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THE SCIENTIFIC AMERICAN SUPPLEMENT,

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For the Week ending August 26, 1876.

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PHYSICAL MAN IN AMERICA.

From time to time every great mercantile or manufacturing firm slackens the work of making and selling to review its position and possessions: as the phrase runs, to take an account of stock. Just now the American people are similarly engaged in taking stock.

We have had a hundred years of general prosperity, a hundred years of rapid growth in numbers, wealth, and power: and very properly we celebrate our Centennial year in reviewing the results of the years that have gone, in trying to learn our relative standing among the nations. Not only in the great sample show of our natural and industrial resources at Philadelphia, but everywhere throughout the land, are manifestations of the same laudable desire to discover just what we are worth as a nation, what the past has done for us, and what the prospect is for the future.

There is danger however that, with our absorbing interest in the things we have invented, discovered, and made, in our mental and industrial achievements, we may forget the more important item of national stability, what we are: in other words, the character and conditions of our physical manhood. How do we compare bodily with the citizens of more homogenious nations? How big are we, on the average: what is our condition as to health and disease: what is our working force, and how long does it hold out?

Questions like these are especially pertinent at this time; for what our country shall be during the coming centuries depends far more upon the physical character of the people than upon the things they have or the machines they use.

It is fortunate that the material for such studies of physical man in America are ready at hand, thanks to the excellent use made by the Provost Marshal General's bureau of the records of examinations for military service during the late war, an elaborate digest of which has just been completed by Dr. J. H. Baxter, late chief medical officer of that bureau, and published by the United States Government. The records cover the physical examinations of more than half a million men, furnishing an amount of data largely exceeding in extent any of a similar nature ever before collected and published. And, as Dr. Baxter justly observes, the value of this enormous mass of statistical matter is hightened by the circumstances that it does not relate to soldiers already in the field, picked men in no wise representing the masses, but to the people: the men engaged in every occupation, professional men, and men of letters, traders and business men of every grade, laborers skilled and unskilled, the rich and the poor, the robust and the crippled: in short, to all the citizens of the country, whether of native or foreign birth.

During the first two years of the war, the armies were recruited by volunteer enlistments, under the control of the State authorities. This method proving inadequate, Congress passed an act, in the spring of 1863, creating a bureau of the war department to be known as the Provost Marshal General's, and to have charge of the recruitment of the armies, by enlistment or by draft as might be necessary. As a preliminary to the latter method, an enrolment of all persons liable to perform military service had to be made; and in order that none but able-bodiedmen should be put in the field, a thorough and systematic medical examination of all drafted men and volunteers was necessary. Four drafts were made, the whole furnishing records of the examination of 605,045 men, of whom 155,730 were exempted, or a ratio of 257·39 per thousand. During the same period there were examined 225,639 volunteers and 79,968 substitutes. Of the former 50,008, or a ratio of 221·63 per thousand, and of the latter 21,125, or a ratio of 264·17 per thousand, were rejected.

Of these and other records, covering the examination of over a million men, nearly half were found more or less incomplete and were thrown out; but as those which could be used seemed to be fair representatives of all, the omissions abridged the work rather than detracted from its value. The records made use of showed for each of the subjects of examination his age, nativity, residence, occupation, hight, complexion, color of eyes and hair, girth of chest at inspiration and at expiration, social condition (married or single), color, general physical constitution and condition, distinguishing natural or accidental mark if any, in case of acceptance, and specification of disease or disability in case of rejection. The scope of the final report is in the main the comparison of each of these elementary conditions with others, and a consideration of their relation to disease. The tables in which nativity is an element of the comparison show the physical condition of the foreign-born citizens of various nativities in relation to each other, and to native Americans, both white and colored.

The first fifteen tables, the anthropological series, treat of physical qualities without relation to disease; the remaining seven are pathological, treating of disease and its relation to the physical qualities of man, to occupation, and to locality. To facilitate the interpretation of the latter a series of charts have been prepared, presenting to the eye the more interesting results deduced from the tables: also a number of maps showing by gradations of color the prevalence of disqualifying diseases together and singly, by congressional districts. In the letter press, the reviews of the tables call attention to what is most interesting and significant of the lessons they teach, and furnish an amount of information with regard to American manhood, physically considered, the relative healthfulness of different parts of the Northern States, the relation of health to employment, and so on, that is truly wonderful.

Another exceedingly valuable portion of the work is the three or four hundred pages of Part III, containing reports of examining surgeons. In these is given, with other interesting matter, a connected and generally graphic account of each congressional district by a resident physician, covering its physical description, its prevalent diseases and their local causes, the general character of the inhabitants, their modes of life and occupations, the fitness of the different classes and nationalities for military service, and so on. From these, in connection with the tables and colored charts, it is our purpose to draw much curious and valuable information for the entertainment of our readers: to sum up, so to speak, our physical assets and liabilities as a nation.

SUMMER SCIENCE.

We have received a periodical bearing the name "Appalachia," a rather mystifying title until one peruses the pages sufficiently to learn that the magazine is intended to be the report of results accomplished, plans proposed, and information gathered by the Appalachian Mountain Club, the object of which association is the thorough geographical, geological, topographical, zoölogical, and botanical study of the mountains of New England and adjacent regions. The required knowledge is to be obtained by systematic exploration conducted by the members individually; and one cardinal aim and object is the publication at some future time of "a detailed and accurate map of the White Mountains, upon a large scale and in the very best style of workmanship."

It seems to us that those who have organized this club deserve credit for a very sensible idea, and one that merits to be widely imitated. Camp life in the summer, as witness the throngs which yearly visit the Adirondack region in this State, is extremely fascinating, and generally a grand restorer of impaired health. Beside it offers to the hunter and fisherman the best opportunities for sport. Now a club with the objects above stated combines all the benefits of outdoor life, besides placing before its members a definite and useful aim, so that each individual mingles with his holiday relaxation work which, from its very novelty and variety, ceases to be labor, and yet is of sufficient importance to stimulate the best endeavors. We cannot imagine anything more enticing to the scientific student than a summer spent with such a club as the Appalachian. If his tastes incline to natural history, he has only to read Professor Sterry Hunt's admirable letter of instruction to know, as Faraday expressed it, just "what to look for." There are floral materials to collect, limits of altitude of trees, plants, and animals to be noted, nature and distribution of rocks to be observed, rare and remarkable vegetable productions to search for, and so on through a long category. Does he desire a summer of practical surveying, Professor Hitchcock tells just what is to be done and how to go about it, gives a list of points to be determined, and even describes the needful instruments. The artist is offered an enchanting sketching tour, and Professor Fay explains how the knight of the brush and pencil can make himself scientifically useful. Professor Pourtales tells where original explorations are needed, and how they are to be conducted: lastly, Professor W. G. Nowell, for the benefit of those who do not care to be pioneers, suggests where paths may be made, record bottles placed, points of view to be cleared, and other improvements accomplished, which will facilitate the general work. It is original investigation conducted under the pleasantest conditions, and certainly well calculated to give those who undertake it a zest for discovery which may stimulate them to higher aims.

Beside, the task projected has a wider utility than is involved in its immediate result. There is a lamentable ignorance all over this country regarding our own territory, an ignorance which across the Atlantic becomes surprisingly dense, even among people otherwise highly educated. Our English contemporaries constantly quote American localities incorrectly; and to the minds of continental writers, our cities, counties, and States seem inextricably confused. In geography, as in all sciences, true knowledge has its foundation in details; and where those are clearly and accurately determined, we may look for generalizations based thereon to be equally correct. In the United States, the youth of the nation, and the fact that there are still portions of our immense territory wholly unexplored, are the obvious reasons why general information has been compiled without the substantial basis we have indicated; and many years will elapse before we shall have that intimate knowledge of our land which the marvelously minute topographical maps of Sweden, exhibited at the Centennial Exposition, prove that the Swedes have of theirs. Still we know of no better means of securing such useful information than by the labors of scientific students, associated as in the present club, which we trust may be but the precursor of others formed in other parts of the country.

ARTIFICIAL GUANO.

The enormous value of the guano deposits of the Chincho and Lobos Islands naturally gave rise to an early and eager search for similar stores of agricultural wealth in other localities. And seeing that sea fowl were not less numerous and voracious on uninhabited islands the world over, there seemed to be no reason why the search might not be successful. But it soon became clear that climate had much to do in the matter. Only in rainless regions where the slowly accumulating layers of excrement, fish bones, dead fowls, and so on could remain undisturbed and undissolved was it possible for true guano to accumulate. The search for it, however, was not without good results On many other islands, especially in the equatorial regions of the Pacific, there were found extensive beds of rock, which differed from the usual coral rock in that it contained a large percentage of phosphate of lime, the mineral base of Peruvian guano At first it was supposed that, by some mysterious chemistry