at dinner some agreeable companion. A conversation-room could be added, and the place become a general rendezvous for scientific and literary men; and these rooms could be so arranged as to admit, on precious occasions, of being thrown together, so as to banquet a Huxley, a Helmholtz, or a Pasteur in a suitable place and manner.

If we look for a suitable name to give to the edifice which shall be the free home of the arts and sciences in Boston, what can better represent its local history, its exalted science, its 'divine' art, than the name of 'BOWDITCH'? 'Bowditch hall,' then, let it be; and let those in Boston, and they are many, who honor the sciences and love the arts, make this more than a name, and help the advancement of all these varied institutions at once by securing them a common and a fitting home. The societies can doubtless bear a part of the expense; but the plan is too large for them to carry out unaided, too fair to fail. What other plan could promise such solidarity of all high interests? What better fitted to restore the ancient prestige of Boston's name?

IS THERE A CORRELATION BETWEEN DEFECTS OF THE SENSES?

PEOPLE sometimes assume that a defect of any important sense is balanced to the individual by the increased perception of the remaining senses. For instance: it is often thought that deaf persons have better eyesight than those who hear, and that blind persons have better hearing than those who see. The returns of the tenth census of the United States (1880) concerning the defective classes show clearly the fallacy of such a belief. They indicate that the deaf are much more liable to blindness than the hearing, and the blind more liable to deafness than the seeing.

About one person in every thousand of the population is blind, and one in every fifteen hundred deaf and dumb. Now, if these proportions held good for the defective classes themselves, we should expect to find one in a thousand of the deaf-mute population blind, or one in fifteen hundred of the blind population deaf and dumb: in other words, we should expect to find no more than thirty-four blind deaf-mutes in the country; whereas, as a matter of fact, no less than four hundred and ninety-three blind deaf-mutes are returned in the census.

In the following table, I., I present an analysis of the doubly and trebly defective classes. The information has been compiled from the published statements of Rev. Fred. H. Wines (who had charge of the department of the census relating to the defective classes[1]), supplemented by unpublished information kindly furnished by the census office.

TABLE I.

Analysis of the defective classes as returned in the tenth census of the United States (1880).

Singly defective.		
Deaf and dumb[1]	30,995	
Blind	46,721	
Idiotic	73,370	
Insane	91,133	
Total singly defective		242,219
Doubly defective.		
Blind deaf-mutes	246	
Idiotic deaf-mutes	2,122	
Insane deaf-mutes	268	
Blind idiots	1,186	
Insane blind	528	
Total doubly defective		4,350
Trebly defective.		
Blind idiotic deaf-mutes	217	
Blind insane deaf-mutes	30	
Total trebly defective		247
Total defective population		246,816

[1] The 'deaf and dumb' have no other natural defect save that of deafness. They are simply persons who are deaf from childhood, and many of them are only 'hard of hearing.' They have no defect of the vocal organs to prevent them from speaking. A child who cannot hear our language with sufficient distinctness to imitate it remains dumb until specially instructed in the use of his vocal organs. In the above table, the 'deaf and dumb' are therefore classified with those having a single defect.

In the following tables, II.–VII., I have reduced these figures to percentages.

TABLE II.

Percentage of the population of the United States who are defective.

	Totals.	Percentage.
Deaf and dumb	33,878	0.0675
Blind	48,928	0.0975
Idiotic	76,895	0.1533
Insane	91,959	0.1833
Defective population	246,816	0.4921
Population not defective	49,908,967	99.5079
Total population	50,155,783	100.0000

[1] See *American annals of the deaf and dumb* for January, 1885.

TABLE III.

Percentage of the deaf-mute population who are otherwise defective.

	Totals.	Percentage.
Deaf-mutes returned as also blind	493	1.45
Deaf-mutes returned as also idiotic	2,339	6.90
Deaf-mutes returned as also insane	298	0.88
Deaf-mutes returned as otherwise defective	2,883	8.51
Deaf-mutes returned as simply deaf	30,995	91.49
Total deaf and dumb	33,878	100.00

TABLE IV.

Percentage of the blind population who are otherwise defective.

	Totals.	Percentage.
Blind persons returned as also deaf and dumb	493	1.01
Blind persons returned as also idiotic,	1,403	2.87
Blind persons returned as also insane,	558	1.14
Blind persons returned as otherwise defective	2,207	4.50
Blind persons returned as simply blind	46,721	95.49
Total blind	48,928	100.00

TABLE V.

Percentage of the idiotic population who are otherwise defective.

	Totals.	Percentage.
Idiots returned as also deaf and dumb,	2,339	3.04
Idiots returned as also blind	1,403	1.82
Idiots returned as otherwise defective,	3,525	4.58
Idiots returned as simply idiotic	73,370	95.42
Total idiots	76,895	100.00

TABLE VI.

Percentage of the insane population who are otherwise defective.

	Totals.	Percentage.
Insane persons returned as also deaf and dumb	298	0.32
Insane persons returned as also blind,	558	0.61
Insane persons returned as otherwise defective	826	0.90
Insane persons returned as simply insane	91,133	99.10
Total insane	91,959	100.00

TABLE VII.

Percentage of the doubly defective who are also trebly defective.

Of 493 blind deaf-mutes, 217, or 44.02 %, are returned as also idiotic.
Of 493 blind deaf-mutes, 30, or 6.09 %, are returned as also insane.
Of 2,339 idiotic deaf-mutes, 217, or 9.28 %, are returned as also blind.
Of 298 insane deaf-mutes, 30, or 10.07 %, are returned as also blind.
Of 1,403 blind idiots, 217, or 15.47 %, are returned as also deaf and dumb.
Of 558 insane blind persons, 30, or 5.38 %, are returned as also deaf and dumb.

The tables seem to indicate that in the case of deafness, blindness, idiocy, and insanity, some correlation exists; for persons having one of those defects appear more liable to the others than persons normally constituted, and doubly defective persons appear to be more liable to be otherwise defective than persons having a single defect. For instance: —

(*a*) Of 50,155,783 persons in the United States, 246,816, or 0.4921 %, are defective.
(*b*) Of 246,816 defective persons, 4,597, or 1.86 %, are doubly defective.
(*c*) Of 4,597 doubly defective persons, 247, or 5.37 %, are trebly defective.

The results obtained above, I think, merit the consideration of scientific men, and are calculated to throw light upon the subject of correlated defects.

Although the proportion of the insane who are deaf or blind is abnormally large, the evidences of a correlation between insanity and the other defects noted above are not well marked; but in regard to deafness, blindness, and idiocy, a marked correlation appears to exist.

1. *Deaf-mutes.* — There are fourteen and a half times as many blind persons among the deaf and dumb in proportion to the population as there are in the community at large, and forty-six times as many idiotic.

2. *Blind.* — There are fourteen times as many deaf-mutes among the blind in proportion to the population as there are in the community at large, and nineteen times as many idiots.

3. *Idiotic.* — There are forty-three times as many deaf-mutes among the idiotic in proportion to the population as there are in the community at large, and eighteen times as many blind.

The apparent correlation between deafness, blindness, and idiocy, may possibly indicate that in a certain proportion of cases these defects arise from a common cause, perhaps arrested development of the nervous system.

It is of course possible that some of the persons returned as 'blind deaf-mutes' may

have lost sight and hearing from the same disease. The returns have not yet been sufficiently analyzed to enable us even to separate the congenital from the adventitious cases. We cannot therefore tell at the present time how far the evidences of correlation may be weakened by a closer inspection of details.

The large number of deaf-mutes who have been classified as idiots, also suggests caution in accepting the returns. I recently met a young lady — one of the brightest and best pupils of the Illinois institution for the deaf and dumb — who commenced her school-life in an idiot-asylum. She was there discovered to be simply deaf, and was transferred to the Institution for the deaf and dumb at Jacksonville, where she not only received a good education, but was successfully taught to speak. Not only are children who are simply deaf, sometimes sent to idiot-schools; but idiotic children who hear perfectly are often sent to institutions for the deaf and dumb, when it becomes the painful duty of the principal to undeceive the parents as to the real condition of their child. The difficulty in distinguishing these two classes of defective persons arises from the absence of articulate speech. Children who are deaf from infancy, and idiots, do not naturally speak, but from very different causes. In the one case, the cause is lack of hearing; in the other, lack of intelligence. The judgment of unskilled persons regarding the intelligence of deaf-mutes should evidently be received with caution. It is only to be hoped that the number of idiotic deaf-mutes returned in the census has been over-estimated. Before accepting the results as thoroughly reliable, it would be well to know whether or not the persons who made the returns were competent to judge in the matter.

ALEXANDER GRAHAM BELL.

EARTHQUAKE OF JAN. 2, 1885.

THE daily papers of Jan. 3 contained reports of a slight earthquake in Maryland and Virginia the previous evening.

On Jan. 4 circulars of inquiry were sent to more than twenty places in the vicinity of the reported shock. The questions asked had reference to the time of the shock, its duration, number of shocks, character of accompanying noise, and intensity according to a given scale. It will be necessary here to quote only the first three of the six numbers of this proposed scale of intensity, which are as follows: —

No. 1. *Very light.* — Noticed by a few persons, but not generally felt.

No. 2. *Light.* — Felt by the majority of persons, rattling windows and crockery.

No. 3. *Moderate.* — Sufficient to set suspended objects (chandeliers, etc.) swinging, or to overthrow light objects.

In response to this circular, seventeen written reports, and a copy of the Leesburg *Mirror*, were received; and from these replies, together with reports in the New-York *Tribune* and in *Science*, a tabulated summary was prepared, and represented graphically upon the accompanying map, on which are marked all the places from which any report, either manuscript or press, was at hand.

As is there shown, the northern boundary of the region affected is well determined by manuscript reports from five places lying beyond its limits. The inquiries, which might have determined its limits as clearly in other directions, failed to elicit any response. It appears to have extended very little, if at all, west of the mountains. The only direct report obtained from that region was from Boonesborough, Md., where it was felt *near*, but not *in*, the town. The Leesburg *Mirror* stated generally that it was felt in Jefferson county, W. Va., but no reply was received to circulars sent there.

The closest approximation to the true time is probably 21 h. 12.1 m. eastern time, as given by W. C. Winlock at Washington, D.C., with which agree also the reports of W. J. Grove at Lime Kiln, Md., and W. H. Routzahn at Middletown, Md. These are the only reports which vary from 21 h. 10 m. or 21 h. 15 m., except Fairfax, Va., which is 21 h. 5 m., and W. H. Dall at Washington, who gave 21 h. 16 m. At Adamstown, Md., two shocks were reported; and at Buckeystown, Md., a second very light shock at 21 h. 45 m.

The estimates of duration were, as usual, very discordant, varying all the way from three seconds to two minutes. As the tendency of ordinary observers is always to exaggerate this element, the unexpected and exciting nature of the phenomena making the time seem longer than it really is, probably ten or fifteen seconds would be a liberal estimate of the duration.

The noise accompanying the shock was compared to that made by a loaded wagon passing rapidly over frozen ground or over a bridge, to distant thunder, and to the roaring of a chimney on fire. In some cases persons went out of their houses to see if their chimneys were not burning.