1880 was about forty-eight per cent. The census may be faulty, but I take it that we shall have to admit that growth of the cities has been much more rapid than that of the country. This being so, it still further tends to increase the burdens of those classes who can least easily conceal their property under a general-property tax system, viz., the farmers.

The rapid growth of the cities, in many cases at the expense of the country, tends, moreover, to leave a continually increasing burden of expense upon the shoulders of the rural districts, which tends to overburden the latter still more.

Under our system of taxation, then, the farmer, using that term for the country districts in general, is at a disadvantage in several respects. In the first place, as we have seen, our method of obtaining public revenue by taxation touches chiefly that form of property which is visible and can not escape the eye of the tax assesssor or tax collector; while that which can be hidden, or known only by a general system of registry, such as mortgages, bonds, stocks, etc., practically escapes taxation altogether. Now the farmer has a larger proportion of his property in this form than any other class. If he is thrifty he can buy more land, put up a better class of buildings, get a better breed of stock, use better machinery, etc. Every improvement in his condition, in a word, reflects itself in something visible about the farm, and thus subjects him to heavier taxation. It is very different with the inhabitants of the cities. A wealthy man, of course, occupies as a rule a better house in a dearer neighborhood than a poor man, and to that extent pays more taxes; but as his wealth increases, his house does not necessarily grow better. His scale of living may not increase proportionately. A millionaire is quite as likely to live on as great a scale as one who has ten times the property. As a result, the visible forms of wealth do not increase as rapidly in the case of the wealthy city man as in the case of the country farmer. More and more of the property takes the form of mortgages, bank, railroad, and manufacturing stock, and bonds. All these things escape the eye of the tax assessor, and to that extent relatively lighten the burden of the wealthier classes.

(To be continued.)

NOTES AND NEWS.

THE bacillus of tuberculosis, says *Nature*, is often to be found in places lived in by consumptives. Herr Prausnitz has lately collected the dust in various compartments of trains which often convey patients from Berlin to Meran, and inoculated a number of guinea-pigs with it. Two out of five compartments so examined were found to contain the bacillus; the dust of one rendered three out of four guinea-pigs tuberculous, that of the other, two. The animals were killed after ten to twelve weeks, but in no case was the disease very advanced; the author supposes the number of bacilli to have been but small. The facts, however, seem to point to the necessity of disinfection of such railway carriages, especially the carpets or mats.

— Under the will of Dr. Fothergill (1821), funds were bequeathed to the Society of Arts, London, for the offer of medals for subjects, in the first instance, relating to the prevention of fire. The society now offers a gold medal or £20 for the best invention having for its object the prevention or extinction of fires in theatres or other places of public amusement. In cases where the invention is in actual use, reference should be made to places where it could be inspected. A full description of the invention, accompanied by such drawings or models as are necessary for its elucidation, must be sent in on or before the 31st of December, 1891, to the secretary of the Society of Arts, John Street, Adelphi, London. The council reserve the right of withholding the prize, in case there is nothing, in their opinion, deserving the award, or sufficiently complying with the conditions sent in for competition.

— To the usual well-known ways of stimulating muscles to contraction, viz., electrical, thermal, mechanical, and chemical, M. D'Arsonval has recently added that by means of light (*Nature*, Aug. 20). He could not, indeed, get any contraction in a fresh frog-muscle, when he suddenly threw bright light on it in a dark chamber; but having first in darkness stimulated a muscle with induction currents too weak to give a visible effect, and then suddenly illuminated the muscle with an arc light, the muscle showed slight tremulation. Not thinking this conclusive, however, M. D'Arsonval attached a muscle to the middle of a piece of skin stretched on a funnel, and connected the tube of the funnel, by means of a piece of india-rubber tube, with the ear. The muscle being now subjected to intense intermittent light, he heard a tone corresponding to the period of illumination, and this ceased when the muscle was killed with heat. Arc light was used, which was concentrated by a lens and passed through an alum-solution to stop the heat rays.

— From a recent issue of *Nature* we learn that M. Raspail has lately called attention in the Zoölogical Society of France to the serious diminution of birds in that country through destruction of their nests. Some insectivorous species are becoming very rare, while the ravages of parasites on useful plants are extending. Boys, of course, do a great deal of the mischief; and of the various animals which attack nests (the squirrel, the hedgehog, the dormouse, the magpie, etc.), M. Raspail regards the cat as the worst offender. On a recently wooded property of about seven acres he observed last year as follows: Out of thirty-seven nests, carefully watched, only eight succeeded; twenty-nine were destroyed, fourteen of these by the cat, though effort had been made to ward off this insatiable marauder. On a large property in the centre of a village the owner had about eighty cats annually caught in traps. The place having lately changed hands, the gardeners estimate that more than one hundred nests were destroyed last year, three-fourths of these by cats. M. Raspail advocates a rigorous application of the law for protection of insectivorous species, the disqualification of the cat as a domestic animal, and the giving of prizes to foresters and others for destruction of all animals which prey on eggs and young in the nest.

— Tobacco fermentation, a very essential process, is brought about by firmly packing ripe tobacco in large quantities. *Nature* states that it had been generally supposed that the fermentation is of purely chemical nature, but Herr Suchsland, of the German Botanical Society, finds that a fungus is concerned in it. In all the tobaccos he examined, he found large quantities of fungi, though of only two or three species. Bacteriaceæ were predominant, but Coccaceæ also occurred. When they were taken and increased by pure cultivation, and added to other kinds of tobacco, they produced changes of taste and smell which recalled those of their original nutritive base. In cultivation of tobacco in Germany it has been sought to get a good quality, chiefly by ground cultivation and introduction of the best kinds of tobacco. But it is pointed out that failure of the best success may be due to the fact that the more active fermenting fungi of the original country are not brought with the seeds, and the ferments here cannot give such good results. Experiments made with a view to improvement on the lines suggested have apparently proved successful.

— Experiments in various methods of seeding wheat have been conducted for a series of years at the Ohio Experiment Station, with the following results: In the average of four years' experiments, wheat covered one inch or less has produced at the rate of thirty-four bushels per acre, that covered two inches has produced thirty-five bushels, and that covered three inches thirty-four bushels. Judging from a smaller number of experiments it does not seem advisable to sow deeper than three inches. In the average of six years, wheat sown with the roller-press drill has yielded about eight per cent more than that sown with the ordinary drill. More or less increase has followed the roller-press in almost every season, but a single trial has given results unfavorable to the use of the common roller after seeding. Broadcast wheat has this year yielded about the same as that drilled; but in

the average of five years the produce from broadcast seed is considerably smaller than from the same quantity of seed drilled. The results of seven years' experiments point clearly to the latter part of September or first of October as the most favorable season for sowing wheat on this farm. A single experiment, made this year, fails to show any advantage in favor of cross drilling over sowing the same quantity of seed in the ordinary manner. No larger crop has been produced this year from mixed seed of two varieties than from pure seed of the same varieties sown separately. The land upon which these experiments were made lies in the valley of the Olentangy, one of the largest branches of the Scioto. The soil is a yellow loam, part first and part second bottom. It is either naturally underdrained with gravel or artificially drained with tiles, and its average yield of wheat for thirteen years has been over twenty-six bushels per acre, on an annual acreage of about thirty acres.

— The laughing plant is the name of a plant growing in Arabia, and, according to the *Medical Times*, is so called by reason of the effect produced upon those who eat its seeds The plant is of moderate size, with bright yellow flowers, and soft, velvety seed-pods, each of which contains two or three seeds resembling black beans. The natives of the district where the plant grows dry these seeds and reduce them to powder. A dose of this powder has similar effects to those arising from the inhalation of laughing-gas. It causes the most sober person to dance, shout, and laugh with the boisterous excitement of a madman, and to rush about cutting the most ridiculous capers for about an hour. At the expiration of this time exhaustion sets in, and the excited person falls asleep, to awake after several hours with no recollection of his antics.

— The following persons will be the officers of the American Association for the Advancement of Science for the ensuing year: President, Professor Joseph Le Conte of the University of California; vice-presidents, Section A, Professor J. H. Eastman, Naval Observatory, Washington; B, Professor B. F. Thomas, State University, Columbus, O.; C, Dr. Alfred Springer, Cincinnati; D, Professor John D. Johnson, Washington University, St. Louis; E, Professor H. S. Williams of Cornell; F, Professor S. P. Gage of Cornell; H, W. H. Holmes of Washington; I, S. Dana Horton, Pomeroy, Ohio; permanent secretary, F. W. Putnam of Harvard University; general secretary, Amos W. Butler, Brookville, Ind.; secretary of the councils, Professor T. H. Norton, Cincinnati; secretaries of sections: A, Professor W. Upton of Brown University; B, Professor Brown Ayers, Tulane University, New Orleans; C, Professor J. L. Howe, Polytechnic Institute, Louisville; D, Professor H. Landuth of Vanderbilt University, Tenn.; E, Professor R. D. Salisbury, State University, Madison, Wis.; F, Professor L. B. D. Halstead, Rutgers College; H, Mr. Colin of Philadelphia; I, Professor Lester Ward of the Geological Survey, Washington; treasurer, William Lilly, Mauch Chunk, Penn.; auditors, Dr. H. Wheatland, Salem, Mass, and Professor Mehan, Germantown, Penn. The next meeting of the association will be held in August, 1892, at Rochester, N.Y.

— A meeting was held in Washington, on Aug. 28, at the Columbian University, which promises to result in the formation of one of the most valuable organizations in the country for the advancement of geological work, and especially of official geological work. This is an official organization of the directors of the state and national geological surveys. There were present at the meeting Maj. J. W. Powell, director of the United States geological survey; Professor James Hall, State geologist of New York: Professor J. M. Safford, State geologist of Tennessee; Professor J. W. Spencer, State geologist of Georgia; Professor E. A. Smith, State geologist of Alabama; Professor J. A. Holmes, State geologist of North Carolina; Mr. Arthur Winslow, State geologist of Missouri; Mr. E. T. Dumble, State geologist of Texas; and Professor J. Lindahl, State geologist of Illinois. Maj. Powell was elected chairman of the meeting and Mr. Winslow was elected secretary. After a few preliminary remarks in explanation of the reasons for calling the meeting, Mr. Winslow read a paper suggesting a plan of organization and explaining the objects of and the results to be derived from such an official association. As prominent among the important objects of the associatton the following may be cited: (1) the determination of the proper objects of public geological work; (2) the improvement of methods; (3) the unification of methods; (4) the establishment of the proper relative spheres and functions of national and state surveys; (5) co-operation in works of common interest, and the prevention of duplication of work; (6) The elevation of the standard of public geologic work, and the sustenance of an appreciation of its value; (7) the inauguration of surveys by States not having such at present, to co-operate with the other State surveys and with the national survey. As an immediate result of this meeting a committee of six was elected to consider the matter of organization, with the power to frame a constitution and by-laws, to be reported to the association at a time and place to be selected by the committee. This committee consists of Maj. J. W. Powell, chairman; Professor E. A. Smith, Professor J. A. Homes, Dr. J. C. Branner, Mr. Arthur Winslow, and Professor W. H. Winchell. It is a matter of sincere congratulation that the association, whose organization has been an oft-mooted question, is now in a fair condition to become an established fact. That it will serve as an invaluable agent in securing harmony and efficiency in the important public work will be readily appreciated.

— Snow-drifts are found a serious disturbance of the Russian railway system. With a view to forecasting such occurrences, according to *Nature*, M. Sresnewskij has lately collected information about snow-drifts on the Russian lines during 1879–89 (*Rep. für Met.*). The drifts occur in the northern and eastern governments, chiefly with south-west wind, but in southern Russia with north east. In the north greater gradiants are required than in the south. The maximum of the drifting is in mid-winter, but there is more in the second half of winter than in the first, that having more snow. In the course of winter the snow grows in thickness, so that in March there is more to drift than in December. The marked diminution of drifting in February is due to the less wind in that month (a fact not yet explained, as the number of cyclones shows no decrease). Two kinds of drifting are distinguished; it may be only or chiefly snow lying on the ground that is whirled and carried along, or the wind may drive falling snow. There are most drifts in the months that have least snowfall and the smallest number of days of snow. The snow-drifts in South Russia with north-east wind are chiefly connected with anticyclones in the central region, or cyclones on the southern border; those in the east and north with cyclones in European Russia. In central Russia they occur with cyclonic winds of various direction, seldom with anticyclones.

— An investigation (more comprehensive than the previous ones by Forel, Fritz, and others) of the variations of Alpine glaciers has been recently made by Herr Richter of the German and Austrian Alpine Club. To six advances of glaciers, previously known, he adds three, and his account of the six differs somewhat from previous ones. The dates of commencement of the nine advances are 1592, 1630, 1675, 1712, 1735, 1767, 1814, 1835, 1875 (?). The following are some of Richter's conclusions, as given in *Nature* of Aug. 20: Glacier advances recur in periods varying between twenty and forty-five years; on the average of three centuries, thirty-five years. The advances are not all of equal intensity, nor alike in their progress. Nor is the intensity in a given advance-period the same in all glaciers. In the case of some glaciers, a period is occasionally skipped, the advance or retirement being very weak, so that the thirty-five years period gives place to one of seventy years. The glacier variations correspond, in general, with Brückner's climate variations. The glacier advance generally begins a few years after the moist and cool period has set in. There is no good reason to suppose that, in historic time, before the sixteenth century, the Alpine glaciers were smaller than now, or that variations occurred of a different order and period from those of the last three hundred years. About 1880 the earth was passing through a moist and cold period, which should have resulted in a general advance; but the advance has been but slight hitherto, and, in the eastern Alps, mostly absent. The cause of this is not at present clear, but the mild nature of this last cold period may have something to do with it.