their subject-matter by this attempt at self-injection, and so destroy the peculiar advantage of the subject in intellectual training. If the proper intellectual result of the humanities is *appreciation*, whose processes demand *self-injection*, the proper and distinctive intellectual result of the sciences is *law*, to obtain which there must be rigid *self-elimination*. Any injection of self into a scientific synthesis vitiates the result. The standard is not a variable, an artificial one developed from the varying tastes of man, but absolute, founded upon eternal truth.

It is evident that this basis of distinction will result in a classification of subjects differing considerably from the ordinary grouping under 'humanities' and 'sciences,' but I am convinced that from the standpoint of mental development it is fundamental. It would even result in the divorcing of certain subjects now commonly included under one head. For example, it would certainly sharply cut off certain phases of language-study from literature proper, a fact which the universities have long recognized. This further emphasizes the fact that no hard and fast lines can be drawn separating the specific effects of the various studies. In our analysis we strip off the flesh and lay bare the skeleton, and are apt to lose sight of the fact that the contour is a composite result. Although the skeletons of the humanities and of the sciences may differ from each other in the fundamental way described, I cannot conceive of the resulting contour of the one as distinct from combination with the other. The self-elminating result of science must be associated with the self-injecting result of the humanities, even though science alone be studied; and the power of appreciation developed by the humanities must always be tempered by the scientific instinct. And yet the two processes and the two results are so distinct and so complementary that any system of education which does not provide for the definite cultivation of these two mental attidudes, and which leaves the complementary part merely to the chances of teaching methods and mental structure, is in constant danger of resulting in mental distortion.

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THE FATE OF A EUROPEAN BISON HERD.

In a paper entitled 'Das allmähliche Aussterben des Wisents (*Bison bonasus* Linn.) im Forste von Bjelowjesha'* Mr. Eugen Büchner gives a detailed history of the bison herd in the Bieloviejsha (or Bialowitza) forest, Province of Grodno, in Lithuania, Russia, during the present century. In his opening paragraph the author states that his purpose is two-fold: to make a critical historical study of this herd during the period for which the necessary data are available; and to find what light, if any, this history may throw on the general subject of the extinction of the larger mammalia.

Up to the year 1832 the accounts of the condition of the bison in the Bieloviejsha forest are conflicting and untrustworthy, but the number of animals in the herd during that period is estimated at from 300 to 800. Since 1832 a yearly census of the bison has been taken by the government of the forest. The count is made each winter immediately after the first snowfall, but must necessarily be only approximately accurate. The figures show an apparent slow increase from 770 head, the number recorded in 1832, to 1,898 head, the maximum reached in 1857. After 1857 there was a steady decrease until the minimum of 380 head was reached in 1889. During the three succeeding years there appears to have been a slight increase.

After presenting these figures the author at once attacks the question as to the cause

*Memoires de l'Academie impériale des sciences de St. Petersburg, Vol. III., No. 2, p. 1–30, 1895.

which can produce such marked and unfavorable results in a herd protected as carefully as that in the Bieloviejsha forest. The factors which have brought about this decrease may be divided into two principal categories: first, those wholly external; and second, those proceeding from the animals themselves. Under the first head are discussed: hunting, poaching, taking of live specimens for zoological gardens, ravages of beasts of prey and of various diseases, and finally possible deaths from shortage of food supply. As all these factors taken together are shown to be insufficient to account for the present condition of the herd, the true reason must be sought in the animals themselves. As long ago as 1830 Jarocki noticed that the bison cows as a rule calve only once in three years, and this observation has been repeatedly verified. The question at once arises whether this low grade of fertility is natural or otherwise. A careful study of the breeding habits of the bison in the Bieloviejsha forest and elsewhere leaves no room for doubt that the present slow rate of reproduction is an abnormal condition, and that to it is due the rapid approach of the extinction which is the certain fate of the herd under consideration. This diminished fertility the author regards as a stigma of degeneration caused by in-breeding. Associated with it are other stigmata, such as fatty degeneration of various organs and abnormal condition in parts of the skeleton. Many of the bison cows are known to be wholly unable to care for their calves through lack of milk. The process of degeneration has progressed so far that the more degenerate animals may be recognized by their paler color, weaker horns and thinner fur. Of eleven captured by Strahlborn in 1858, four were of the pallid, thin-haired, degenerate type. Another indication of the degenerate condition of the Bieloviejsha herd is seen in the great excess of bulls, which probably outnumber the cows two to one. This is doubtless a result of in-breeding, for Düsing (Jena Zeitschr. für Naturwiss, Bd. XVII., p. 827, 1884) has shown that close in-breeding, like a reduced condition of nutrition, is favorable to the production of an excess of males. Thus the total extinction of the Bieloviejsha bison is certain to occur, and that probably in the near future. Such a fate the author points out overtook the last herd of *Bos primigenius* in Poland during the early part of the seventeenth century, notwithstanding the most careful protection.

In conclusion, the author considers that his studies of the history of the Bieloviejsha bison leave scarcely room for doubt that in-breeding is the cause of the final extinction of most large mammals. In-breeding must begin and lead gradually but certainly to the extinction of a species when it, through any cause, has become so reduced in numbers as to be separated into isolated colonies.

If Büchner's conclusion is correct—and few will doubt that it is—we may look for the speedy extinction of the American bison, whatever means may be taken for the protection of the few remaining individuals, while the danger attending any considerable reduction in the size of the Pribilof Island seal colonies, with the expectation that they will regain their former size under subsequent strict protection, becomes fully apparent.

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DENTITION OF LEMURS AND THE SYSTEMATIC POSITION OF TARSIUS.

IN a recent number of SCIENCE appeared an abstract by Prof. A. A. W. Hubrecht, of his contribution to Gegenbaur's *Festschrift*, giving his conclusions upon the relations of Lemurs and monkeys, especially upon the position of *Tarsius* among the Anthropoidea. It is interesting to find, in the same collection of memoirs, a contribution from