vious. Even a cursory reading of the "Kallikak Family"[5] or "Feeble-Mindedness" would have shown them that intelligence tests were in constant use.

Perhaps it is possible to regard these glaring errors as natural mistakes; but it is difficult not to feel that some, at least, result from wishful thinking.

In these days, one can not read everything. But if one feels it necessary to publicly criticize, it would seem that he should be sure that he understands what he is condemning. This would be not only for his own protection, but for the far more important consideration, the preservation of truth and the advancement of science.

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THE GRAYING OF HAIR

DR. ALEŠ HRDLIČKA'S[1] recently publicized explanation that as one of the functions of the hair is to excrete melanin, graying of the hair is, therefore, a quantitative expression of the total amount of melanin to be excreted by the body, which in some way, not explained, depends on the metabolism. Thus, according to Dr. Hrdlička, graying is an automatic expression of the dying fires of metabolism, and no drug or chemical can be expected to have more than a temporary effect.

The color pattern of the hair is not only generally, but also somatically inherited. If this were not so we might be startled to find our leopard losing her spots and the tiger his stripes. Moreover, we would be at a complete loss to explain the white tips on black fox fur or the reverse on ermine.

That the coloring of the hair is functional in character and not automatically dependent on some generalized bodily change or growth is most clearly shown by the fact that certain animals, as the Arctic fox, change the entire color of the hair from winter to summer season, which is coupled with the moulting function; also shown in birds, like the ptarmigan. Moreover, in birds, and to some extent in mammals, the pattern of the hair coloring changes with sex activities, remarkably confirmable by experiment. In humans, both the hair coloring and its time-duration is a hereditary matter and independent of general health, virility or age.

Moreover, much evidence goes to show that melanin formation is a local matter. Commonly, for example, one finds the scalp hair white over the site of a former injury, although there is a good hair growth continuing. This is also true in other pigmented tissues, such as the skin. Pregnancy, lice, irritation, etc., cause marked localized pigmentary changes. On the other hand, as yet unknown factors cause marked patch withdrawal of pigmentation (Vitiligo) peculiarly striking in colored people. The Negro's hair grays with age; his skin doesn't, which fact I find impossible to coordinate with Dr. Hrdlička's idea of general melanin excretion.

While sex seems to play an important role in hair coloring, nevertheless, albinos breed quite freely, as laboratory rats and mice amply demonstrate.

That the matter is not a simple concomitant of growth or nutrition is well illustrated by the fact that the "bald" area rarely becomes markedly gray primarily, and often completes its own peculiar function without any graying whatever. The lateral margins of the scalp, on the other hand, most commonly gray first and they, on the contrary, rarely become bald.

All the above facts are but a small selection of the large number illustrating the same matter; namely, that while there are many outside controls reacting on the actual machinery of pigmentation, nevertheless, this is a separate entity. Moreover, each cell shows a quantitative difference in its reactivity to such controls so that hairs growing side by side may show very marked pigmentary contrasts. Such facts leave little doubt that the fiber pigmentation is a special function, and unless this be a solitary exception to the general rules of physiology, it is capable of being altered in a quantitative manner by pharmacological agents.

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SOME FACTORS AFFECTING APPLE SCALD DISEASE

THE scald disease of the apple is a storage disorder which causes tremendous wastage in storage wherever apples are stored the world around. The cause of this disease was found by workers in the U. S. Department of Agriculture to be accumulations of certain volatiles around the fruit in storage.[1] They devised a method of control in which these volatiles were absorbed by paper wraps impregnated with mineral oil.

Two years' results on the Rhode Island Greening variety indicate that coating the fruit with a wax emulsion (Brytene 489 AM) gave considerable promise in scald control. On prematurely picked apples, the wax treatment did not give as good control as the oiled paper treatment, but on pickings made at the normal time it gave as good control as oiled paper. Waxing has the advantage over the oiled paper treatment in that it keeps the fruit in a more green, crisp

5 Henry H. Goddard, "The Kallikak Family." Macmillan. 1912.

1 *Jour. Am. Med. Asn.*, March 14, 1942, p. 918.

1 C. Brooks, J. S. Cooley and D. F. Fisher, *Jour. Agr. Res.*, 18: 211–240, 1919.

condition. It is suggested that small commercial trials of this wax treatment be made. A concentration of 6 to 8 per cent. solids in the emulsion is suggested.

It was found that the volatiles from one lot of apples may induce scald on a second lot. Susceptible varieties scald much sooner and more severely in the presence of volatiles from McIntosh apples than when stored alone. This was true both in ordinary cold storage practice and in "controlled atmosphere storage," where carbon dioxide and oxygen levels as well as temperature and humidity were controlled.

Progress has been made in "air conditioning" the storage atmosphere to rid it of these harmful volatiles, but absolute scald control by this method has not yet been attained. The more promising materials which have been used in the air-conditioning process have been various oils and activated charcoal. Failure to attain complete control of the disease by this method may be attributed partially to a lack of knowledge as to when the absorbing materials became saturated.

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A GRASSHOPPER PROBLEM IN MECHANICS

A FRIEND on a farm, having to move a hive full of bees, asked me whether the hive would weigh less if the bees were stirred up so as to fly around inside the closed hive while she carried it. This suggested a similar—but mathematically simpler—problem: Will a suitcase containing a pound of grasshoppers weigh less if the grasshoppers are jumping so that half of them are constantly in the air in the suitcase than if all are constantly at rest?

If a grasshopper of mass m jumps with a vertical velocity v, the downward impulse on the suitcase is mv when he jumps and also when he alights, which will be $2v/g$ seconds later if he strikes nothing; therefore if n grasshoppers are in the air half the time, the average downward impulsive force due to the change in momentum is one half of $2nmv$ divided by $2v/g$, that is $\frac{1}{2}nmg$; and this added to the weight of those at rest gives the dead weight of all. In other words, the total average weight is the same whether they are jumping or not. This is, of course, the kinetic theory explanation of the downward pressure exerted by the weight of a gas. It should be noted, however, that only the average weight is the same. If a box containing a single grasshopper is suspended from a sensitive spring balance, every time he jumps the box will receive a downward kick. So the indicated weight of any body not at absolute zero is partly static and partly kinetic, and is a statistical average sum of varying static and impulsive forces.

The hive-and-bees problem is more complex; but in this case also, of course, the total average weight must be the same no matter what the actions or motions of the bees and other parts inside the closed container may be.

This problem is doubtless very old, though I do not happen to have run across it before. References to previous discussions of it will be appreciated.

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SCIENTIFIC BOOKS

EPILEPSY

Epilepsy and Cerebral Localization. By WILDER PENFIELD and THEODORE C. ERICKSON. 607 pp. Springfield, Illinois: Charles C Thomas. 1941.

A RARE kind of devotion to suffering humanity and science is needed to keep a man working at a disease such as epilepsy. The patients are deeply distressed and distressing to the physician because many can not be given much aid. Lennox in his recent book, "Science and Seizures," has shown this spirit and has written a book from the medical and social view-point. Now comes "Epilepsy and Cerebral Localization," by Penfield and Erickson, from the surgeon's point of view. But these men are more than surgeons; they have approached the entity called "epilepsy" from the physiological standpoint; they have made histological studies and finally, with the aid of the special laboratories of Dr. Jasper and Mrs. Erickson, respectively, they have taken up electroencephalography and psychology, as related to epilepsy.

A series of proven cases of focal epilepsy treated by craniotomy provided the major source of material for physiological, psychological and anatomical studies of the human cerebral cortex over a ten-year period. The histology of cerebral scars, the cytology of the brain, the structure and control of cerebral vessels and the physiology of cerebral blood flow have formed the subjects of what might be called their preliminary research. During the process of clinical elaboration, collateral studies were made upon patients suffering from all types of convulsive states by electroencephalography and pneumoencephalography as well as by the analysis of seizure pattern and clinical picture. At the same time related medical literature has been freely used. For students of neurophysiology the direct observations made upon the cerebral cortex of conscious patients and the descriptions of patterns