

Physical degeneration : a survey of the discussion at the Anthropological Section of the British Association, meeting in Cambridge / by Vratsch.

Contributors

Anderson, Richard John, 1848-1914.
Royal College of Surgeons of England

Publication/Creation

Newry : Joseph Wright, 1904.

Persistent URL

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PUBLISHED BY JOSEPH WRIGHT.

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THE JOURNAL OF THE

ROYAL ANTHROPOLOGICAL INSTITUTE

OF GREAT BRITAIN AND IRELAND

VOLUME 100 PART 1

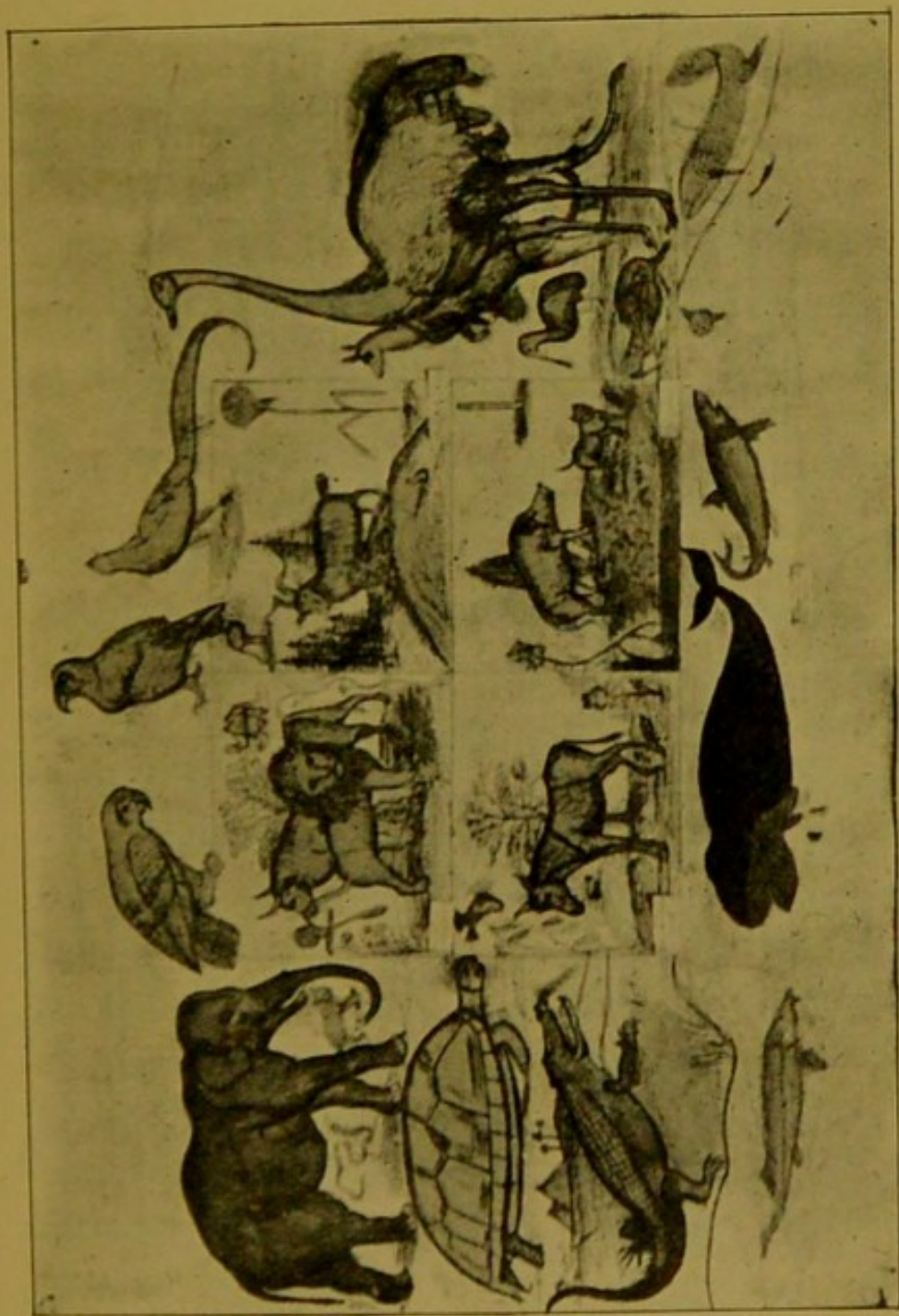
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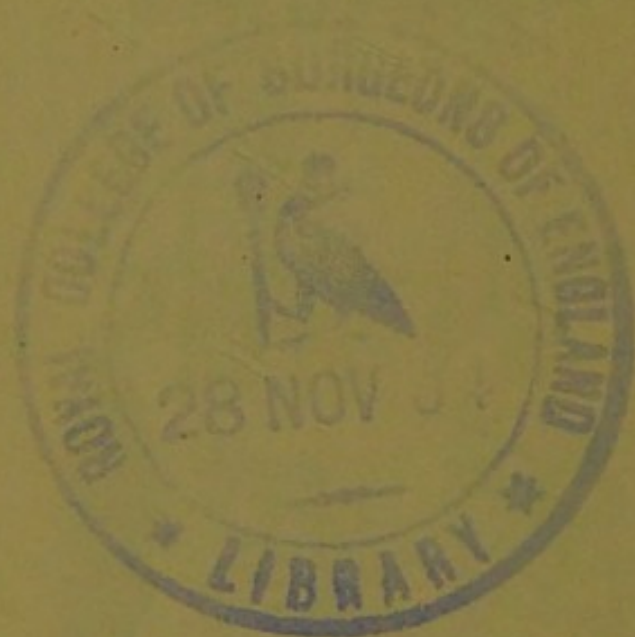
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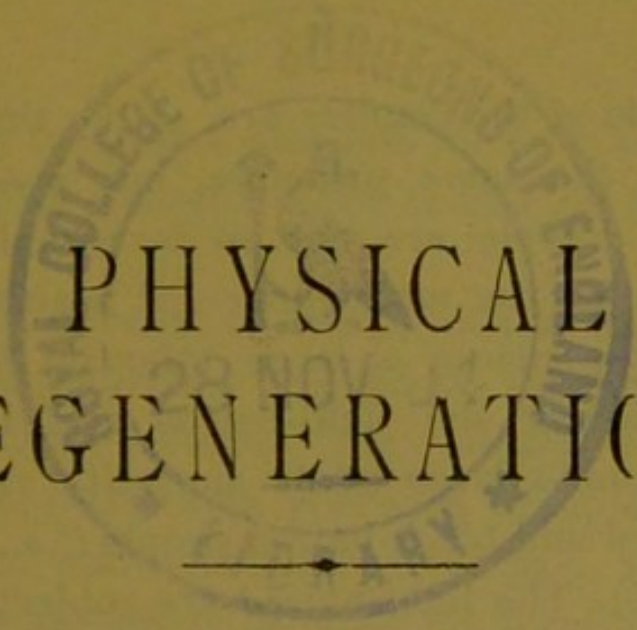
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PHYL A CASSITERINA.





PHYSICAL DEGENERATION.

The inevitable conclusion that one seems impelled to draw from the report of the Anthropometric Committee of Great Britain, the Commission on Physical Fitness, and the speeches and papers read and made at the British Association (Cambridge) meeting, is that physical degeneration of some kind has taken place; that this is probably of a temporal kind so far as the race is concerned (i.e., so far as each family in which it occurs is concerned); that temporary deformity induced by tight lacing or badly-fitting boots is not inherited; and that shrinking of the palate (upper jaw) and lower jaw is producing a change in the number of the teeth. This seems to be permanent. Further, the physical characters of recruits are not necessarily to be regarded as a proof that all

the people of the country are, at the time noted, built on the same principle, but possibly the reverse. People are not so favourably placed in towns for the maintenance of health. There is in these places a large infantile mortality, chiefly among the light-haired and light-eyed races; and a large adult mortality among the black-eyed and black-haired people (i.e., between 20 and 45). The light-haired are subject to rheumatism and heart affections; the dark-haired to phthisis, cancer, and epilepsy. The tendency is for people in each individual race to become darker in towns. It seems on the face of it that ill ventilation and deficient food (if not food of bad quality) have much to do with the change from country to town life. Children who attend some Metropolitan (London) schools have been pronounced to be insufficiently nourished and unfitted thereby for education, and it is suggested that food should be given in schools, such as the one referred to, to those of the children who require it. It was also pointed out that late marriages tend to depreciate the stock in some cases (in those who are advancing socially owing to education), owing to the relatively smaller number of children, and

that early marriages amongst the poor and marriages of the mentally unfit should be prevented by law.

Reports of most of the speeches made at the Cambridge meeting are given in the London papers and others. It seems, therefore, considering the high positions occupied by the gentlemen who addressed the section, that there were and are ample grounds for scrutinizing the methods which are adopted in dealing with social questions of most supreme importance; indeed, one feels somewhat embarrassed by the rapid changes that take place in the fortunes and physique of families in town and country, and especially in the case of those who migrate or emigrate. One has to face a many-sided problem when dealing with the conditions under which animals live and thrive best, and the same statement holds with reference to plants. It might be safely assumed, did we not know from common observation if not from scientific experience, that the conditions best for man are not less difficult to ascertain than they are easy to speculate upon. The "rule of three" that is puzzling to the proverbial schoolboy is trivial and simple compared with the simplest of the

questions that arise in connection with the life and well-being of mankind. To show how easily one may fall into error, the following story may be regarded as not 'malapropo.' A very charming young married woman, who had two beautiful and healthy-looking children, was being lectured on some points on the upbringing of children by her medical adviser. The latter had occasion to observe that he noticed with alarm the free use that parents made of opiates as narcotics for young children and infants. The lady interrupted him to say that her seven-year-old boy had almost from birth been treated with laudanum, and asked was he not a proof that the free use of laudanum was good. The indication for the use of opium in cases like these are held to be fretfulness and wakefulness (two common complaints found in town life). Analyses of the causes of the above troubles are too delicate operations for the person who administers the drug, and held to be rather for the refined specialist. It will be seen, therefore, that causes may exist within that province commonly regarded as professional, which may seriously affect the physical condition of children. The annals of the Registrar-General

are very sad reading. The reports there are medical reports; but in these annals the worst and saddest things are never told and are never known. Compared with what the medical public learn and see, the lay observer sees little and learns naturally less, as he is rarely able to get hold of the various factors. Anyone who will take the trouble to look over an article on any disease in any comprehensive work on medicine will see the enormous difficulties professional experts have had in ascertaining the causes that have led to or favoured the onset of a disease. It may be safely said that the causes of changes in nerve or muscle are so various that it is difficult even for the keenest observers and the most skilled experts to establish the existence of a failure, to learn its nature, to ascertain the cause or causes of the lapse, and lastly, to suggest a cure.

Speaking generally, this arises partly from the fact that man lives under biological conditions which are extremely difficult, if not impossible, to fix for some groups of individuals. The best of us are overwhelmed with the feeling that men do not in all cases wish to regard all men as having strictly humanitarian claims

upon us. The popular interest in grotesque romance of the sanguinary kind, and the narratives published in diurnal prints, of the effacement of costly lives, at great expense, in order to secure the interest of readers, prove that the nervous system may seek to rise from its enforced quiescence or depression by means that bear, to say the least, an equivocal construction. This seems to show that a special training is necessary, so that, as far as possible, national, race, family, and other feeling may be kept in abeyance, and that the cause of race changes be ascertained by those who will not be influenced by any consideration whatever, not even where a statement of the causes may seem to work disadvantageously to the object one has in view. It is obviously difficult to urge methods which would involve a great change in the personnel of active workers within fifty years in a state, and at great cost, for it is quite certain, if one take means to raise the mental tone and physical tone of lower substrata, new elements are introduced into the social warfare.

It is evident that this does not in itself influence modern philanthropic nations much, if at

all. It is, however, not enough that a nation should provide food for its indigent. A proper consideration of the causes of poverty is highly desirable. Questions of food, dwellings, migration, emigration, ventilation, drainage, industries are about artistic methods of dealing with biological phases in human life. They are comparable to outline maps, in which the physical features of a country and the towns are to be inserted. It is admittedly easier to provide food and clothes for people than to study the methods by which these people can be kept in health of mind and body. Ultimately, however, the increase of the industrious and diminution in number of the poor will tend to render collective wealth greater.

It will be seen that investigation with reference to the truth of the statement that there are grounds for believing that the race has degenerated has been an attempt to prove that men have not fallen off in efficiency. It is impossible, however, to say what the average fitness was sixty years ago. It seems impossible to fix a standard, and even if this were done, how can one speak for the people generally. Indeed the report itself shows the

evil of these attempts, and any scientific attempt to compare the present with the past must fail. Nerve and muscle development are hard to estimate, and having come to ascertain this according to our lights—an excellent thing in itself—we find there still remains the difficulty of ascertaining the power and power of endurance in the individual. The latter quality is unknown and unknowable. Conditions are enormously influenced by the nature of the food, the periods of administration of this, and the periods of rest and work.

It will not now be denied that all over the three kingdoms railways and good roads have diminished the amount of walking, and that machinery and new methods of agriculture have diminished the number of men and women skilled in the use of tools. Horses work ploughs, sowing, reaping, digging and thrashing machines. Spades are largely discarded, except in the form of patent diggers, so sickles and scythes are fast becoming obsolete, and man has established his title to the name "tool-using animal," in a more mechanical sense than the "Sage of Chelsea" meant. The blacksmith and tailor, the shoemaker and joiner have almost all become

curiosities. If one goes into an engineering establishment steam hammers and planes, steam lathes and boring instruments are worked by muscle force of a minimal kind. Vessels are laden and unladen by a man who touches a handle or moves a lever. All this has taken the place of much muscle. Quickness of movement has taken the place of force, and quick adjustment and co-ordination does the rest.

The children of the present day have fewer opportunities of studying or seeing work done by tradesmen, or skilled or unskilled labour. The taste for work cannot be so easily cultivated at a very early age, at an age when the child is most influenced by the one who fondles and feeds. Children who imitate easily and readily actions of those who move slowly, have now few opportunities of observing the movements of the joiner, seamstress, or shoemaker as work proceeds to its completion, so that it may be conceded that for our own country the loss to the young of seeing harmonious, slow, useful skilled work done is immense, knowing that children are apt to imitate with their hands the movements they see, as they imitate the voice and gestures. Even where the actions

cannot be consummated owing to lack of organisation of nerve matter, local impressions produced may, there is reason to believe, lead to the development of activities of various kinds later, when strands and fibre connections have been established. There comes in, also, the question of the degree of association with adults that is actually useful to children, however beneficial this may be to the elders. So the statement made frequently and positively by employers of labour that generally the physical condition has deteriorated may be explained. But why should the family of a labourer in the town be less fit physically now than a similar family 60 or 70 years ago; and why should a family raised in a town be less fit than a family raised in the country? It is suggested that the air of the town is less invigorating, and in the case of all the inhabitants the same rule may be urged. It is doubtful whether anyone would seriously say that we touch all the causes in urging the importance of fresh air, good food, and sanitary houses in towns. Many people create an "atmosphere" for themselves, or rather an environment, which is useful or prejudicial; but one cannot supply to growing children or young

adults the movements of men and animals on the mountain side, where no animal can move far without going either up or down. A child on the grass can see the slow motion of the climbers for long periods, a fact stimulated to attempt repetitions of the actions long before it is strong enough to accomplish any considerable task. The movements of human beings rather than animals appeal to the growing intelligence.

The "mother of six" will not be able to nurse, cleanse, feed, clothe her children, and cook her husband's food, with the methods that one commends most. Who is to advise, persuade, or help? Where the current idea in some communities still is that "dirt is wholesome," in its widest signification, physicians find that strength in the form of sanitary acts is necessary, or pleadings are in vain. The establishment of local centres of industry, and, if possible, the decentralisation of labour might possibly aid; but where muscle is desired, no local demonstrations or object lessons will produce so satisfactorily the effects of the operations on the hillside.

The question of feeding the children who attend morning schools must be a serious one, and not easy to answer. Starvation dogs the footsteps of those who live in the ill-ventilated rooms of overcrowded cities.

The physical and physiological condition of the starveling is so very different from the condition of the child provided with ample food that one is apt to forget that the well-fed are very often somewhat backward in learning. The truth is, so many conditions prevail that one must study "the when and the how" in the matter of feeding. The teaching will become more efficient if the children are clean and comfortable looking. But hunger is recognised as an important stimulus to action, and it leads not only to procuration of food but to the appetite which brings pleasure. In man poverty has often been associated with genius, and although few have appended the word "impransus" to the letters addressed to their benefactors, numerous records show us that such a word might often have been justified.

The accumulation of waste products in the system may become a great danger to the health of the individual, and ventilation and drainage

and exercises of various kinds are observed with the object of purifying the system. One can see that statesmen and philanthropists are thoroughly alive to the importance of depuration. One must remember, however, that here as in feeding there is quite a series of gradations between pure blood and tissues and blood and tissues holding all they can of poisonous material without killing the owner. The carbonic acid in the blood appears to stimulate the respiratory muscles, so that greater activity of these is brought about; whilst freer and fresher air tends to diminish the respiratory effort. So a moderate accumulation of waste products, different for different individuals may impel the individual to increased effort. Rest during the night may lead to rejuvenation, and the accumulated products to the stimulus that helps to give the fillip to the system which is required to rid itself of these, and to the restoration of what one may designate for want of a better phrase the restoration of the tissue equilibrium.

It is scarcely necessary to say that the discomfort which scanty food and other deprivations entail leads sometimes to efforts of a mental nature, which seek to substitute for the

real thing vivid imaginings, which in some cases are of the most grotesque kind, if we take the most extreme of the recorded descriptions. This appears to be akin to the nerve actions that lead the victim of ill-usage to turn to the contemplation of some good actions in order to restore his belief in humanity. So the occupier of a hovel may dream of being in a palace of surpassing grandeur, whilst the inhabitant of a two-storey villa may find his surroundings adequate and the play of his imagination not unduly exciting. Hence deprivation may lead to a result apparently the reverse of what one would expect, because biological conditions prevail. The stimulus gives rise often to undue activity, a fact often discovered by the nurse and made use of, to the lasting injury or death of the child. But what can one say of the effects of social life in towns upon the growth and development of the muscles in the young. The question is, perhaps, much too ambiguous or general. Children in towns may see men when resting from work and not those who are working, whilst in the country the workers claim much of their attention,

The odors that emanate from the skin and lungs are the products of evaporation of fatty matters and organic compounds that either are directly formed in the body or are products of decomposition. Some of these substances are more or less characteristic of the species and even of the individual. It is evident that in sanitation it would scarcely be possible to separate the injurious from the not injurious, and so one loses the benefit which one may assign to the natural odor which the animal possesses. The odor which gregarious animals possess enables them to keep together for protection, warmth, and feeding. Odor seems to be necessary for the wellbeing of some animals. Certain carnivora thrive best when the odor is of moderate strength. It is possible, therefore, that the odor natural to a race or family may have a soothing effect or a stimulating effect, or oftener a reassuring effect upon its friends. The sanitary rules that urge the bathing and deodorising of the mother and offspring on the one hand, or the houses, towns, or villages, where new odors obliterate the natural odor of the parent, may lead to a state of dis-

comfort in the offspring, and possibly thus to a state of unhealth.

The immunity of some people in the midst of epidemics or in infected neighbourhoods is often due to the anti-toxic character of the secretions, or to some tissue modification, and the actual influence of such persons has not yet been fully understood. It is, indeed, possible, this is only a suggestion, that an immune person may preserve the health of those who live in their immediate neighbourhood. The value of domesticity as one sees it in the case of those who live in ill-ventilated rooms is not easy to estimate; and although the value of town life, by the creation and maintenance of houses for the married, is in some respects enhanced, yet one can easily obtain examples where the separation of the children from the parents and their transference to a home in the country would be an altogether desirable thing, even where parents are almost as good as parents can be in the cases sampled. So many of the lives of the poor are subject to depressing causes that one may seek even here a reason for physical failure in the young, owing to the growth of apathy, or of lack of faith in industry,

or a positive belief in and a taste for a vagrant life.

The meeting of the difficulty or part of the difficulty by preventing too early marriages is a doubtful method of dealing with decay and inefficiency, and for this reason, for what may prove too early an age for one may be quite suitable for some others, and one can easily see how changes in environment might render an age suitable which otherwise would not be so. Then as to the marriages of the unfit, the question is should regard be had to the well-being of those who are marrying or only for the children, or for both? It is proved, to the satisfaction of some, that the children owe largely their physical and mental characters to ancestors more remote perhaps than their parents, and may really gain their chief productive characters from the imitation of those who nurse and rear them. If these hypotheses be true, one must be slow in introducing very drastic measures.

It remains, then, to suggest a remedy for the disease, or, as we choose to call it, degeneration. One can easily suggest a remedy for tight-lacing and ill-fitting boots, but the changes in

the length of the jaw are the results of a long series of slight alterations, and it will probably be better to leave this deformity to work out its own cure. But for muscle failure, one can but suggest for those who can find it possible sojourns in mountain regions; and for those who must remain in the lowlands or in towns, that opportunities should be constantly afforded to the young of seeing people straining their muscles by working at trades or agriculture, or by seeing mimic labour engaged in by elder children, and then the object lessons which trade handicrafts give.

Lastly, we must look to the clerical profession to help us in all these undertakings. The physician the politician, and the lawyer are unable to persuade the people to make these object lessons for the very young. Legislation is only a remote possibility in view of what has been said, and law is impossible in its present state.

In almost all respects the condition of life has improved. In some cases useful factors have got less potent or have vanished. If these be compensated for, we may hope to get back much of the good that has disappeared, whilst we re-

tain some of the best features of modern life. Passive movements of the limbs in the very young may be regarded as an important adjunct in promoting the most important groupings of muscles.

[Contributions to the discussion on Physical Degeneration were made by Professor Rudolphi Livi, Director of the Italian Military Survey; the Secretary of the Anthropometric Committee of Great Britain and Ireland, the Minister of Education, E. W. Bradbrook, Mrs. Watt-Smith, the Prime Minister, Major M'Culloch, Professors Cunningham and Alexander Macalister, and Dr. Shrubsall.]

R. J. A.

Beech Hill,
1904.

This was the first lecture of the series
 and was held in the hall of the
 University of Toronto on the 1st of
 October 1901. It was attended by
 a large number of students and
 was most successful.

The lecture was given by the
 Professor of the University of
 Toronto and was most successful.
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