenon is that of stimulus primacy. By its visibility, physique becomes quickly apparent and pre-empts the field of stimuli in influencing what the first impression of the person will be. It sets up a direction for thinking and feeling about the other person that exerts a continuous effect upon the development of other impressions about that person. That the order in which the characteristics of a person are perceived does influence the total personality impression of that person has been experimentally demonstrated.[2]

Conditions Facilitating Spread

There are three conditions that seem to facilitate the phenomenon of spread. The first of these, stressed by Dembo,[3] is the *comparative frame of reference* of the evaluator. This means, succinctly, that a standard of comparison is used in the evaluation which causes him to emphasize status implications. For example, a person may be judged to be bright or stupid and concomittantly admired or disgraced, with little concern about the value of what he can do within his limitations. In contrast, an "asset frame of reference" focuses on the qualities inherent in the object of judgment itself. For example, a musical performance may be enjoyed or suffered for what it offers without comparing it to the performance of anyone else.

The theory about the influence of the comparative frame of reference upon the process of spread hypothesizes that if normalcy is taken as the standard, and a disability is viewed as far below that standard, then other vague characteristics of the person, as well as the person as a whole, will be regarded as below standard. In some diffuse sort of way, the person who has been judged comes to be regarded as being inferior. Dembo[4] explains the dynamics as follows: In comparing a person with a standard, one is interested only in a particular characteristic (such as physique or intelligence). Because these characteristics are within the main field of concern, they acquire considerable potency, and influence the perception and evaluation of other characteristics which, not being compared at the time, are therefore vague and unstructured. Thus, the evaluator, be he the person with the disability, the parent, or outsider, when judging the disability against the standard of the nondisabled state, is prone to generate a broad array of negative perceptions about other attributes which are only arbitrarily connected with the disability. Where the comparative frame of reference is a pervasive pattern of thinking, that is, where a person characteristically functions within this outlook, then it is to be expected that he will be more highly susceptible to the spread phenomenon and more apt to overestimate the inadequacies and inferiority of a person with a disability. This theory has been experimentally supported in a study[5] in which a significant correlation ($r = .37$) was found between comparative mindedness and spread scores, as measured by specially devised tests.

A second condition facilitating spread has to do with emotional factors which engender *dedifferentiation* and fluidity of cognitive processes. By dedifferentiation is meant a primitivization in which parts of a system become less defined. To put it another way, the parts become more global in structure. Thoughts become dedifferentiated when richness of ideation is supplanted by a paucity. In the motor sphere, an example is the substitution of the finely coordinated prehensile grasp by the cruder palmer grasp. Fluidity refers to the ease with which boundaries within a system are crossed. For example, thought processes are said to be fluid when the cognitive system is without firm boundaries, when ideas freely influence each other and blend together. Both fluidity and dedifferentiation are assumed to characterize heightened emotionality, and therefore it is predicted that such a state would give rise to spread effects, which, in the case of disability, would encase the person in an overwhelming undifferentiated devaluation. This may be a meaningful basis for

understanding the early reactions of some people to severe traumatic injury when they experience the deep depression of a feeling of total loss of self and capabilities. It is after the spread has had a chance to become differentiated that the process of reconstitution can begin and the total devaluation diminished. Similar undifferentiated, yet pronounced effects of spread can be expected in persons who have a deep fear, resentment, or guilt about disability, whether the disability is theirs or another person's.

The third condition has to do with *wish forces* within the evaluator. It can be postulated that spread will proceed more readily and with less restraint when it is in accord with the wishes of the perceiver than when it is in opposition. Thus, where there is a wish to devaluate a person with a disability in order to maintain one's own uncertain status, negative spread can be expected to be particularly clear. This is sometimes seen, for example, in a parent of a normal child, who "feels so sorry" for the crippled child next door, all the while attempting to reassure herself that her own child meets all specifications. In such instances the need to devaluate has been labeled the "requirement of mourning." Facilitation of spread may also appear in the person with a disability himself through masochistic satisfactions or thoughts of secondary gain. Where the wishes run counter to the direction of spread, on the other hand, the restraining forces of reason, rationalization, denial, and other processes may be expected to enter.

Processes Giving Spread Content

What gives content to the personal attributes encompassed by spread? How do *particular* characteristics become ascribed to the person? It is true that under some circumstances an undifferentiated, generalized devaluation or adulation of the person occurs. But more frequently, there is a specification of traits. Moreover, spread is not to be regarded simply as an inundating process that captures all traits bearing the same sign as the propelling one. On the contrary, not all like-sign traits are included. Typically there is a selection among innumerable traits which could have been subsumed by the spread phenomenon. For example, a person may believe that cripples tend to be bitter, irritable and indigent, but not sneaky, conceited or selfish.

The spread phenomenon appears to establish an orienting framework within which certain adjunctive processes operate to bring about trait selection. It is as if the perceiver, sensitized by his reaction to a potent negative characteristic of a person, activates additional processes within himself to guide the selection of traits from among many negative ones

which have become candidates for admission by the original sensitization. We shall try to identify four such processes, and it should be noted that the last two of these not only serve to give content to the impugned personality characteristics, but also serve to justify them.

The first of these adjunctive processes concerns the *Gestalt properties of personality traits.* As an illustration, let us examine such trait attributes as impulsiveness, anger, and suspiciousness from the point of view of their figural properties.

> In one pilot study, a subject was asked to select the two trait attributes which he could represent most nearly by the same set of geometrical lines. He chose impulsiveness and anger, and represented them with sporadic spikes over a distance of three-fourths of an inch, followed by a plateau of two inches. He contrasted these traits with suspiciousness which he represented as a band extending across the page with unchanging direction. He also added that he would color impulsiveness and anger red, and suspiciousness black. It is here proposed that traits with similar Gestalt properties, such as might hold true for impulsiveness and anger, are predisposed toward being assimilated by the spread process by virtue of this factor, as compared with dissimilarly figured traits, such as impulsiveness and suspiciousness. In Gestalt perceptual terms, this hypothesis parallels the principle of similarity as a factor in unit formation.
>
> A more complex exploration of Gestalt properties would have to consider other sense modalities in addition to the visual, *e.g.* synesthesic patterns as provided by such dimensions as smooth-rough, heavy-light, etc. The semantic differential techniques developed by Osgood[6] may be one approach to the determination of important Gestalt properties of personality traits.

The second factor in trait specification is an immature cognitive process characteristic of children between two and four years of age, but persisting as a form af archaic thinking throughout life. It is here designated the *DW power of disability* after the type of response on the Rorschach in which a detail of the blot (D) becomes the key for perceiving the whole blot (W) even though the other features of the blot do not support the percept. For example, children will commonly call Card VI a cat, primarily because the side projections, seen as whiskers, dictate the concept. As applied to the present discussion, a single fact of disability, like the cat's whiskers, has the power to reinstate a previous experience involving it, even though the rest of the existing conditions ill fit it.

The present situation then becomes analogous to the reinstated one. Moreover, because analogous reasoning gives added potency to the similarity of the situations being compared, the very act of drawing the analogy makes detection of flaws difficult.

> To take an example from the area of disability, consider the possibility that disability evokes thoughts of someone who was an invalid during the person's childhood. At that time the invalid may have been seen as bitter, irritable and indigent. It is these traits, then, that become attached to the meaning of a present disability by way of the DW process. Even more subtle meanings of disability may be captured by the DW process. For example, the omnipotence of infantile thinking may have led the child to attribute the invalidism to his own wishes, with consequent fear of retribution. He therefore, as an adult, sees the need for revenge as a complement to disability. It does not matter that the present situation bears little actual resemblance to the earlier one of invalidism, just as it does not matter that the rest of the Rorschach card does not look like the tail, paws and head of a cat.
>
> What does seem to matter is the salience of the part as a symbol for the whole. Because of unique figural properties, the whiskers suggest a cat. Because of the central position of physique as a personal characteristic, a disability, too, is salient. And where a disability has been the focus of highly charged emotional meanings, especially as these were experienced during childhood when dramatic and even terrifying misconceptions about disablement so easily are formed, the saliency is even further enhanced.

The third adjunctive process lends *moral support* to the spread contents. As expressed in Heider's balance theory,[7] man has a tendency to bring into harmony conditions as they exist with conditions as they ought to be. In short, the "ought" and "is" approach congruency. In order to satisfy the moral requirements, a disability, as a reality, "needs to be deserved." Thus, the cause of disability is so often associated with wrongdoing and sin. The negative spread to the cause of disability is given a moral significance. Once such a casual attribution has been effected, a guiding influence is exerted on the further selection of personality traits within the spread process. It should be noted that the same need for moral balance may, under certain conditions, hamper spread effects. If, for whatever reason, it is difficult to perceive the disability as deserved, negative spread may be expected to be limited. Thus, it is our prediction that, because of the presumed innocence of childhood, there would be a tendency to perceive children within a far more restricted negative spread than would be true of teen-agers or adults.

The fourth process to be considered provides *rational support* for the spread phenomenon. From the total array of negative possibilities, a selec-

tive process occurs that seems to make some sense. For example, when someone has the idea that persons with a disability tend to be bitter and irritable, but not sneaky or conceited, the former may fit into a constellation made cogent by a certain view of the effects of misfortune. Moreover, it is likely that not only does the rational integrating process guide the selection, but also that it serves to rationalize the spread array that has been brought about by other processes. Whether the attempt at reason comes before or after the negative array has been differentiated, we may say that the spread phenomenon sets up a prejudiced orientation within which man's rational efforts function. As we shall soon see, there also are instances of the reverse. That is, rational consideration may define the sign, either positive or negative, of the orienting framework within which the spread phenomenon will then proceed.

Negative Trait—Positive Spread

Thus far, we have considered disability as a negative fact from which a negative spread ensues. This sequence may be complicated by the possibility that a disability, in spite of its being negative, may also spark a positive spread through the interpolation of other processes. It is a fact that an admixture of positive and negative personality impressions is typical of those generally reported. Thus it is that the man pictured in the wheelchair in one study[8] was not only perceived as unhappier than when pictured in the nondisabled state, but also as more conscientious and generous.

One such interpolated process is a rational one which links a particular conception about disability to positive effects, which effects, in turn, give a positive direction to the spread that follows. For example, the belief that deep understanding is a by-product of disability may be sufficiently potent to initiate a positive spread in connection with disability.

It is also proposed that, although it is cognitively easier to integrate like-sign personal attributes, there are certain nonrational predispositions toward grouping traits of opposing sign. We do not feel comfortable for long with a person who is either all good or all bad. Thus, the person who aspires to the purity of God is soon damned. At the other extreme, even the most despised are raised a notch by the awakening of compassion. It is as if some counterpoint is required in which a more complex, but more interesting, picture of the person emerges whose features are both positive and negative. The all good—all bad percept tends to be reserved for the condition of dedifferentiation such as occurs with heightened emotionality.

The nature of the nonrational predisposition toward bringing traits of unlike sign together offers challenging speculation. Possibly a need to be fair, to balance the score, may be at work. Possibly there is an aesthetic appeal in the more complex personality impression. Not to be discounted is the possibility that traits of unlike sign may have similar figural properties that make for a stable personality structure in the Gestalt sense. Finally, this type of balance tendency may be related to the kind of free association process in which the stimulus word elicits its opposite instead of a halo proliferation of like-sign associations. Love evokes hate, hot evokes cold, and so on. As applied to person-perception, the idea of disability would then predispose the evaluator toward ability connotations. He may see the person as able in special ways, perhaps made cogent by a theory of compensation for misfortune. For example, the person who is blind may be said to have a sixth sense, the person who is crippled, a depth of understanding, and so forth.

Spread and Adjustment

It is of interest to consider the way spread is related to certain principles of adjustment to disability. These principles characterize adjustment as a process that encourages the person to view himself as a person with a disability, rather than as a disabled person, the latter syntax epitomizing the spread phenomenon.

The principle known as *enlargement of the scope of values* is especially applicable in the case where the person has become so overwhelmed by his disability that nothing else exists but his loss, and his suffering seems boundless in extent and time. The spread effects have become so diffuse that they have inundated all of his life, even obliterating the variety of meanings and possibilities that life has to offer. Whatever the person thinks about he is filled with pain and gloom. The main problem for that person is to begin to see meaning and potential in those aspects of life which are not touched by the disability or closed off to the person. It requires a renewal of values that have been submerged by the disability, as well as an appreciation of new ones.

The principle, *containing disability effects*, attacks the spread phenomenon directly by indicating that the adjustment process involves a new look at the implications of disability, so that they can become confined to those areas which in fact are disability-connected.

Subordinating physique, as a principle, challenges the hegemonious

position which disability commands in the spread phenomena. It affirms that body-whole and body-beautiful are often overrated as values, and implies that if physique becomes a less central personal characteristic, its spread effects will be less.

Finally there is the *change from comparative to asset values*, a change which has been regarded as essential to fully accepting a disability as non-devaluating. Since physique as a value is of substantial importance, the negative effects of disability will tend to show considerable spread when viewed from a comparative standpoint. On the other hand, an asset frame of mind can be expected to retard spread.

In addition to the above principles, I would like to consider the role of *denial* in the adjustment process. It is discussed here because denial often seems to arise as a counter reaction to spread. Both spread and denial alter reality, spread by exaggerating disability effects and denial by overly containing them.

In its extreme form, denial is seen as anosognosia, a term first introduced by Babinski in 1914 to denote denial of paralysis, and since applied more generally to all extreme cases of denial of illness.[9] The person who is blind insisting that he can see, or the individual who is paralyzed, that his limb can be moved, are dramatic examples. To account for the apparent discrepancy between his assertion and reality, the person rationalizes. Thus, one patient, having denied that his limb was paralyzed, attributed his difficulty in moving it to the fact that it was "sore from injections." Another patient who denied his blindness said he could not see because there were "tears in his eyes." It is noteworthy that anosognostic patients typically have some form of brain damage, this condition evidently facilitating the necessary suspension of reality testing. Anosognostic denial has been interpreted to be a mode of adjustment to avoid catastrophic reaction.[10] I do not know of anyone who recommends anosognostic denial even as a useful or necessary first step in the process of adjusting to disability. When it occurs, however, there is some question as to whether it should be directly challenged, or whether the patient should be allowed to reconstitute himself at his own pace.

A second form of denial has been labeled "as if" behavior. Unlike the case of anosognosia, the person is aware of his disability, but acts "as if" it does not exist. He attempts to conceal it and avoid reference to it. This mode of adjustment has been criticized on the grounds that such pretense forces the person to become hypervigilant lest his disability be inadequately

concealed. It therefore tends to reinforce physique as a dominant value in all situations, rather than allowing disability-connected matters to be restricted to relevant situations. It proves the paradox that deliberately trying to forget haunts the memory and thereby tends to increase spread effects. "As if" behavior has also been criticized as leading to estrangement in interpersonal relations. On the other hand, there may be some situations in which "as if" behavior is used to advantage, as when one wishes to avoid intrusion into one's privacy. Further complexities of "as if" denial, including a consideration of its possible positive value, have been elaborated elsewhere.[4, 11]

A third form of denial may be called "denial by decathexis." This involves the intellectual admission of disability effects but the affective denial of any emotional investment in them. The blindness is recognized, for example, but in a totally bland or startlingly objective way. It is as if the negative sign were removed from the spread effects. This is not unlike man's efforts to deal with the overwhelming horror of nuclear warfare. Man deals with the idea of his own death in much the same way. We know that such numbing of affect often occurs in early reaction to trauma and allows the person time to regain the necessary strength to cope with the misfortune.

Spread and denial—two opposing tendencies. How effectively they succeed in limiting each other or indirectly reinforcing each other needs a good deal more analysis. When and how these tendencies can be pressed into serving the adjustment potential of the person also need further investigation. The four principles of adjustment previously discussed neither attempt to deny or exaggerate difficulties but rather to effect an acceptance of disability through important value changes. Spread and its opposite, denial, however, may some day become part of psychological strategy when we have more understanding of the conditions which indicate that a person needs to be temporarily jarred into realization of his difficulties through facilitating spread, or lulled for awhile through encouraging denial.

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In Memoriam

ROBERT THATCHER MORSE, M.D. (1905–1964)

Dr. Robert Thatcher Morse, of Washington, D.C., alumnus and longtime beloved friend of the Menninger Clinic and our staff, died suddenly in his office on the morning of February 18, 1964.

Dr. Morse and his talented wife, Helene, met at the Clinic where he was a resident in psychiatry (1937–38) and she was a recreational therapist. They were married in the garden of the Clinic, with the entire staff present. Soon after, they went to Chestnut Lodge in Rockville, Maryland, and later to Washington, D.C., where Dr. Morse combined private practice with an extraordinary devotion to public service in psychiatry and psychoanalysis, which brought him national and international recognition.

He helped found and was the second president of the Washington Psychiatric Society; served as a president of the Washington Psychoanalytic Society and as treasurer of the American Psychoanalytic Association; served for many years on the Board of the Group for the Advancement of Psychiatry; was Chairman of the Committee on Public Information of the American Psychiatric Association and was at work on a revision of the *Psychiatric Glossary* when he died.

He gave a great deal of time to teaching and consultation: as a training analyst in the Washington Psychoanalytic Institute; in the Department of Psychiatry of Georgetown University; and as a consultant to the Veterans Administration, Walter Reed Hospital, the U.S. Naval Hospital at Bethesda, the U.S. Information Agency, the National Aeronautics and Space Administration, and the U.S. Air Force Georgetown University Project.

But what we remember best, and shall miss the most, is Bob's constant appreciation of his friends and his loyalty to them, and to the ideals and principles of psychiatry.

READING NOTES

January 28: Leo Bellak is very timely in getting together a group of colleagues—two dozen of them—to write upon some aspects of what has come to be called "Community Psychiatry." I doubt if the coining of this expression justifies the rather grandiose announcement that something called this constitutes a "revolution in psychiatry" which Bellak makes. Many of us who might be called psychiatric general practitioners have been doing a good many of the things now described as community psychiatry for a lifetime—functioning in the voluntary general hospital which Louis Linn writes about, maintaining an account with rural areas which the Leightons write about, operating in a new kind of state hospital which Beckenstein writes about, working with general practitioners which Bellak writes about, cooperating with pediatricians which Caplan writes about, and with lawyers which Roche writes about.

In a way *Handbook of Community Psychiatry and Community Mental Health* (Grune & Stratton, 1964) is an exciting book, but I hope the enthusiasts will not ruin the whole business by a kind of chauvinism which implies and promises more than five times the current number of certified psychiatrists could possibly supply.

January 29: Melanie Klein employed a strange language to describe her even stranger fantasies regarding mental life of the baby. Many people cannot understand what she is trying to say. Basic Books has just published the first of several volumes of her writings. This one is entitled *Our Adult World* (1963) after the first essay. This particular essay is written with considerable clarity, much more so than the more important article on Identification in this same volume.

To fairly judge Mrs. Klein's work, one would have to think, talk, and work with her concepts for awhile and this most of us have not done. Some of her ideas have already been accepted and absorbed in the general stream of psychoanalytic thinking so perhaps we give her less credit than she deserves. At any rate this volume will help make her ideas a little better understood.

January 30: When I was a sophomore in high school, I had an ambitious young teacher of mathematics who organized a mathematics club for those who were interested in such things. We met after school hours once a month and talked about such absurdities as the fourth dimension. She asked us to try to imagine how it would be to live in a one-dimensional country, then in a two-dimensional country. I still remember what a startling intellectual discovery it was that people in the two-dimensional world could not jump over each other, or for that matter even *see* each other with any perspective.

How happy we could have been had we had available Edwin A. Abbott's book *Flatland* (Barnes & Noble, 1963). It contains twenty-two chapters of mathematical logic based on how things look in the two-dimensional world and what can be deduced by sheer logic about such a world, and then about a three-dimensional world and a four-dimensional world, and even more dimensions!

Don't start on this book under the impression that it is a child's book!

January 31: Among the nice letters I have received about *The Vital Balance* none was more flattering than one from Dr. Jan Ehrenwald saying that he hadn't realized until my book appeared how much he had been influenced by previously published portions of it, and with these words he mailed me a copy of his *Neurosis in the Family and Patterns of Psychosocial Defense* (Harper & Row, 1963). Sure enough, Doctor Ehrenwald had indeed indicated therein his own impression of the continuity of psychiatric syndromes and their curious reciprocal quality in some instances to figure in the environment. His chapters on Mozart and Picasso I have found fascinating.

February 1: *Directory of Resources for Mentally Ill Children in the United States* is a publication of our National Association for Mental Health (1964). One is reluctant to criticize anything as well intended as this, but I have protested year after year, in vain, and I am not going to stop. I insist that this is a misleading mislabel; it is *not* a *Directory of Resources* for mentally ill children. There are many other resources than the ones listed. On page after page and frequently twice on the same page the editors say, "The introduction . . . more fully explains the various items of information given for each facility." But the introduction only says that "included are residential, day treatment and educational facilities that . . . planfully accept mentally ill children and render continued service in facilities which are distinct and separate from adults." The latter ungrammatical statement is intended, I suppose, to explain the omission of residential and educational facilties for mentally retarded children, the point being that somewhere on the same grounds there are some mentally retarded adults. And what about competent institutions,

I mean "resources for mentally ill children," for children temporarily damned as delinquents? Are these not children? Are they not mentally ill? Are these not resources?

Two qualifying "resources" are listed in this directory for my state. We have at least *a half dozen* institutions which afford resources for mentally ill children uncontaminated by the propinquity of adults, although for the life of me I can't see why the presence of an adult would disqualify a resource from being listed in a directory.

These are people of good will and maybe they know what they are doing. I think what they are doing is important, but unless some of us who think so do a little shouting about what we don't like, how are they going to know how much we look to them?

February 2: *Episode*: *Report on the Accident Inside My Skull,* by Eric Hodgins (Atheneum, 1964). The author is well known to the public from his book *Mr. Blandings Builds His Dream House*, although in addition to that he has been an editor and editor-in-chief of *Fortune* and *Time* magazines. In *Episode* he describes candidly and wittily his sudden loss of speech one January morning in 1960 while he was trying to telephone a message to Western Union. His subsequent description of his feelings during hospitalization, examinations by neurologists and psychiatrists, rehabilitation exercises, and transfer to the psychiatric section are easy and stimulating to read.

An example of the author's cleverness is his *Appendix A* in which he analyzes the misspellings in the handwritten manuscripts of his book carefully collected by his secretary. He discovered that although he felt completely recovered he still had difficulty with certain letters, *e.g.*, he omitted the letter "R" in 58 instances.

The author also analyzes and tabulates carefully the financial costs of his "Episode." This part will disturb thoughtful physicians. Not only was it so expensive—as he says—that he could not afford to have another attack (or rather to *survive* one), but he discovered "something . . . which I wish I didn't [know] . . . what our 'voluntary' hospitals, usually monuments to the noble impulses of wealthy men or groups of men, do with patients who cannot pay their bills. They throw them out." (In a footnote he adds, "gradually.")

"Few disappointments for laymen are as poignant as the discovery that the physician whose dedication to a skill in healing is beyond question,

mingles his own daring thoughts on the extension and bettering of life with thoughts which, in other realms, Adam Smith discarded as obsolete and outworn two centuries ago. An eminent doctor, a realist whose eyes are not clouded by the sentimental tears which blur the vision of the American Medical Association, said to me recently, 'We must do nothing to disturb the sanctity of the Doctor-Cash Relationship.' There *is* hope."

February 3: Dr. H. G. Whittington has put together some of the impressions in his experience at the University of Kansas Mental Health Service regarding *Psychiatry on the College Campus* (International Universities, 1964). He is the most recent among our alumni to become the author of a scientific book. I hope others will soon be joining that group. Doctor Whittington attempts to draw conclusions regarding some of his failures as well as some of his successes during his four-year opportunity at the University of Kansas. The case summaries are particularly good. The general plan of the book progresses from a discussion of the university culture, to an analysis of the patient population and finally to the treatment situation in a logical and well-structured way.

February 4: *Clues to Suicide* (McGraw-Hill, 1963) is a collection of essays brought together by Edwin S. Shneidman and Norman L. Farberow, with whom I am happy to have been connected, in a small way, in their magnificent research on the subject of suicide. The first of these 18 essays is by them and it has the title which has been given to the whole book. I myself wrote a brief introduction, but now that it appears as a paperback I have reread not only my own introduction but quite a few of the essays.

February 5: *The Death of Jesus* (Macmillan, 1962) by Joel Carmichael will intrigue both Jews and Christians since it considerably modifies the conception each group conventionally has of the other. The author started this study under a scholarship in ancient oriental languages at Oxford, but it is not clear just how he got over into theology. He feels that Jesus had no idea of being a part of the Godhead, but was an idealist who sought to convert his fellow Jews to a more ethical and devout life. He believes that the Gospels were written to help in the evangelization of some of the Jews who did not join the original group. They were angry at these "hold-outs" and began to separate from them at a time when there was general political turbulence in relation to Rome.

The disciples were rather like bodyguards protecting Jesus from the

Romans and Sadducees and the episode in the Temple shows that there must have been many hundreds of disciples assisting Him in getting command of this enormous building which normally had hundreds, if not thousands, of guards and employees. Carmichael concludes that Jesus was crucified by the Romans for sedition, having tried to be King of the Jews and perhaps actually having been called the King of the Jews. This is why Pilate refused to change the inscription on the Cross. While the book contradicts many commonly held Christian (and Jewish) beliefs, it is not written in a scoffing or superficial way and stimulates interesting reflections.

February 6: Geoffrey Gorer, that brilliant psychoanalyst, anthropologist and gentleman farmer, always writes and talks interestingly about interesting subjects. I discussed hog raising with him in London last summer and last night I read his *Life and Ideas of the Marquis de Sade* (Norton, 1963). He brings out the paradox that most of us think so ill of this brilliant, original, courageous, far-sighted man who was trying to describe and decry the corruption of power and our susceptibility to domination by unconscious "id" forces, *i.e.*, evil impulses. Gorer writes the book about a man regarded by many as one of the wickedest persons who ever lived, yet this study of him contains no pornography, but high-minded philosophy, poetry and thoughtful philosophy.

De Sade held that the law courts dispense class justice, favoring the rich. "Honesty is believed to be incompatible with misery, and in our law-courts poverty is sufficient proof against the accused . . . Its object is not reformation, but revenge. The laziness and folly of legislators led them to invent the law of talion. It was much easier to say, Let us do to him what he has done, than to proportion spiritually and equitably the punishment to the crime." The stupidity of punishment made de Sade cry: "Murderers, imprisoners, fools of every country and every government, when will you prefer the science of knowing man to that of shutting him up and killing him?"

"I don't say that one should let crimes continue, but I claim that it is better first of all to decide, which hasn't been done, what really troubles society and what in fact doesn't do it any harm. Once the tort is recognized people should work to cure it and extirpate it from the nation, and you don't succeed in doing that by punishment; if the law were wise it would never inflict any punishment except one which tends to

correct the guilty and preserve them to the State. The law is false when it merely punishes, detestable when its only object is to destroy the criminal without teaching him, to frighten without improving him, and to commit an infamy as great as the original one without gaining anything from it."

Contrary to what you may think, de Sade considered tortures for third degree or for punishment as "such obvious barbarities that their only use was to make the citizen of a country where they were employed blush for shame."

The only excuse for prisons, he said, "is the hope of correction; but you must know very little of man to imagine that prison can ever have that effect on him; you don't correct a malefactor by isolating him, but by giving him back to the society he has outraged; from there he should receive his daily punishment, and it is the only school at which he can improve; reduced to a fatal solitude, to a dangerous vegetation, to a tragic abandonment, his vices germinate, his blood boils, his head ferments; the impossibility of satisfying his desires fortifies the criminal cause of them, and he comes out slyer and more dangerous . . . If your prisons . . . had produced even a single conversion . . . there would be some point in continuing them, but you cannot quote a single example of a man made better by chains. How can he be? How can one become better in the midst of depravity and degradation? Can one gain anything in the midst of the most contagious examples of greed, roguery and cruelty? Characters become degraded, morals corrupted; you become vile, lying, ferocious, sordid, treacherous, mean, underhand, a perjurer like those who surround you; in a word all your virtues are changed to vices and you come out full of horror for mankind, occupied only in harming them and revenging yourself." (From a passage of fifty pages in *Aline et Valcour* dealing with Crime and Punishment which Gorer regrets that he cannot reprint in toto.)

February 7: Few people will recognize the organization represented by the expression "the Joint." It refers to The American Jewish Joint Distribution Committee which began work nearly fifty years ago. Its history is a whirl of melodrama as someone has well said. It worked all through the war. It transmitted the presentation of Eichmann's plan for trading a million human lives for war materials. Its history is the subject of Herbert Agar's book *The Saving Remnant: An Account of*

Jewish Survival (Viking, 1960). I bought the book thinking it was a description of the Jewish and Christian religious philosophy regarding the little group which carries on the torch of faith despite desertion by the multitudes. It was this Saving Remnant that gave Jeremiah what hope he had; likewise Ezekiel and the first Isaiah. Jesus often referred to them that "Many are called but few are chosen."

Through the thousands of years of Jewish and Christian history, time after time the doctrine of the Saving Remnant has comforted believers, but surely it never had such trials or such a glorious vindication as in the tribulations of the Jewish people two decades—only twenty years—ago.

February 8: Dr. Herbert Hendin of New York did a very clever thing in selecting three of the Scandinavian countries for residential study of the same act—suicide (*Suicide and Scandinavia*, Grune & Stratton, 1964). He then compared the frequency of this act, which differs greatly in these three countries, with the characterological differences of the people which are slight, but definite. This was of great interest to me because we were so struck by the marked social differences between the Danes and the Swedes whom we visited last summer; it seemed impossible that they could be closely related. But as a matter of fact the suicide rate in Denmark and Sweden is quite comparable; while in Norway it is about a third as high. Yet, everyone told us that Norwegians were much more like the Danes than like the Swedes. Hendin says they are *all* different. The characteristic type of suicide in Denmark, he thinks, has to do with interruptions in a dependency pattern. In Sweden it is related to competitive performance and self-condemnation for failure. In Norway it is more apt to be related to guilt feelings connected with external aggression and antisocial behavior.

February 9: Vance Packard is alarmed, and thinks all of us should be, at the increasing extent to which information feedback devices and personality appraisals have become a part of business administration, law enforcement, teaching programs, and other aspects of life (*The Naked City*, McKay, 1964). He is concerned not only about the extent to which information is ascertained without our knowledge, but the way in which that information is then sold to commercial agencies or others who may want it. It seems one can buy a copy of other peoples' birth certificates, unlisted telephone numbers, hospital records, the names of women who have recently bought bust developers, and so on.

Packard feels that our privacy is being invaded in a shocking way and that we should not stand for it; he thinks something can be done. I am not sure.

February 10: *Interacting with Patients* (Macmillan, 1963) by Joyce Samhammer Hays and Kenneth Larson consists of a considerable number of recorded interviews, or rather dialogues, between nurses and various patients in a VA hospital. The nurses' responses are classified as therapeutic and nontherapeutic, the former including 25 such things as "presenting reality," "voicing doubt," "offering self" and the latter such things as "rejecting," "disagreeing" and "interpreting." Comments are interspersed from time to time by the editors. Sample:

"P-1. Do you love this guy you're going to marry?

"N-2. Of course, I do, Joe. (*Giving information.*)

"P-3. Does he love you?

"N-4. Yes. (*Giving information. When the patient uses the time to interview the nurse about personal matters, the nurse can state that she cannot see the value to him of such discussion and suggest that they use the time to explore his problems.*)"

It is difficult to say whom this book will irritate the more—psychiatric nurses or psychiatrists.

February 11: *Law, Liberty, and Psychiatry* (Macmillan, 1963) by Thomas S. Szasz is a disturbing, irritating book which every psychiatrist probably should read. Overlook the author's bad manners, his arrogance, his sweeping generalizations; overlook his pleasure in an iconoclastic pose; overlook his smug assumption that he is the one psychiatrist in the history of the world who has held some of these ideas; overlook his snide and belligerent personal attacks. Overlook all these things and give credit to the man for not wanting to stand still in regard to matters of ambiguity and self-contradiction, who recognizes the misuse of psychiatric terms for derogatory classification instead of for treatment determination, and who sees the overweening and game-playing aspect of the courtroom, especially as it involves psychiatrists. Give the man credit for being willing to risk his popularity for the sake of holding up a mirror to all in regard to unintentional injury to patients through the use of what we let ourselves believe are purely scientific observations. Give him credit for disturbing some people's complacency.

Szasz is angry. He is angry about some of the things that many of us

are angry about. He is angry about the legal-medical trick of keeping patients from standing trial and justifying indefinite incarceration by a strange presumptuous opining by young psychiatrists who are not qualified to interpret the legal term of "competence" but who subscribe their names to statements about it.

Seeing some of these things clearly as he does, it is unfortunate that Szasz should have let his blood pressure get so high and his anger get so uncontrolled that he put himself in a bad light with his colleagues by indiscriminately and collectively ridiculing them. He even attacks some of the people who agree with some of his points. Thus he alienates the very people whom he should be persuading and correcting. Dr. Manfred Guttmacher's critical but gentlemanly review of the book in the March 1964 issue of the *Archives of General Psychiatry* is fully justified.

February 12: On our trip to Arizona last month, Jean and I visited one of our favorite museums, that of the Archaeological Institute of Northern Arizona. About thirty miles south of this on one of the tributaries of the famous Oak Creek Canyon nestles one of the most beautifully situated schools in the world, the Valley Verde School. One of the charming faculty people we met there was a Mrs. Fernando Aldara who has a sister in Guatemala and a brother who is head of that wonderful Pennsylvania University Museum where the Sumerian treasures are. These three are the children of Alfred Vincent Kidder, a great archaeological pioneer of the Pueblo Indian area. Summer after summer, beginning about 1910, he came out to the Pecos ruins near Glorietta, New Mexico, and worked at his explorations with more or less help from his family. (My mother and father went camping with H. U. Mudge, General Manager of the Santa Fe, about the same time, in the very same area. They may have known each other.)

At any rate, Alfred Kidder explored Pecos and many ruins thereabouts and laid the foundation of an understanding of this whole extensive Indian civilization which followed the Hohokam into the New Mexico, Arizona and Southern Utah area. The average American tourist may know about the Mesa Verde (I hope) and possibly Canyon de Chelly, little realizing that there once were thousands and thousands of these villages. I believe that Dr. Edward Danson, Director of the Museum, told us that they had excavated about ten thousand ancient settlements in Northern Arizona alone.

Some of the things are described in Alfred Vincent Kidder's book, *An Introduction to the Study of Southwestern Archaeology,* written in 1924, but brought up to date (1962) in the Yale paperback book with an introduction by Irving Rouse, Professor of Anthropology at Yale right now. Mrs. Menninger and I found this book fascinating.

February 13: Professor Hugo A. Bedau teaches at Reed College, one of the most famous little schools in the world. He formerly taught philosophy at several eastern colleges and held a Carnegie Fellowship in Law at the Harvard Law School. I cite this information because I never heard of him before, but Doubleday has just published as an Anchor Book his anthology of articles on *The Death Penalty in America* (1964), which runs to nearly 600 pages of excellent basic material.

Besides himself there are over a score of contributors. There are collections of the best arguments for the death penalty which Professor Bedau could find, including Barzun's—and they are all pretty weak. Perhaps no chapter is more valuable than the one on errors of justice, in which he first points out that to say "no one knows how many innocent men have been put to death by hanging" is eloquent but deceptive. "No one knows how many persons have been deterred from crime by the threat of hanging" is also eloquent but pointless. No one knows, true; therefore it is of no value. But in some cases we do know it, not by presumption but without any doubt. He abstracts 74 cases occurring in the United States since 1893 in which wrong conviction has been alleged and in most cases proved. These abstracts make *fascinating* but disturbing reading.

So do the histories of repeated successful reprieves and the histories of prisoners, undoubtedly very ill at the time, who were officially executed. Earle Stanley Gardner has been interested in the false conviction cases. There is one case in which the patient was extremely ill mentally, so much so that he was regressed, inaccessible, hallucinated, disordered. In a näive way the records tell that they gave him shock therapy, whereupon he began to improve somewhat and got so he could play on his mandolin and entertain the other prisoners. Gradually he got in pretty good condition, whereupon he was taken off to the gallows.

This is far and away the most important book on the death penalty in existence and ought to be circulated by some progressive organization to all legislators and all lawyers.

February 14: Professor Ralph Slovenko of the Tulane University School of Law has been visiting with us for several months, being especially interested in our work at the Kansas Diagnostic Center. Professor Slovenko is the editor of a book, *Symposium on Labor Relations Law* (Claitor, 1961), which collects the opinions of many legal authorities. This book runs to nearly 800 pages and is full of articles about arbitration, bargaining, grievances, strikes, injunctions and so forth. Most of it was far beyond my competence, but there was one article on "Problems Faced by Arbitrators in the Process of Judging" by one Peter Seitz that every court judge would enjoy. Anyway, I did.

February 15: Proceedings of the American Correctional Association, 93rd Annual Congress, Portland, Oregon, 1963. The best thing about this book, which is like all such bound volumes of papers given at annual meetings, is a paper by our Dr. Joseph Satten, the very title of which is arresting—"Barriers to Progress: The High Cost of Taking Science Seriously."

As one glances through these sixty odd pages one has the illusion that we are making progress in this area. Within the limits of their jurisdiction, there is no question that the correctional people are far ahead of the judicial people and the prosecutors and police. Educational functions and research projects occupy much of the attention of these workers; there are many pages on treatment and quite a few on prevention. I have the impulse to send this book to every judge in the United States; a few might read it. Certainly some of this few would never be the same again.

"They [the judges] are not experts in correction," said one of the speakers at this meeting. "They rarely even visit prisons—yet they speak to the public as if they were and *you let them get away with it*. You know the community is kidding itself when it feels that the present system protects it, yet you keep silent . . . You have no right to be silent . . . You have to point the direction in which the community is to move."

This organization has been meeting annually for 93 years.

K.A.M.

Editors' Note:

Because of lack of space, the *Bulletin* will be unable to continue to print the entire book-a-day record which Dr. Karl Menninger has been engaged upon since January 1, 1964. In future numbers of the *Bulletin*, we will make a selection from those books read to date and will present some of his current comment.

BOOK REVIEW

Emotional Health in the World of Work. By HARRY LEVINSON. $6.95. Pp. 300. New York, Harper & Row, 1964.

However enthusiastic psychologists and psychiatrists may be about the possibilities of the application of their disciplines to industry, this sentiment is not always shared by the leaders of industry. Many well-meant attempts to develop improved working conditions in business and industrial organizations have failed because of inappropriate or excessive zeal by the proponents. One of the most successful of all the practitioners in this important but sensitive area is Dr. Harry Levinson. Now he has produced a book, *Emotional Health in the World of Work*, which should be of inestimable help to those who would apply what is known about human personality to the solution of the problems of business management.

In *Men, Management, and Mental Health*, Doctor Levinson and his colleagues delineated many of the conditions essential for skilled and unskilled employees to work for a company with feelings of loyalty and satisfaction. In his new book, he turns his attention to the executives themselves, and particularly to their subordinates who have responsibility for others in their organizations.

Building on his article "What Killed Bob Lyons?" in the *Harvard Business Review*, Doctor Levinson includes an enormous amount of material about causes and explanations of human behavior with a minimal use of professional jargon. Reactions induced by fear, depression, and hostility are well covered as are some of the signs by which the body signals that something is going wrong. Problems of identity, the family, advancement, and the onset of retirement and old age all receive appropriate attention. The executive's own development and the various effects of inappropriate methods of management are particularly well described.

Principles derived from the psychological sciences may be applied to the problems of business and industry in two different ways. First, they may be used to exploit the cupidities or weaknesses of people, to entice them to buy goods which they do not want or need, or to cause them to indulge in behavior which may be temporarily pleasurable, but which in the long run brings them no reward or satisfaction. This manipulative form of psychological practice may bring wealth to those who practice it but hardly does credit to the discipline of psychology.

A second way psychological principles may be applied to the solution of industrial problems is through the use of knowledge of the needs and aspirations of human beings to enable them to derive satisfaction from their life and work. This involves a subtle change in attitude from that of an employer who uses his employees to gain a desired end (profit), to that of one who thinks of his company or enterprise as a means whereby employees may attain an adequate and dignified way of life. Profit is necessary and desirable in both instances. The issue is the employer's willingness to exploit people for the sake of quick or excessive gain.

Doctor Levinson is a strong proponent of the latter point of view. He has repeatedly deplored the use of psychology in industry as a means of exploitation. He has equally strongly encouraged the increase of understanding by executives of the personality characteristics of their junior colleagues so as to channel their

energies into constructive work and prevent the dissipation of their drives by conflict and frustration.

This book should be very helpful to businessmen, industrial physicians, and others concerned with the application of mental health principles to industrial and business management.

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BRIEF BOOK REVIEWS

The Symbolic Language of Vincent Van Gogh. By H. R. GRAETZ. $9.95. Pp. 315. New York, McGraw-Hill, 1963.

The title of this beautifully illustrated and printed book does not do it full justice. It is a biography, not of the man, but of the artist's creative life; and not so much a biography as an autobiography, for it is based on a chronological arrangement of more than 100 drawings and paintings in association with the artist's own words about his intentions, feelings and experiences in painting them. Such documentation of the creativity of a great artist must be unique. The author does pick out recurrent symbols in the paintings, but he supports his interpretations with hundreds of quotations from Van Gogh's letters (translated into English by the author) and he avoids abstruse language that might discourage the general reader.

Of Van Gogh's illness, Mr. Graetz says: "The 300 paintings and many hundred drawings and sketches he did in the 19 months from the first attack of his illness until his death are proof of this fight [against disintegration] . . . There can be no doubt that the import and greatness of his art was not diminished, but fully maintained, if not increased, after the outbreak of the illness . . . In the over 100 letters he wrote during that time, we often find unusual judgment and foresight. In many of them he dealt with his illness."

Mr. Vincent W. Van Gogh of Holland, namesake and nephew of the artist who has frequently visited Dr. and Mrs. H. G. van der Waals in Topeka, assisted in the preparation of the book. The foreword by the former President of the Psychiatric Society of Switzerland, Dr. Gustav Bally, calls attention to the method of free association used by the author. (Jeanetta Lyle Menninger)

Pickford Projective Pictures. By R. W. PICKFORD. Manual $4. Cards $5. Pp. 122. New York, Springer, 1963.

This book presents some preliminary research done with a set of 120 simple, four-by-six inch line drawings depicting children in various relationships with other children and adults. The test is offered as an adjunct to the child psychotherapist for use much as the Lowenfeld World Test is used. The author considers his projective pictures less cumbersome than the World Test, and more readily acceptable to older and brighter children. The test seems promising enough to warrant further research as a diagnostic device. The text which accompanies the pictures has several chapters illustrating their use in the treatment of five children. (Martin Mayman, Ph.D.)

Inhibition and Choice. By SOLOMON DIAMOND and others. $6.50. Pp. 456. New York, Harper & Row, 1963.

The authors of this well-organized and convincing book have presented old concepts in a new light. They have divided their work into two major sections. "Inhibition" sets the tone for the larger section on "Choice." The latter section incorporates much of the former and proceeds to relate inhibition to mental handicaps, the manner in which drugs influence behavior, and the organization of behavior. The continuity of the sections is consistent with the authors' initial statement (and their conclusion) that inhibition and choice rather than response and learning are primary determinants of behavior. Both sections are replete with biographical sketches and historical experimental evidence. Although it is a reference text with good subject and name indices, its conclusion can only be appreciated by a thorough perusal of the arguments. (Charles D. Glazzard, M.D.)

Role Development and Interpersonal Competence. By DAVID MOMENT and ABRAHAM ZALESNIK. $6. Pp. 346. Boston, Harvard, 1963.

One of a growing series of studies drawing on a fusion of sociological, psychological, and psychoanalytic sources as a basis for understanding the behavior of executives, this is the first to use psychoanalytic considerations as a serious basis for evaluating and planning executive training. The experimental problem-solving behavior of 52 middle- and upper-level business executives and engineers was studied both as normal aspects of specific phases of development and as manifestations of the defensive system of the individual. The methodology, depth, and implications of the study are important contributions. (Harry Levinson, Ph.D.)

Imagination. By HAROLD RUGG. $6.95. Pp. 361 New York, Harper & Row, 1963.

This is a charmingly written account of the creative processes, with special emphasis upon literary creativity. There is wide scholarly familiarity with psychoanalytic concepts and a good orientation in cross-cultural thinking. The role of dreaming and of dreamlike waking states is brought out through vivid examples. "A chorus of voices from my file confirms this advice to the original thinker. After effortful conscious preparation, put the problem 'out of mind,' let go, sleep on it, do something else," "the flash comes when the person is in a state of relaxed tension; being off-guard seems to be a central condition. . . ." (Gardner Murphy, Ph.D.)

Impotence and Frigidity. By DONALD W. HASTINGS. $5.50. Pp. 144. Boston, Little, Brown, 1963.

Doctor Hastings, Professor of Psychiatry at the University of Minnesota, sharply defines the areas of his discourse. He discusses sexual arousal in the male and in the female, genital union, orgasm in both sexes, premature ejaculation, homosexuality, sexual coldness in the female, and treatment (emphasizing psychotherapies). His classification of impotence takes into account etiology, time in sexual pattern, specificity, and duration, with examples of each. He discusses organic as well as psychological impotence, but points out the relative rarity of the former. A useful appendix deals with privileged communication and confidentiality. Doctor Hastings has succeeded in dealing with the problems he discusses with sympathy and clarity. (Russell M. Wilder, M.D.)

The Prevention of Hospitalization. By MILTON GREENBLATT and others. $7.50. Pp. 182. New York, Grune & Stratton, 1963.

In an effort to reduce inpatient admissions at the Massachusetts Mental Health Center, a psychiatric team consisting of psychiatrist, social worker, and psychiatric nurse systematically explored ways of diverting applicants by psychiatric first aid, *i.e.*, emergency psychiatric consultation, home visits, short-term psychotherapy, among other extra hospital resources. Perhaps a first of such an effort in a state psychiatric setting, their first year of operation kept 66 out of 128 referred admissions from being hospitalized. Of particular interest is the way psychiatric nurses were used in home visits, differing from the functions of the psychiatric social worker. The write up by ten contributors is comprehensive. It illustrates effectively their approach and experience in attaining their goal. (Ronald Chen, M. D.)

Alcohol and Civilization. SALVATORE P. LUCIA, ed. $3.95. Pp. 409. New York, McGraw-Hill, 1963.

This is the record of a symposium, organized by the University of California School of Medicine, on the influence of alcohol, good and bad, on the organism and on civilization throughout the ages to the present. There are 21 contributors and participants, representing the fields of pharmacology, physiology, social psychology, psychiatry and law. Inevitably repetitious and, with notable exceptions, sketchy in their presentation of the various aspects of the subject, the essays and discussions that comprise the book are lively and broadminded, in defense of alcohol. (Peter Hartocollis, M. D.)

Elements of Psycho-Analysis. By W. R. BION. $3.95. Pp. 110. New York, Basic Books, 1963.

The author suggests a model of classification which might be applied "to all statements whether made by patients or analysts." This model consists essentially of a matrix or "grid," the horizontal axis of which is the degree of action-orientedness and the vertical axis the degree of secondary process quality. "Elements" of psychoanalysis in the context of this book are essentially ideas and feelings defined by their location in a single grid category. The author denominates, as psychoanalytic "objects," complex combinations of such elements which present "extensions in the domain of sense, myth, and passion." Much of the book is devoted to explaining all these concepts. The "grid" is interesting and might be a very helpful research instrument. There are some good clinical examples illustrating its use. (Otto Kernberg, M.D.)

Counseling in Medical Genetics. By SHELDON C. REED. $5.50 Pp. 278. Philadelphia, Saunders, 1963.

In spite of its breezy style and questionable statements about certain psychological phenomena, this book for the physician and layman makes some important and little-known points about genetics and genetic counseling. It contains a list of genetics counseling centers in this country and includes discussions of a number of medical syndromes, with sample answers to parents' questions about the probability of occurrence in subsequent offspring. In view of the complexity of human genetics and the widespread misconceptions concerning it, accurate, up-to-date information can alleviate much unnecessary suffering. Since one birth in 50 involves some genetic anomaly, few areas seem so worthy of attention. (Riley W. Gardner, Ph.D.)

The Design of Electric Circuits in the Behavioral Sciences. By TOM N. CORNSWEET. $8.95. Pp. 329. New York, Wiley, 1963.

The author (a psychologist) guides the reader from elementary topics in electricity such as Ohm's law, simple circuits, and how to solder, to topics as advanced as complex switching circuits, amplifiers, sensors, and oscilloscopes. The book is written for the behavior scientist who wishes to know more about electrical equipment either so he can build his own circuits or communicate more effectively with engineers. The many illustrations, photographs, and problems which vary from actually building circuits using a "kit" to paper-and-pencil solutions show the practical orientation of the book. In the reviewer's opinion, it is an excellent book. (Paul E. Thetford, Ph.D.)

The Encyclopedia of Mental Health, 6 Vols. ALBERT DEUTSCH, Editor-in-Chief. $49. Pp. 2228. New York, Franklin Watts, 1963.

One of the projects of Albert Deutsch's last years was an encyclopedia which would supply authoritative information on the many topics in our field to the many people who are now interested in it. He planned this work. He enlisted many of the contributors. He wrote some of the articles. His kindliness and his great facility for bringing together different kinds of people for concerted action upon a common purpose made him ideal for the task. When he died in the middle of its preparation, the contributors rallied to the completion of the task in a kind of memorial gesture and tribute; and neither they nor the publishers need be ashamed of the product. (K.A.M.)

Elementary Medical Statistics. By DONALD MAINLAND. $9. Pp. 381. Philadelphia, Saunders, 1963.

The emphasis of this book is statistical thinking rather than statistical techniques or computation. The first ten chapters, in question-and-answer format, are devoted to a general discussion of planning investigations, definition of populations, sampling and sample size, choice of measurement and design, collecting, recording and examining data, and interpretation of experimental or survey results. The statistical techniques discussed are limited in number and variety, as compared to psychological statistics books, and emphasize small-sample and non-parametric methods. The discussion of appropriate sample sizes is commendable. The outstanding feature of the book is the readable discussion of the philosophy of statistical investigation. (Lolafaye Coyne.)

The Analyst's Role. By RICHARD C. ROBERTIELLO and others. $3.50. Pp. 126. New York, Citadel, 1963.

The authors describe 34 cases, many of whom, they say, had failed to improve in psychoanalysis. These patients were helped to feel and function better, according to the authors, by a variety of interventions, including the therapist confiding his own problems, demonstrating his respect for a patient by asking his advice, pretending to be more immoral than the patient in order to "soften his superego," etc. The authors seem to be unaware of the existence of a range

of psychotherapeutic modalities grounded in psychoanalytic principles from which to choose. The two alternatives which they see are psychoanalysis versus the kinds of *ad hoc* interventions they describe. (Ann Appelbaum, M.D.)

The Behavioral Sciences Today. BERNARD BERELSON, ed. $4.95. Pp. 278. New York, Basic Books, 1963.

This collection of papers by leading behavioral scientists originated as a series of talks for the Voice of America. If you are sure you are *not* a behavioral scientist, or think perhaps you should be, or wonder what 21 famous behavioral scientists think behavioral science is, study Robert K. Merton's concluding chapter and then read the other chapters in reverse order. Brief biographical sketches of the contributors enhance the value of this symposium. (Charlton R. Price)

Computer Simulation of Personality: Frontier of Psychological Theory. SILVAN S. TOMKINS and SAMUEL MESSICK, eds. $5. Pp. 325. New York, Wiley, 1963.

Simulation of human psychological processes on electronic computers is one of the more intriguing and controversial frontiers of behavioral science. This book contains contributions by a number of specialists in this new area, plus discussions by a group of commentators representing a broad spectrum of psychological theory. The attempted simulations described vary from a simplified model of a total person to specific aspects of problem-solving, pattern recognition, etc. One of the most valuable uses of computers as simulators apparent in the contributions is rapid spelling out of the implications of rigorously formulated theories. Among the intriguing papers is Kenneth Mark Colby's "Computer Simulation of a Neurotic Process." (Riley W. Gardner, Ph.D.)

Man and Civilization: Conflict and Creativity. S. M. FARBER and R. H. L. WILSON, eds. $2.95. Pp. 360. New York, McGraw-Hill, 1963.

The omnibus qualities of the words, "conflict" and "creativity," are illustrated in this diverse selection of papers from the second symposium "Man and Civilization: Control of the Mind, Part 2" held at the University of California San Francisco Medical Center, January 26–29, 1962. The papers range from such specifics as brain-wave patterns and legislation about opiate addicts to such general themes as the relationship between the individual and his society. Some of the way stations along this discursive, but often interesting and thought-provoking route, include essays and panel discussions by Gardner Murphy, Carl Rogers, William H. White, Jr., Benjamin Pasamanick, and Joseph Szigeti. (Stephen A. Appelbaum, Ph.D.)

A Psychiatrist's Views on Social Issues. By SOL W. GINSBURG. $5. Pp. 296. New York, Columbia University, 1963.

Doctor Will and I have said at the front of this book what we think about it and its author. We think he loved people, wanted to help people, and knew a lot about people. He was so genuine, so earnest, so kind that he helped people not only with his ideas, but also with his wonderful personality, which shows through his writings. (K.A.M.)

Serological Fractions in Schizophrenia. ROBERT G. HEATH, ed. $7.50. Pp. 239. New York, Hoeber, 1963.

Major papers, presented at a 1961 symposium on "A Psychosis-Inducing Factor in Schizophrenic Serum," describe serum fractionation procedures, animal assay studies, mode of action of blood factors and clinical studies. The findings seem tentative but fruitful enough to remain provocative of further research. The sections on clinical studies fail to amplify certain theoretical aspects of the clinical background of the research (*e.g.*, choices of Bleulerian criteria over more recent concepts). However, they provide a timely, useful summary of the frames of reference, both of the Heath-Tulane group, and of the American and European investigators, attempting to duplicate and expand their findings. (Ian Graham, M.D.)

The Mental Patient Comes Home. By H. E. FREEMAN and O. G. SIMMONS. $7.95. Pp. 309. New York, Wiley, 1963.

Two sociologists report a painstaking examination of the post-hospital experience of 649 mental patients. No practitioner will be surprised to read that the psychiatric condition of the patient is as important a factor in rehabilitation as the attitudes of those in his milieu. The book is an excellent demonstration of the supreme importance, in the increasing dialogue between sociology and psychiatry, of clear definitions early in the discourse. Had this been achieved early in this study—as it was later—the devoted efforts of these two sensitive, responsible men would have been far more rewarding. (Richard Benson, M.S.W.)

Sexual Behavior and Personality Characteristics. MANFRED F. DEMARTINO, ed. $7.50. Pp. 412. New York, Citadel, 1963.

This is a collection of more or less classical articles of the past 20 years on sexual behavior, ranging from the purely descriptive and statistical to clinical and psychoanalytic studies. Some of the authors represented are Albert Ellis, Robert Knight, Clelland Ford, Frank Beach, and Judd Marmor. The topics include normal sexual behavior, correlates of orgasmic adequacy, effect of self-esteem on sexual behavior, masturbation, impotence and frigidity and the sexual life of the middle-aged and aged. (William S. Simpson, M.D.)

The Psychology of Meaningful Verbal Learning. By DAVID P. AUSUBEL. $6.50. Pp. 255. New York, Grune & Stratton, 1963.

Within the framework of modern concepts of cognitive structure, content and style, a theory for learning and retention of meaningful material in the classroom is carefully developed. Relevant research findings are analyzed, and major gaps in our knowledge are clearly discovered. Subsumption into cognitive structure is developed as the key idea, much broader than, and inclusive of, many standard concepts such as transfer of training, readiness, maturation, and receptive vs. discovery learning. Side trips to a variety of psychological, neurological, educational and/or computer models of learning and retention are well guided. (Phillip M. Rennick, Ph.D.)

The Mind: First S-T-E-P-S. By HARRY A. WILMER. $3.95. Pp. 71. New York, Franklin Watts, 1963.

A psychologist colleague, Harry Wilmer of Stanford University, has tried his hand at a primer of psychology illustrated by himself. Perceiving, classifying, feeling, controlling, thinking, deciding, and acting are progressively illustrated, with some other corollaries. He aims at the junior high school level. (K.A.M.)

Clinical Examinations in Neurology, Ed. 2. By MEMBERS OF THE SECTIONS OF NEUROLOGY AND SECTION OF PHYSIOLOGY, MAYO CLINIC AND MAYO FOUNDATION. $8.50. Pp. 396. Philadelphia, Saunders, 1963.

As the student fills out the framework started in his medical school course in physical examination, he must periodically fall back on a source for reviewing and augmenting his information. This requires not only an exact description of the multitudinous tests, but also a correlation with anatomy, physiology and pathology. For the neurological examination a practical guide runs the risk of being too detailed or too sketchy. The authors deserve much credit for having prepared a volume which on the one hand provides a clear outline of procedure, and on the other explains the basis for normal and abnormal findings. Few students will read this book from cover to cover, but for the person who wishes rapidly to brush up in limited fields it will be invaluable. In its second edition it is worthy of replacing some of the older monographs on the shelves of those especially interested in neurology from medical student to mature specialist. (Robert P. Woods, M. D.)

Hospitals and Children. By JAMES ROBERTSON. $4. Pp. 159. New York, International Universities, 1963.

This book, focusing on letters written by parents of young children who were hospitalized for physical illness or operation, stresses the threat to the emotional health of the child under five years when he is separated from the mother even for periods of brief hospitalization. The author effectively delineates the ways to prevent damaging effects upon personality development and thus continues the significant work he has already done to bring about humanization of hospital experience for the young child through increased visiting privileges, freedom for overnight stay by parents, and the admission of the mother with the child. (J. Cotter Hirschberg, M.D.)

The Symbolic and The Real. By IRA PROGOFF. $6. Pp. 234. New York, Julian Press, 1963.

The intention of this Jungian offer of help to the troubled is conveyed in its subtitle: "A New Psychological Approach to the Fuller Experience of Personal Existence." Through exploration of the depth of one's "psyche," with the aid of a "psyche-evoker" (not a psychotherapist) and techniques such as "twilight imaging" (not free-association) and "group workshops" (not group therapy), one may restore meaning to his life by forging "a new awareness of what spiritual reality is, not as an object of dogma but as the place of meeting in the depths of man where meaning unfolds." Interesting and authoritative, this work evokes the flavor of Jungian symbolic-spiritual therapeutic interchange. (Richard S. Siegal, Ph.D.)

The Family and Human Adaptation. By THEODORE LIDZ. $3. Pp. 120. New York, International Universities, 1963.

The author, using insights gained from his research into the family structure of schizophrenic patients, explores the more general problem of the role of the family as mediator of the individual's cultural heritage on the one hand and nurturer of the individual's own unique capacities on the other. His chapter on the role of the "isolated nuclear family" in our scientific era is especially interesting and potentially valuable, but, like the rest of the book, it suffers from an imperfection rare in scientific writing—it is too brief. (Philip Woollcott, Jr., M.D.)