

In 1834, or possibly later, Dr. Gray received an appointment as botanist of the Wilkes expedition, which was expected to start for the South Sea Islands; but delay after delay, and a change in the plans of the expedition, caused him to resign, and about this time he received an appointment to the chair of botany in the University of Michigan, then just established. He asked for a year's absence in Europe, which was granted him, during which year he not only made valuable purchases and collections for the library of the new university, but gained the personal acquaintance of the leading European botanists. He made himself also familiar with the type specimens in the older herbaria, and came back fully equipped for the work of his life, the examination of the North American flora, the first volume of his 'Flora' being completed in 1840. He never occupied the chair at Michigan, but in 1842 accepted a professorship of natural history in Harvard. The early years of his life in Cambridge were naturally occupied with routine teaching, with appliances which would be regarded as utterly inadequate at the present time; but it was a small beginning, which has led to the better-equipped Botanic Garden and to the establishment of an herbarium. He continued his work as an instructor till 1872; but during this time he found opportunities for carrying on his work on the 'North American Flora,' for the preparation of his educational treatises, and for increasing the popular interest in science. In addition to this, he devoted much time to the American Academy, in which he always took the greatest interest.

To the public not merely interested in the science of botany, especially to the religious public, Dr. Gray is well known by his writings on the relations of science and religion, and upon the Darwinian theory. Darwin, in his letters recently published, refers to Gray as one of the three or four whose judgment on his theory was of more value to him than that of the world besides, including with Gray, Hooker, Lyell, and Huxley. Darwin had been in correspondence with Dr. Gray for years before the publication of his great book, and had been gathering from him botanical facts bearing upon his hypothesis; and from the time of the appearance of that volume Dr. Gray was one of the earnest advocates of the theory as a fair working hypothesis. Many residents of Boston and vicinity will recall the earnest discussion before the American Academy, in the years 1860 and 1861, between Dr. Gray and Professor Agassiz on this great question.

Dr. Gray was crowned with diplomas and honors from all the principal universities of Europe, and during the past summer, while travelling in England, received degrees from the Universities of Oxford, Cambridge, and Edinburgh. He leaves no children, but a widow, the daughter of the late eminent lawyer Charles G. Loring of Boston; and a host of friends in Cambridge and throughout the country will feel that his death has extinguished a bright and cheering light in the world of thought, and has removed a most cherished and valued friend and companion.

HEALTH MATTERS.

Sex and Consumption.

DR. THOMAS J. MAYS of Philadelphia has contributed to the *Medical News* a very valuable paper on female dress as a determining factor in pulmonary consumption. He says that it is currently believed that more females than males fall victims to this disease. Both Laennec and Louis held this view, at least so far as France was concerned; and Ancell, one of the most prolific and exhaustive writers on the natural history of tuberculosis, concurs entirely in this opinion. Sir James Clark's statistics, which were collected from thirteen different localities in Europe and America, showed in the aggregate more deaths from phthisis among females than among males. Dr. A. James, in an interesting article on sex in connection with phthisis, lately published in *The Edinburgh Medical Journal* (March, 1886), arrives at the same conclusion. It must be admitted, too, that, if the question of sex in relation to pulmonary consumption be viewed from an *a priori* standpoint, there are sufficient reasons for believing that the female is more prone to the disease than the male, because she is generally considered to be the weaker, and because she is more exposed to the causes which are known to give rise to it. She is confined within doors, where she naturally spends the greater portion of her life,

and is, of course, subjected to the influences of impure air and bad ventilation. She leads a sedentary life, is deprived of sunlight, exercise, and undergoes the enervating processes of gestation and lactation, while, on the other hand, the male is, as a general rule, less or not at all exposed to most of such unhealthful conditions; and it is only when he is subjected to some of them, as, for instance, to impure air, sedentary occupations, etc., that he becomes notoriously liable to pulmonary consumption.

Dr. Mays has collected statistics for many of the American cities, and also for other countries, and finds, that, so far as they go, they establish the fact beyond a doubt, that in civilized life the male sex is more liable to pulmonary consumption than the female. He gives the following statistics:—

STATISTICS OF SEX IN PULMONARY CONSUMPTION.

Locality.	Male.	Female.	Remarks.
Chicago ¹	1 : 635	1 : 793	Average for 6 years, 1869, 1881-85.
New York City, 1870 . .	1 : 233	1 : 318	
Massachusetts, 1880 . .	2.86%	3.28%	Per 1,000 males and females respectively.
Boston, 1883-84	1 : 248	1 : 251	
Rhode Island, 1884 and 1885 .	1 : 380	1 : 351	
Philadelphia, 1884 and 1885 .	1 : 303	1 : 310	
Nashville, 1877 and 1878 . .	1 : 263	1 : 286	Both white and colored males and females.
" " " "	1 : 443	1 : 422	White males and females only.
" " " "	1 : 142	1 : 190	Colored males and females only.
San Francisco, 1875-80 . .	1 : 313	1 : 418	Average of 5 years.
Sacramento	1 : 340	1 : 435	Average of years 1874 and 1879.
Cincinnati, 1883	1 : 325	1 : 423	
Baltimore, 1885	1 : 342	1 : 381	
Scotland, 1871-80	1 : 423	1 : 387	
England, 1872-81	1 : 467	1 : 502	
London, 1843-46, decedents from consumption	53%	47%	See 'Ancell,' p. 396.
Basel and Zurich, 1877-84, decedents from consumption . .	54.7%	45.3%	See Dr. Schnyder in <i>Correspondenz Blatt für Schweizer Aerzte</i> , Nos. 10, 11, 12, 1886.
Cantons of Wallis, Waadt, Freiburg, Lucerne, from 1877 to 1884, decedents from consumption	52.5%	47.5%	<i>Ibid.</i>
Cities of Prussia, 1875-79 . .	1 : 236	1 : 318	
County districts of Prussia, 1875-79	1 : 314	1 : 369	
Leading cities of New Jersey, 1884, deaths from consumption in nine	94	84	
Hospital and Private Practice.	Male.	Female.	Remarks.
Dr. Flint, Sr., 669 cases . .	505	164	See 'Flint on Phthisis,' p. 50.
Dr. Williams, 1,000 cases . .	625	375	See 'Williams on Consumption.'
First Brompton Hospital report, 1848	61	39	
Dr. Pollock's practice . . .	60.75%	39.25%	
254 patients of Dr. Schnyder's, coming from cities	165	89	See Dr. Schnyder, <i>Cor. Blatt für Schweizer Aerzte</i> , Nos. 10, 11, and 12, 1886.
914 patients of Dr. Schnyder's, from the country	537	377	<i>Ibid.</i>
500 of Dr. Brehmer's cases . .	319	181	See Brehmer, 'Die Aetiologie der chronischen Lungenschwindsucht.'
88 cases reported by Dr. Churchill of Paris . . .	59	29	
67 cases reported by Dr. Thorgood	34	33	
Cases in Royal Infirmary, Edinburgh, 1833, 1834, and 1835 . .	365	217	See Reynold's 'System of Medicine,' vol. iii. p. 546.
Consumptives in three Parisian hospitals, proportioned to the whole number of inmates . .	1 : 35	1 : 21	See 'Ancell,' p. 397.
550 deaths in St. George's Hospital in ten years	388	162	<i>Ibid.</i> , p. 763.
Chest Department of Phila. Polyclinic since Jan. 1885 . .	113	88	
Brompton Hospital for Consumption, from 1842 to 1848 . .	2,682	1,597	

¹ These figures indicate a lower death-rate for Chicago than actually exists, because we are not able to obtain the male and female population of this city separately: hence our estimate is based on the male and female population of Cook County, in which it is located, and for comparative purposes answers very well.

Having seen, then, that in the aggregate more civilized males than females die of pulmonary consumption; that the costal respiration of the civilized female is developed through the constricting influence of dress around the abdomen; that the lungs possess an excessive breathing surface which by sedentary occupations, etc., can be, and is frequently, reduced in a great degree; that the baneful results of such a reduction, consisting of hyperæmia, etc., fall with the greatest force on the apex of the lung; that all those who suffer from consumption also show a decided tendency to immobility of the upper part of the chest, — are we not, therefore, justified in believing that a defective costal respiration and the beginning of pulmonary consumption stand in relation to each other as cause and effect? And, going one step further, is it not clear that the civilized female owes her greater immunity from this disease in a great measure to the fact that she possesses a more highly developed costal expansion? If these relations exist, it is quite obvious that her manner of dress is a direct factor in bringing about this result. She has, by force of necessity, been led to clothe herself after a method which demands a restriction of the abdominal and diaphragmatic movements, and which cultivates a greater development of the costal portion of the breathing-organs, and thereby she unconsciously protects herself to a greater degree against this disease; while the male, on the other hand, dresses himself after a fashion which secures perfect freedom of motion to the diaphragm and to the abdominal muscles, but which also attracts and tends to confine the respiratory function to the lower portion of the chest. Moreover, it must not be forgotten that the same fashion also demands that his clothing should be suspended from the shoulders, which of itself restricts the movements of the upper portion of the chest; making it evident, therefore, that his clothing renders him, both indirectly and directly, more liable to the disease under consideration. To this conclusion, and to no other, do our facts and reasoning lead.

The evidence which has thus far been gathered from statistical, experimental, and inductive grounds, all tends to demonstrate that impairment of the respiratory movements of the upper portion of the lungs is one of the principal direct causes of pulmonary consumption. Indeed, all the proof goes to show that in many conditions of life, especially in many of those to which the male sex is exposed, the apices of the lungs become superfluous parts of the body, and on this account possess a strong tendency to that premature waste which is characteristic of all organs when they fall into a state of inactivity. The practical solution of the problem of the prevention of pulmonary consumption, as well as of the cure in many cases, therefore consists in the adoption of measures which tend to increase the chest capacity, and which maintain the general and local health of the individual.

The treatment, so far as prevention is concerned, resolves itself into a proper exercise of the chest muscles, into systematic breathing, and into the rational employment of compressed and rarefied air. First, then, as to a proper training of the chest muscles. This is accomplished by raising the shoulders, and by swinging the arms backward, forward, and upward, either with or without dumbbells, or by exercising on parallel bars, care being taken that a full inspiration is taken every time that the arms are thrown backward and upward, or the body forward, and that a complete expiration occurs when the arms are brought together in front, or when the body is thrown backward. These movements should be performed regularly, and from sixteen to twenty times in a minute. There are a number of appliances in the market which are worked by means of ropes, weights, and pulleys, and which are admirably adapted for the enhancement of the above-described movements. They are very simple, and can be attached to the wall of the nursery or of the sleeping-room, and not only afford a healthful exercise, but a pleasant amusement for both children and adults.

BOOK-REVIEWS.

Handbook of Republican Institutions in the United States of America. By DUGALD J. BANNATYNE. New York, Scribner & Welford. 16°.

THIS would have been a remarkable book even for an experienced public official to have written, and it is doubly so, coming

from a foreigner. It is the most systematic, the most complete, and the most accurate handbook of our institutions that has ever come to our notice. The author is a Scotch attorney, resident for twenty-two years past in Canada and the United States. In his preface he gives the reason for writing the book. "I have frequently heard it said," he writes, "that an immigrant into either of these countries, who brings some capital with him, is not likely to permanently succeed until he has lost all he brought with him and has started afresh." The author's personal experience corroborates this saying, and he attributes its truth to the fact that immigrants are ignorant of the country, the people, the customs, the government, to which they have come. To aid such in removing their ignorance, the book before us was written. But its existence can be and should be defended on far broader grounds. It is a mine of information for the American citizen himself, or at least it would be if it had an index. No table of contents, however full, can take the place of a good index.

The work consists of an introductory chapter and two parts. In the introduction the author gives a cursory view of our political life, its conditions, and its most recent workings. Rather too many statements rely upon the somewhat vivid and always vehement imaginations of the New York *World* for their foundation; but this is a minor matter, and may be overlooked. Mr. Ballantyne betrays his foreign extraction by criticising the equal representation of States in the United States Senate. The populations and areas which he cites as evidences of inequality of representation have absolutely no bearing upon the question whatever; for it is States as such, and not populations or areas, that are represented in the Senate. In these days, when so much ignorant criticism and unintelligent abuse are directed at public officials, it is pleasant to find that a disinterested and presumably non-partisan foreigner can write as follows: "The reader's attention should be attracted by the manner in which the whole population is, through Congress, kept thoroughly posted as to the several executive departments, and the whole United States and state, county, town, village, and city machinery. . . . The writer has on several occasions tested the merits of the federal, state, county, and other public officers, and has always had prompt response and courteous treatment. There is no unnecessary red-tapism or flummery, and every respectful application, whatever the form, receives attention" (p. 51).

Part first contains the great national documents, — the Constitution, Articles of Confederation, Declaration of Independence, and Washington's Farewell Address (which in some places the types make 'Farewell Letter'). Then follow careful, painstaking, and accurate descriptions of Congress, the Presidency, the Executive Departments, and their numerous bureaus and divisions. Every branch of the national administration is touched upon. The Territories are described, and the Enabling Act of Colorado given, to show by what process a Territory becomes a State.

Part second treats of State government and administration. That of New York is taken as a type. This is just as full and comprehensive as the preceding part, except in the case of cities. They are very scantily treated in two pages, whereas at least twenty-five would be necessary to make clear their organization and relation to the county and State governments. The subject of education and school organization is amply treated. We lay down the book with a feeling of profound satisfaction, and with full appreciation of its value as a book of reference.

The author's descriptions are impartial, and he rarely presents his own opinions or views. When he varies from this rule, his success is such that we are tempted to wish he did it oftener. Witness this comment: "There is need for a national bureau of immigration and naturalization, in which shall be kept a register recording the names and full particulars of every immigrant, and also a register of every immigrant naturalized under the laws of the United States, and which shall refer to the entries in the other register."

We commend the book unreservedly.

Organic Analysis. By ALBERT B. PRESCOTT. New York, Van-Nostrand. 8°.

THIS volume is in a measure an outgrowth of the useful little book put forth by the same author thirteen years ago under the title of