

The "skin" portion of the ectoderm, then, does not really separate from the "neural tube" portion and migrate outward at all. The neural tube expands by means of trunks, axons, and endings, with the skin as its advancing boundary. And it is the chemical and sensory make-up of the skin which provides the "template" for the connections and reflex patterns within the brain, not the other way around.

The skin is no more separated from the brain than the surface of a lake is separate from its depths; the two are different locations in a continuous medium. "Peripheral" and "central" are merely spatial distinctions, distinctions which do more harm than good if they lure us into forgetting that the brain is a single functional unit, from cortex to fingertips to toes. To touch the surface is to stir the depths.

Touch as Food

So the skin, it would seem, offers an excellent means of influencing internal processes. Its sensory pathways unite the surface and the interior of the organism, and its surface does not shield any more than it exposes.

It is also obvious, of course, that internal states of mind and of physical health directly affect the skin. Transitory moods are reflected by paling, flushing, goose flesh, cold shivers, sweating. Chronic anxiety and exhaustion darken the area under the eyes. Healthy circulation makes the surface pink and warm; liver failure makes it yellow and clammy. Faulty diet can make it too dry or too oily. Acute emotional distress can erupt in a plethora of rashes, bumps, pimples, and boils. Neurotic dispositions can render it nearly numb at one extreme, or excruciatingly sensitive at the other.

But what about the other way around? Can conditions and sensations on the skin really have equally potent effects on our organs, our circulation, our moods, our personalities? A soothing hand will calm a frightened animal or an injured child, and a cool cloth can diminish a raging headache — these are effects everyone has experienced. But doesn't the intimate connections between the skin and the central nervous network suggest that the relationships might go further than these familiar palliatives? Evidence from many quarters indicates that indeed it does go much further.

In the Orphanage

As recently as 1915 James H.M. Knox, Jr. of the Johns Hopkins Hospital noted that, in spite of adequate physical care, 90% of the infants in Baltimore orphanages and foundling homes died within a year of admission.²¹

In the same year a New York pediatrician, Dr. Henry Dwight Chapin, published a report concerning children's institutions in ten different cities, which described a similar situation, except that in the orphanages he studied the infant mortality within one year after admission was much closer to 99%. Such

statistics for abandoned infants were in fact almost universal in the nineteenth and early twentieth centuries.

The "disease" was called *merasmus*, a Greek word meaning "wasting away," and it was tacitly assumed that almost every infant in every orphanage would succumb to it, in spite of an adequate diet and professional medical attention. Even those who lived through this initial year were clearly damaged by it.

The period between the seventh and the twelfth month of life was the time of the highest fatalities. Infants who managed to survive their first year uniformly showed severe physical retardation.²²

As one would hope, these shocking figures spurred investigations and reforms in orphanages in Europe and America. The largest single factor that emerged from the closer study of these institutions proved to be their sparse staffing. Attendants had just enough time to clean and feed the infants and plop them back into their solitary cribs, where they died of loneliness, of inadequate sensory stimulation. When extra help was added, so that there were enough attendants for each infant to be held, handled, talked to, played with for ample lengths of time every day, infant mortality rates plummeted.

And not only did more infants survive, but the survivors were not marred by the stunted growth and the mental retardations of "deprivation dwarfism." Even those who had been previously retarded showed dramatic increases in their weight, height, energy, and mental acuity. In institution after institution, the mystery of infant *merasmus* was cleared up: The *tactile stimulation* associated with tender, loving care was absolutely crucial to a baby's development. Without it, no amount of food and no kind of medicine could produce a healthy individual.

In the Hospital

Continued observations have confirmed that this connection between adequate stimulation and healthy physical development is unequivocal. In 1942, Harry Bakwin of New York University began observing infants who were removed from their homes for hospital care. He noted that they soon became listless, apathetic, depressed. Their bowel movements were more frequent, and even though they were well fed, they failed to gain weight at normal rates. They suffered from an increase in respiratory infections, and they persistently developed fevers of unknown origins. "All such abnormalities, however, quickly disappeared when the infants were returned to their home and mother."²³

A similar study was conducted by Margaret A. Ribble over an eight year period in three New York maternity hospitals. She found that when an infant was isolated from its mother, diarrhea was more prevalent, and muscle tone commonly decreased. The absence of normal mother-infant interaction was not, Ribble concluded, merely a sentimental concern, but was "an actual privation which may result in biological, as well as psychological damage to the infant."²⁴

In 1965 a mother in upper New York State gave birth to a daughter with

an incomplete esophagus. A feeding tube was surgically inserted into the baby's stomach, and for fifteen months the mother meticulously fed the child with standard daily doses of nutrient formula administered through the tube. However, the mother was afraid of disturbing the tube in any way, and consequently she did not play with or cuddle the child for the entire time. At the end of fifteen months the child was extremely depressed, showed evidence of motor retardation, and her physical development was that of an eight-month-old. At this point she was hospitalized for observation. During this observation period she received a great deal of attention and handling from the doctors and nurses trying to find her problem. She responded dramatically to this added stimulation by gaining her normal weight and making up for lost growth. Her emotional state also improved strikingly.

Moreover, these changes were demonstrably unrelated to any change in food intake. During her stay in the hospital she received the same standard nutrient dosage she had received at home. It appears to have been the enrichment of her environment, not of her diet, that was responsible for the normalization of her growth.²⁵

In this case, the child fared better in the hospital than at home, just the reverse of the cases studied by Bakwin and Ribble. This would seem to further underscore the point that it is adequate *tactile stimulation* — whatever its source — that is necessary for healthy physical development, and neither some more mysterious “bonding” with the mother *per se*, nor unique genetic characteristics inherited from her.

Sensory Malnutrition

These symptoms of sensory deprivation — retarded bone growth, failure to gain weight, poor muscular coordination, immunological weakness, general apathy — are strikingly similar to those of malnutrition, and yet improper feeding must be ruled out as the causative factor in all these instances. Every one of these children's bellies was being well fed. But a bellyful is not enough. The similarities between malnutrition and sensory deprivation are probably not coincidental at all; it is most likely the case that we suffer from the lack of one sort of nutrition to the same degree that we suffer from the lack of the other.

Indeed, some researchers, such as R.H. Barnes and David Levitsky of the Cornell University Graduate School of Nutrition, regard malnutrition and sensory deprivation as being very closely linked in their causes and effects, and have proposed that

certain effects of malnutrition may actually be secondary effects of environmental impoverishment. That is, since a prominent effect of malnutrition is to make the person or animal apathetic and unresponsive to the environment, the individual then suffers from lack of stimulation, and this may be the direct cause of some of the symptoms usually associated with malnutrition. Current research suggests that some of the effects of malnutrition

may be offset by programs of environmental stimulation or increased by environmental impoverishment.²⁶

Tactile stimulation, physical contact with the environment, appears to be a food that is as vital for development as is any protein.

A Mother's Touch

A large number of observations and experiments have been inspired by these revelations about the cause of infant merasmus, and as evidence continually accumulates, the role of touch in the physical and mental health of animals of all kinds broadens and deepens in its significance. It was formerly assumed, for instance, that it was some sort of hormonal secretion in pregnant animals which initiated the physiological and behavioral changes we refer to as the "mothering instincts," so necessary in order for the mother to successfully gestate, deliver, nourish, and instruct her young.

However, if pregnant rats are simply fitted with a wide collar, so that they cannot lick themselves, dramatic things happen to the quality of their motherhood: Their mammary glands attain only 50% of the growth of uncollared pregnant rats; they amass the material for nests, but they scatter them about loosely and do not construct useful nurseries; they are not attentive to the pups as they are born, and do not lick them, do not fondle them, do not clean up the afterbirth; they do not nurse their pups to any extent, and even seem to avoid contact with them.²⁷

On the other hand, stereotyped maternal behavior can be induced in virgin female rats by merely putting them into a small cage filled with pups, where they share many close physical contacts. It is evident that adequate tactile experience is at least as important as are hormones for the conditioning of the mothering instincts, and in fact it may well be specific quantities and qualities of tactile experience which trigger the release of the hormones themselves.²⁸

This relationship between self-licking and successful motherhood has been confirmed in other animals, and it seems to be closely akin to the almost universal practice of the mother thoroughly licking her young. It has been tacitly assumed that this licking demonstrates an admirable, an almost human, fastidiousness among animal mothers; but for the pups, kittens, kids, and other whelps, something much more significant than a little tidying up is going on. By virtue of the skin's close association with the central nervous system, this cutaneous stimulation is literally awakening organic functions in the newborns' internal organs, and without it their chances of survival are markedly diminished.

Animal breeders, farmers, veterinarians, and zoo-keepers all concur that the new animal must be licked if it is to live. In particular, the perineal region between the genitals and the anus, and the lower abdomen need a good deal of cutaneous stimulation, or else the young animal is very likely to die of a functional failure of either the genitourinary system or the gastrointestinal system: It does not learn to urinate or defecate, and it perishes.

This association of tactile stimulation and proper organ function was forcefully underscored by some accidental findings in a series of experiments having nothing to do with licking. Professor James A. Reyniers and his colleagues of the Lobund Laboratories of Bacteriology of the University of Notre Dame were interested in raising animals in a germ-free environment. During the early days of their experiments, they lost virtually all their animals because they died of early genitourinary and gastrointestinal failure. Only after a former zoo-keeper advised the investigators of her experience with newborn litters, and they began to systematically stroke the animals after each feeding, did their subjects begin to survive.

Rats, mice, rabbits, and those mammals depending upon the mother for sustenance in the early days of life apparently have to be taught to defecate and urinate. In the early period of this work we did not know this and consequently lost all our animals. The unstimulated young die of an occlusion of the ureter and a distended bladder. Although we had for years seen mothers licking their young about the genitals I thought that this was a matter largely of cleanliness. On closer observation, however, it appeared that during such stimulation the young defecated and urinated. Consequently, about twelve years ago, we started to stroke the genitals of the young after each hourly feeding with a wisp of cotton and we were able to elicit elimination. From this point on we have had no trouble with this problem.²⁹

It is interesting that it is a civilized concern for cleanliness that prompts us to overlook this far more profound benefit of licking. If it weren't for our own squeamishness, we would probably recall more readily that no part of the body is as germ-laden as the mouth, and that the tongue can scarcely be regarded as a proper cleansing agent since its touch innoculates the skin with a thousand bacterial horrors. The stimulation of internal functions is far more important to the infant's health than the removal of a little surface dirt, because it empowers the organism itself to eliminate toxins and wastes on its own. Let not this fact be an invitation to allow our children to wallow in filth, but let it protect us from the fastidious delusion that if baby is clean and fed, then all is well.

Touch and Maturation

The importance of cutaneous stimulation is not confined to the critical period of early infancy. Animals who receive this early contact develop superior functions and immunological resistance that last them their whole lives, and these effects are strengthened if they are fondled throughout their maturation.

In the early 1920's Frederick S. Hammett, of the Wistar Institute of Anatomy in Philadelphia was interested in discovering the effects of total removal of the thyroid and parathyroid glands in a genetically homogeneous stock of rats. It was a foregone conclusion that these rats would die from the removals; presumably the specific causes of death would shed light upon the functions of the two glands.

Making inquiries, Hammett discovered that his rats had been raised in two different groups — one in a rich environment where they were customarily petted and gentled, and one in much more isolated circumstances where their human contact was incidental to routine feeding and cage-cleaning. The handled group were relaxed and yielding when picked up, and not at all easily frightened. The latter group, by contrast, were highly excitable, tense, and tended to bite their handlers in fear and rage.

In subsequent experiments, Hammett kept close track of the subjects from each colony. After the thyroid and parathyroid glands had been removed from the excitable rats, 79% of them died within forty-eight hours, while in the same time period after identical surgery only 13% of the gentled rats died.

Hammett concluded that the stability of the nervous system induced in rats by gentling and petting produces in them a marked resistance to the loss of parathyroid secretion.³⁰

Similarly, another group of investigators discovered in another series of experiments that gentled rats survive an injection of leukemia cells for a considerably longer time than do ones that have been raised in isolation.³¹

It would seem that these wide disparities in organ function, in resistance to trauma and disease, and in dominant personality traits suggest that the actual physical constitution of the gentled animals had been benefited in some material way by tactile stimulation. In the late 1950's Seymour Levine began looking for concrete physiological changes that could be attributed to stimulation or deprivation during infancy. His findings were astonishing.

In almost all respects, Levine's fondled rats developed more rapidly than his isolated ones. The fondled rats opened their eyes earlier, and achieved motor coordination earlier. Their body hair grew faster. They were heavier at weaning, and continued to gain weight at a faster rate even after their experimental stimulation ceased at three weeks of age. They had a stronger resistance to disease. These superior gains were not related to food consumption — which was identical for both groups — but to a brisker, more efficient metabolism, a "better utilization of the food consumed, and probably a higher output of somatotrophic (growth) hormone from the pituitary."³²

Levine concluded that all of these strengths were the result of an accelerated maturation of the central nervous system in the fondled animals. In particular, he discovered that the cholesterol content of their brain tissues was distinctly higher.

Since the cholesterol content of the brain is related to the brain's white matter, this is evidence that in these animals the maturation of structure parallels the maturation of function.³³

"White matter" consists of the fatty myeline sheaths which surround some nerve axons, insulating their electrical activities, and making them more efficient transmitters; it is opposed to "grey matter," cell bodies and axons with no mye-

lin sheaths, and is therefore regarded as a sign of more highly evolved neural development.

These increases in brain cholesterol and pituitary activity were clues that were rich in their implications, and in the late 1960's a research team at the University of California at Berkeley began to look for specific differences in the neural structures of gentled and ungentled rats. They found that greater tactile stimulation resulted in the following differences: These animals' brains were heavier, and in particular they had heavier and thicker cerebral cortexes. This heaviness was not due only to the presence of more cholesterol—that is, more myeline sheaths—but also to the fact that actual neural cell bodies and nuclei were larger. Associated with these larger cells were greater quantities of cholinesterase and acetylcholinesterase, two enzymes that support the chemical activities of nerve cells, and also a higher ratio of RNA to DNA within the cells. Increased amounts of these specific compounds indicates higher metabolic activity. Measurements of the synaptic junctions connecting nerve cells revealed that these junctions were 50% larger in cross-section in the gentled rats than in the isolated ones. The gentled rats' adrenal glands were also markedly heavier, evidence that the pituitary-adrenal axis—the most important monitor of the body's hormonal secretions—was indeed more active.³⁴

Many other studies have confirmed and added to these findings. Laboratory animals who are given rich tactile experience in their infancy grow faster, have heavier brains, more highly developed myelin sheaths, bigger nerve cells, more advanced skeletal muscular growth, better coordination, better immunological resistance, more developed pituitary/adrenal activity, earlier puberties, and more active sex lives than their isolated genetic counterparts.

Associated with these physiological advantages are a host of emotional and behavioral responses which indicate a stronger and much more successfully adapted organism. The gentled rats are much calmer and less excitable, yet they tend to be more dominant in social and sexual situations. They are more lively, more curious, more active problem solvers. They are more willing to explore new environments (ungentled animals usually withdraw fearfully from novel situations), and advance more quickly in all forms of conditioned learning exercises.³⁵

Moreover, these felicitous changes are not to be observed only in infancy and early maturation; an enriched environment will produce exactly the same increases in brain and adrenal weights and the same behavioral changes in adult animals as well, even though the adults require a longer period of stimulation to show the maximum effect.³⁶

A Basic Need

How is it possible that mere tactile stimulation, in the form of fondling, cuddling, licking, and stroking, produces such dramatic changes in the neural anatomy and physiology, the organ functions, and the behavioral patterns in these animals?

The answer is quite simple: Tactile stimulation appears to be a fundamentally necessary experience for the healthy behavioral development of the individual. . . . The raw sensation of touch as stimulus is vitally necessary for the physical survival of the organism. In that sense it may be postulated that the need for tactile stimulation must be added to the repertoire of basic needs in all vertebrates, if not in all invertebrates as well. Basic needs, defined as tensions which must be satisfied if the organism is to survive, are the needs for oxygen, liquid, food, rest, activity, sleep, bowel and bladder elimination, escape from danger, and the avoidance of pain. It should be noted that sex is not a basic need since the survival of the organism is not dependent upon its satisfaction. Only a certain number of organisms need to satisfy sexual tensions if the species is to survive. However that may be, the evidence points unequivocally to the fact that no organism can survive very long without externally originating cutaneous stimulation.³⁷

Touch is food. Vital food.

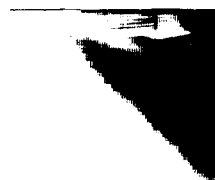
Harlow's Monkeys

In fact for the infant, this food is as vital as mother's milk. Just as the stimulatory significance of licking was obscured by the assumption that the animal mother is motivated by a desire for cleanliness, so the infant mammal's dependence upon its mother's breasts for nutrition has obscured some of the crucial nurturing qualities derived from nursing.

It was long held to be an obvious fact that the infant's affectionate attachment to its mother was generated by the satisfaction of feeding. But studies of rhesus monkeys in the late 1950's by Harry Harlow, head of the Primate Laboratory at the University of Wisconsin, demonstrate clearly that the close body contact involved in clinging, nuzzling, and nursing is the main factor in forming the affectionate bond, and is as important to the infant's physical and mental development as is the milk itself.

Harlow provided baby monkeys with two surrogate mothers—one made of cold wire, and the other made of soft terry cloth. For some monkeys, only the wire mother had a nipple and milk, while for others the milk came only from the terry cloth one. Regardless of which mother fed them, all of the monkeys displayed a dramatic preference for spending their time clinging to the soft, cloth one—about eighteen hours a day compared to an hour or less spent with the wire mother. Both sets of infants drank the same amount of milk, but this nutrition coming from the wire surrogate produced no affectionate bonding whatsoever.

Harlow found that this preference became even more pronounced and psychologically significant when the monkeys were subjected to stress. A wind-up noise-maker was put into a cage containing a monkey and its two "mothers." Again, despite which mother had been dispensing milk, the frightened in-



fants overwhelmingly chose the soft one for comfort and protection. Even if they first blindly rushed to the wire one, they quickly abandoned her and clung desperately to the cloth one. Then, when their fears were assuaged by the bodily contact, they would turn around and look at the noise-maker with no evidence of fear.

Very similar results were obtained by placing the monkeys in a strange environment, such as a room much larger than their cages and provided with a variety of unfamiliar objects: If the cloth mother was present, the infant would rush wildly to her, clinging tightly and rubbing against her; its initial fear then subsided, and it began to explore the room, returning periodically to the cloth mother. But if the cloth mother was absent, "the infants would rush across the test room and throw themselves face down on the floor, clutching their heads and bodies and screaming their distress."³⁸

These behaviors are, of course, very like those of human infants who find themselves in new circumstances either with or without their mothers. But when only the wire mother was provided in the strange room, starkly contrasting behavior resulted. The bare wire mother provided no more real assurance in this "open field" test than no mother at all. Control tests on monkeys that from birth had known only the wire mother revealed that even these infants showed no affection for her and obtained no comfort from her presence. Indeed, this group of animals exhibited the highest emotionality scores of all. Typically they would run to some wall or corner of the room, clasp their heads and bodies and rock themselves convulsively back and forth. Such activities closely resemble the autistic behavior seen frequently among neglected children in and out of institutions.³⁹

Certainly no one would deny that being clean and well fed are desirable conditions for babies, but studies such as this one, along with those previously cited, make it clear that when these factors are stressed and adequate handling and comforting are short-changed, the infant suffers consequences just as grim as those of malnutrition or disease. Psychologically at least, cleanliness and food are clearly secondary to the infant, since supplying these things alone creates no affectionate bonding and offers no security in times of stress. "These data make it obvious," Harlow concluded,

that contact comfort is a variable of overwhelming importance in the development of affectional responses, whereas lactation is a variable of negligible importance. With age and opportunity to learn, subjects with the lactating wire mother showed decreasing responsiveness to her and increasing responsiveness to the non-lactating cloth mother. . . . We were not surprised to discover that contact comfort was an important basic affectional or love variable, but we did not expect it to overshadow so completely the variable of nursing; indeed, the disparity is so great as to suggest that the primary function of nursing as an affectional variable is that of insuring frequent and intimate body contact of the infant with the mother. Certainly man cannot live by milk alone.⁴⁰

Freudian Confusions

These findings have a frightening significance for our culture when we reflect upon the routine treatment of newborn infants in almost all of our hospitals. They are thoroughly cleaned, provided with a bottle, plopped into an isolated crib, and given just enough physical attention to avoid the most obvious symptoms of deprivation, with little to listen to their first days but the cries of their neighbors in the nursery. "Nursery" as the name for baby's room is revealing in itself on this head; where, we might ask, is the "touchery"?

The sort of contact that has been shown to stabilize the young rhesus monkey is often not even offered to the young human, a lamentable situation that is even further darkened by the fact that no animal is as dependent as the human being upon early experiences for the formation of personality traits. Nor is this shaky beginning compensated for by popular child-rearing theories which stress the importance of not "indulging" children when they clamor for attention.

Freud at least understood the biologically compulsive nature of these needs. Unfortunately, one of the principle features of his theory — the specifically erotic Oedipus complex — led him to term this hunger for contact "infant sexuality," a heavily loaded term which has ushered as much confusion as clarity into our understanding of basic human needs and motives.

Montagu suggests that "infant tactuality" would be a far more accurate phrase to describe the child's endless delight in exploring and experiencing its body, an activity that we can call "sexual"⁴¹ only by broadening the term to the degree that its primary meaning dissolves. Self exploration and the response to external touch do not have nearly as much to do with preparing the child for adult genital expression as they do with organizing the nervous system as a whole, preparing it for all of its potential contacts — not merely genital ones.

There is no question of the enormous significance of sexuality as such to human behavior; but the failure to differentiate between specifically sexual development — along with the erotic qualities of the skin — and the more generalized neurological maturation induced by physical contact has served to keep the whole subject of touching under a threatening shadow in our culture. Such confusion confounds to a damaging degree the pleasures and implication of genital activity with pleasures and implications which are equally sensory but utterly different in their physiological and psychological significance to the individual. The lack of important distinctions in these matters has by and large reduced touching to foreplay for coitus, rather than recognizing it as preparation for living.

It is this confused point of view which associates every sort of contact with sexual innuendo, which regards touching as dangerously intimate, which views bodywork as a modified form of prostitution. The adult's sexuality may or may not be painfully crippled by these blurred lines; the sense of well-being that should come from all the rest of his contacts is almost certain to be.

This confusion of tactuality and sexuality prompted Freud to maintain militantly one of the weakest features of psychoanalysis as a therapy—the strict taboo against touching the patient. It was his fear that this would, at the very least, enormously complicate the problems of the patient's process of transference (the attaching of libidinous desires to the analyst). In addition, he felt that the analyst himself must guard stiffly against his own ambiguous sexual motives in dealing with the patient, and not present *himself* with the temptations that were thought to be implicit in physical contact.

Be these fears as they may (and it is certainly possible for therapeutic disasters of a sexual nature to be perpetrated), Freud unquestionably cut himself and his patients off from much that has proven to be helpful. Wilhelm Reich's separation from Freud and his pursuit of techniques to liberate the patient from what he called "body armor" was a recognition of this limitation by one of Freud's own pupils. It simply is true that by means of various kinds of touch therapies many breakthroughs have been made with mental patients who have proven to be completely refractory to classical analysis. Alexander Lowen has pointed out that the central crisis in all forms of schizophrenia is the loss of the identity of the *ego* with the *body*.

The feeling of identity arises from a feeling of contact with the body. To know who one is, the person must be aware of what he feels. This is precisely what is wanting in the schizophrenic. There is a complete loss of body contact to such an extent that, broadly speaking, the schizophrenic doesn't know who he is.⁴²

And the withdrawal of the schizophrenic from contact may, just as in the cases of malnutrition previously mentioned [see pp. 45-46], create a whole range of secondary developments which we confuse with his primary disturbance. Such experiences have been recorded by many therapists, and there are those who insist that the analyst's strict adherence to Freud's taboo can only

confirm the patient's own convictions that words are good and touch is always erotic or destructive and bad. Both therapist and client need to learn tolerance for their own excitement and realize that fantasies need not lead to action. Thus the therapist's nonerotic touch may break through the client's defenses and help him separate and tolerate the two kinds of experiences.⁴³

Touch and Disposition

Violence and rage have demonstrable relationships to tactile deprivation as well. There is scarcely a study that has been done on violent crime which does not solidly associate it with harsh or isolated childhoods. Dr. James Prescott, a developmental neurophysiologist at the National Institute of Child Health and Human Development, writes that "recent research supports the view that the deprivation of physical pleasure is a major ingredient in the expression of physi-

cal violence." His experiments have convinced Dr. Prescott that the presence of physical pleasure categorically inhibits violence, that rage is not possible in the presence of pleasure. This has been demonstrated by instantly calming down raging experimental animals with electrical stimulations of the pleasure centers in their brains. He states further that

I believe that the deprivation of body touch, contact, and movement are the basic causes of a number of emotional disturbances which include depressive and autistic behaviors, hyperactivity, sexual aberrations, drug abuse, violence, and aggression.⁴⁴

Certainly there are other contributing causes. But—no less certainly—lack of physical contact is a major one.

Cultural Norms

Since different degrees of tactile experience in early life play such a large role in neural maturation and the development of differences in personality traits and behavioral patterns, it would seem reasonable to assume that similarities in tactile experience among a given people go a long way towards conditioning their social and cultural norms. Observations of various national and tribal temperaments indicate that this is very much the case.

Widely recognized national contrasts in upbringing and social character leap immediately to mind, such as the spartan education of German youths in the nineteenth and twentieth centuries, or the mild and harmonious existence of the Tahitians and other South Sea Islanders prior to European colonization, the tightly controlled reserve spawned by the English public schools, or the jovial, rowdy fellowship common to those English lower classes who do not attend them.

Margaret Mead made a study of two New Guinea tribes that throws some light on this influence of touch in such markedly different cultural circumstances. The members of the Arapesh tribe take great delight in children, and fondle them regularly; an infant is rarely out of someone's arms. The mother carries it in a sling around her body all day long, regardless of her activities, and if she is absent for any length of time she is careful to devote enough attention to the child upon her return to make up for the lost hours. Nursing continues three to four years, and mealtime is a happy affair to both mother and baby, with nuzzling, tickling, rocking, sucking, playful pats, and laughter being usual parts of the ritual.

The whole matter of nourishment is made into an occasion of high affectivity and becomes a means by which the child develops and maintains a sensitivity to caresses in every part of its body.⁴⁵

Nor is the mother the only source of affection; virtually every adult treats every child in the same fashion.

The result is an easy, gentle, receptive unaggressive adult personality, and a society in which competitive or aggressive games are unknown, and in which warfare, in the sense of organized expeditions to plunder, conquer, kill, or attain glory, is absent.⁴⁶

Living to the south of the Arapesh are the Mundugamors. To them, children are not a joy, and often before a child is born there is much discussion about whether or not to let it survive. If it is allowed to live, it is promptly placed in a hard, rough basket carried like a pack on the mother's back, or hung from the wall while she is working. Infants are suckled when their crying cannot be stopped by other means. The mother stands to nurse, and indulges in no fondling; as soon as suckling stops, the infant is put back in the basket on the wall. Thus the infant has to fight for its food, clamping the breast aggressively and frequently choking, which infuriates the mother. The nursing experience is "one of anger and frustration, struggle and hostility, rather than one of affection, reassurances, and contentment."⁴⁷

It is time for weaning as soon as the child can walk, and this is done with abrupt harshness, as often as not by repeatedly slapping the child when it approaches the breast. The Mundugamors are "an aggressive, hostile people who live among themselves in a state of mutual distrust and uncomfortableness."⁴⁸ They are cannibals.

Conclusions

It is not true that every child, in any culture, who suffers tactile impoverishment or abuse grows up to be a catatonic or a violent misfit. Some are clever enough to devise alternative sources of stimulation, or lucky enough to stumble onto them. For many others, the tactile deprivations they suffer are not crushingly extreme, and so they are able to strike a compromise with the world based upon the sensory development they *do* receive.

It is simply impossible to estimate the numbers of these partially deprived individuals, or to calculate exactly the degree to which their physiologies, their attitudes, and their behaviors are conditioned by deficient tactile development. And yet, given what we know about the relative paucity of touch in our child-rearing practices and in our adult culture, and given the mass of evidence which points to the importance of touch in the chemical, structural, and psychological characteristics of the individual, it is equally impossible not to suspect that the number is probably vast, and that the amounts of more or less subtle retardation and compensation are probably considerable.

The overwhelming majority of complaints in the doctor's office are not congenital defects, traumas, or diseases. They are headaches, various somatic pains, digestive or eliminative dysfunctions, heart conditions, apathies, depressions, obesities, losses of appetite, emotional tensions, physical stresses—more often

than not with no discernible specific causes. Unable to find microbial culprits for so many unhealthy conditions, researchers have begun increasingly to examine our life-styles for excesses and deficiencies that might trigger them.

Dietary deficiencies are unquestionably very significant factors. And bodywork — the form of “cutaneous stimulation” we are the most concerned with in this book — is *good food*. Or, more precisely, bodywork can have a marked positive effect upon the efficiency of the metabolism of whatever we eat. It does not matter how much of what we include in our intake if we do not have the internal capacity to extract and utilize its value; touch has been demonstrated to be helpful, even necessary, to the development of this metabolic efficiency.

Stress is presently receiving an enormous amount of attention as a powerfully contributing factor to these common complaints with vague etiologies. Soothing touch, whether it be applied to a ruffled cat, a crying infant, or a frightened child, has a universally recognized power to ameliorate the signs of distress. How can it be that we overlook its usefulness on the jangled adult as well? What is it that leads us to assume that the stressed child merely needs “comforting,” while the stressed adult needs “medicine”? It has been the thrust of this chapter to suggest that there is nothing “mere” about tactile comforting, and that there is no gulf between “medicine” and simple contact.

Certainly we cannot rub away diphtheria, or leukemia, or botulism, or Hong Kong flu, or hundreds of other conditions, diseases, and mutilations for which allopathic medicine has made itself our lifesaver. Let us continue to increase the scientific training of the physician, the tools of the emergency room, the apparatus of the intensive care unit, the range of effective pharmaceuticals. But if by “good health” we mean something more than the absence of a life-threatening emergency, if we mean rather the ongoing development of the individual, his awareness of his body, the optimum maturation of the nervous system, and the resilience of the tissues to resist toxins and repair damages, then let us not forget bodywork either.

There is a great deal of stress and discomfort and discord in our world that clearly do not yield to traditional medical procedures, but which require rather a coaxing into existence of new habits, new attitudes, new ways of relating to self and to others.

Indeed, inside every failed individual there is a potentially warm, loving creature struggling to get out. The trick is so to interact with the individual who has been tactually failed as to release that potentiality for something resembling the kind of humanizing experiences he should have enjoyed in infancy and childhood.⁴⁹

It is difficult to imagine a more direct way to rectify these failures than by supplying the touch that was missing in the first place.

It is the burden of the bodyworker to discover and to develop within himself or herself that quality of touch which will provide the emotional comforting,

the tactile information, and the integrating experience so acutely needed by the distressed individual. This is not an easy task, but the developing therapist may take comfort in the fact that the surface he most directly stimulates, the human skin, has a marvelous intelligence of its own, and possesses the means of carrying his efforts to the very core of the person being touched.