APPENDICES.

I.

THE UNITED STATES CENSUS REPORT ON THE SIZE OF FARMS.

THE reference on page 41 to the evident incorrectness of the statement of the Census Report as to the decrease in the average size of farms in the United States, led, when originally published in *Frank Leslie's Illustrated Newspaper*, to the following controversy, which is given as there printed:

SUPERINTENDENT WALKER'S EXPLANATION.

BOSTON, May 10, 1883.

To the Editor of Frank Leslie's Illustrated Newspaper.

SIR: In Mr. Henry George's fifth paper on the "Problems of the Time" he declares that the statement of the Census Bureau to the effect that the average size of farms is decreasing in the United States, is inconsistent not only with "facts obvious all over the United States," but with "the returns furnished by the Census Bureau itself;" and at a later point, after citing the Census Statistics of the number of farms of certain classes, as to size, in 1870, and again in 1880, he says: "How, in the face of these figures, the Census Bureau can report a decline in the average size

of farms in the United States from 153 acres in 1870 to 134 acres in 1880, I cannot understand."

Perhaps I can offer an explanation which may assist Mr. George toward an understanding of what seems to him incomprehensible.

The average size of farms in 1870 having been 153 acres, any increase during the intervening decade in the number of farms below this limit would tend to lower the average size of farms in 1880; any increase in the number of farms above that limit would tend to raise the average for 1880.

Now, in fact, there has been a greater increase, on the whole, in the number of farms below 153 acres than in the number above 153 acres, and, consequently, the average size has been reduced.

If I have not made the reason of the case plain, I shall be happy to resort to a more elementary statement, illustrated with diagrams, if desired.

Respectfully yours,
FRANCIS A. WALKER.

THE CENSUS REPORT AND SUPERINTENDENT WALKER'S EXPLANATION.

[*From Frank Leslie's Illustrated Newspaper, June 9, 1883.*]

I must ask the patience of the readers of these articles if in this I make a digression, having reference to the letter from General Francis A. Walker, Superintendent of the Ninth and Tenth Censuses, which appeared in the last issue of this journal.

To my comprehension, General Walker has "not made the reason of the case plain," nor has he explained the discrepancies I pointed out. I shall be happy to have his more elementary statement, and, if he will be so kind, to have it illustrated with diagrams. But, in the meantime,

as his reassertion of the statement of the Census Report carries the weight of official authority and professional reputation, I propose in this paper to show in more detail my reasons for disputing its accuracy.

It is specifically asserted in the reports of the Tenth Census that the average size of farms in the United States decreased during the decade ending in 1880 from 153 acres to 134 acres, and this assertion has been quoted all over the country as a conclusive reason why the people of the United States should not trouble themselves about the reckless manner in which what is now left of their once great public domain is being disposed of, and the rapid rate at which it is passing in enormous tracts into the private estates of non-resident speculators, English lords and foreign syndicates. All over the country the press has pointed to this declaration of the Census Bureau as conclusive proof, which no one could question (and which, up to the publication of the fifth paper of this series, no one seems to have thought of questioning), that these things need excite no uneasiness, since the steady tendency is to the sub-division of large landholdings. The inference would not be valid even if the alleged fact were true. But that I will not now discuss. I dispute the fact.

General Walker states that, during the last decade, "there has been a greater increase, on the whole, in the number of farms below 153 acres than in the number above 153 acres." This I shall show from General Walker's own official report is not true—is, in fact, the very reverse of the truth. But such a misstatement of fact, astonishing as it is, is not so astonishing as the misstatement of principle which precedes and follows it—viz., to quote the remainder of the sentence, "and, *consequently*, the average size has been reduced."

I have occasionally met thoughtless people who talked of discounts of 150 and 200 per cent.; I once knew a man

who insisted that another man was twice as old as he was, because on a certain birthday, years before, he had been twice as old; but I never yet met anybody, except very little children, to whom all coins were pennies, who would say that when a shopkeeper received one piece of money and handed out two pieces, he had *consequently* reduced the amount of money in his drawer! Yet this is just such a statement as that made by General Walker. In asserting that the general increase in the number of farms under a certain size than in the number above that size must reduce the average size, General Walker ignores area, just as any one who would say that an amount of money had been reduced by adding one coin and taking away two would ignore value. Take, for instance, a farm of 100 acres. Add to it two farms of 50 acres each and one farm of 400 acres. Here there has been a greater increase in the number of farms below 100 acres than the number above 100 acres, but so far from the average having consequently been reduced, it has been increased from 100 to 150 acres!

The truth is, of course, that number is only one of the factors of average, which is in itself an expression of proportion between number and some other property of things, such as size, weight, length, value, etc. An average does not, as General Walker says, increase or diminish according to the numerical preponderance, on one side or the other, of the items added, but according to the preponderance in number and quality. Thus, though the addition of any farm of less than 153 acres would tend to reduce an average of 153 acres, the addition of one farm of three acres would tend much more strongly to reduce the average than the addition of one of 152 acres, and the addition of one farm of 1000 acres would do much more to increase the average than the addition of several farms of 154 acres. Just as weights upon the arms of a lever tend more strongly to counterbalance each other the

further they are placed from the fulcrum, so increase in the number of farms will tend more strongly to raise or reduce the average the further in point of area the new farms are from the previous average. And it may be worth while to remark that while the possibilities on the side of decrease are limited, the possibilities on the side of increase are unlimited. A farm less than 153 acres can only be less by something within 153 acres; but a farm greater than 153 acres may be greater by 10,000 or 100,000, or any larger number of acres.

I speak of this simple and obvious principle not merely to show the curious confusion of thought which General Walker exhibits, but for the purpose of pointing out the significance of the facts I have previously cited—a significance which General Walker does not appear, even yet, to realize.

Let me refer those who may wish to verify the accuracy of the figures I am about to quote to Table LXIII., pp. 650–657, Compendium of the Tenth Census, Part I. This table gives the total number of farms for 1880, 1870, 1860 and 1850, the number of farms in eight specified classes for 1880, 1870 and 1860; the farm acreage and the average size of farms for four censuses. We are told in a note that "it will be noticed" that the number of farms given in the specified classes for 1860 fail to agree with the total number given, and that "these discrepancies appear without explanation in the Census of 1860." This is well calculated to impress one who casually turns over the pages of the Compendium with the vigilant care that has been exercised, but it becomes rather amusing when read in the light of the far more striking discrepancies which appear without explanation in the Census of 1880.

What first struck me in glancing over this table, and what is so obvious that I cannot understand how, from Census Superintendent to lowest clerk, any one could have

transcribed, or even glanced over—not to say examined—these figures without being struck by it, is that in the face of the fact that we are told that between 1870 and 1880 the average size of farms has been reduced, the same table shows in its very first lines that the great increase in the number of farms between 1870 and 1880 has all been in the four classes of largest areas, and that the larger the area the greater the increase; while the number of farms in the four classes of smaller area have actually diminished, and the smaller the class area the greater the diminution! To recur to our simile, it is not only that more weights have been placed on one end of the lever, but they have been pushed out further from the center. On the other arm the weights have not only been diminished, but they have been drawn in closer to the center. Yet we are told that the lever has tipped toward the end that has been lightened!

This is the fact to which I called attention in the fifth paper of this series as showing the inaccuracy of the assertion that the average size of farms had decreased in the United States during the last decade. So conclusive is it, and so obvious is it, that I am forced to suppose that the Superintendent of the Tenth Census has never even glanced over the totals of his own report. For, although the number of farms in 1880 and 1870 are merely placed in parallel columns in the Census Report, without subtraction, yet such differences as 4352 farms under three acres in 1880, and 6875 in 1870, and of 28,578 farms over 1000 acres in 1880 against 3720 in 1870, are glaring enough to strike the eye of any one who has been told that the average size of farms has diminished, and to put him upon inquiry.

In order to show the striking results of a comparison of the number of farms in the eight specified classes, in 1880 and 1870, as reported by the Census Bureau, I have

taken the trouble to do what the Census Bureau has not done, and figure out the differences.

CHANGES DURING DECADE ENDING 1880 IN THE NUMBER OF FARMS IN THE EIGHT SPECIFIED CLASSES, AS REPORTED BY CENSUS BUREAU.

Class.	Decrease in number.	Ratio of decrease.
I.—Under 3 acres	2,523	37 per cent.
II.— 3 to 10 "	37,132	21 " "
III.—10 to 20 "	39,858	14 " "
IV.—20 to 50 "	66,140	8 " "
	Increase in number.	**Ratio of increase.**
V.— 50 to 100 acres	278,689	37 per cent.
VI.—100 to 500 " 1,130,929		200 " "
VII.—500 to 1,000 "	60,099	379 " "
VIII.—Over 1,000 "	24,858	668 " "

This steady progression from a decrease of 37 per cent. in farms under three acres up to an increase of 668 per cent. in farms over 1000 acres is conclusive proof that the average size of farms could not have decreased from 153 to 134 acres. And the figures of numerical decrease and increase are at the same time a disproof of General Walker upon the ground he has chosen. "Now, in fact," he says, "there has been a greater increase, on the whole, in the number of farms below 153 acres than in the number above 153 acres, and, consequently, the average size has been reduced."

The pivotal point, of 153 acres, falls in Class VI., which includes farms between 100 and 500 acres. There is no way of deciding with certainty how many of these farms are between 100 and 153 acres, and how many between 153 and 500 acres; but inasmuch as, in the absence of special reasons to the contrary, there can be no doubt that the average of the class must largely exceed 153 acres (which is very much nearer the class minimum than the

class maximum), and therefore that, taken as a whole, the entire class must count on the side of increase, we should reach substantial accuracy in setting down the whole increase in this class as over 153 acres. This would give:

Increase in number of farms above 153 acres....	1,215,886
Net increase in farms below 153 acres	133,036
Excess in increase of number of farms above 153 acres.	1,082,850

This would be substantially accurate; but if a greater formal exactness is required, let us try to decide, as best we may, what part of the farms of between 100 and 500 acres should be counted as under 153 acres.

Whoever knows anything of the United States land system, and the parceling of land in our newer States and Territories where the greater part of this increase in the number of farms has taken place, knows that the farms between 100 and 160 acres must be comparatively few. The reason of this is, that the government surveys divide the land into sections and fractions of a section, the practical unit being the quarter-section of 160 acres, which is the amount open to preëmption and homestead entry. The land-grant railroad companies sell their land in the same way by the government surveys; and, in fact, nearly all the transfers of farms in our new States, long after the land has passed into private hands, is by fractions of a section, the quarter-section of 160 acres being almost universally regarded as the unit. When the quarter-section is divided, it is generally divided into the eighth, or as it is commonly called, the half quarter section, which falls into the class below the one we are considering. There can be no doubt whatever that the great majority of the newer farms of the class between 100 and 500 acres consist of quarter-sections, two-quarter sections, and three-quarter sections. Considering all this, it is certain that

we shall be making a most liberal allowance for the farms between 100 and 153 acres if we estimate the farms above 153 acres at 1,000,000 and those below at the odd number of 130,929. This would give:

Increase in farms above 153 acres	1,084,957
Net increase in farms below 153 acres	263,965
Excess in increase of farms above 153 acres...	820,992

I have disposed of General Walker's principle and of his fact, and have sustained my own allegation of the inaccuracy of the Census Report. I will now go further, and prove in another way the glaring discrepancies of the Census Report, and the grossness of the assumption that it shows a reduction in the average size of farms. Subtracting the totals given for 1870 from those given for 1880, we find the increase in acreage and number of farms as follows:

	Total number of farms.	Total acreage.
1880	4,008,907	536,081,835
1870	2,659,985	407,735,041
Increase in decade.....	1,348,922	128,346,794

The average size of farms in 1880, given at 134 acres, has been obtained by dividing the total acreage by the given total number of farms. The division is correct, but examination shows that there is an error either in the dividend or in the divisor, which makes the quotient less than it ought to be. Either the number of farms is too high, or the acreage too low. Let me prove this beyond question.

The net increase in the number of farms in the eight specified classes, as I have given it, corresponds with the total increase obtained by subtracting from the total

number of farms given for 1880 the total given for 1870. But no estimate can make the increase in area correspond.

To show that it is impossible on any supposition to make the increased acreage of the specified classes as low as the increased acreage according to the census totals, we will, where there has been decrease in the number of farms, consider these farms to have been of the very largest size embraced in the class. Where the number of farms has increased we will consider these farms as having been of the very smallest size embraced in the class.

Thus we have—

Class.	Decrease.	
I.—Under 3 acres,	2,523, at 3 acres.....	7,569
II.— 3 to 10 "	37,132, at 10 "	371,320
III.—10 to 20 "	39,858, at 20 "	797,160
IV.—20 to 50 "	66,140, at 50 "	3,307,000
Total decrease in area		4,483,049

Class.	Increase.		
V.— 50 to 100 acres,	278,689, at 50 acres,		13,934,450
VI.—100 to 500 "	1,130,929, at 100 "		113,092,900
VII.—500 to 1,000 "	60,099, at 500 "		30,049,500
VIII.— Over 1,000 "	24,858, at 1,000 "		24,858,000
Total increase in area			181,934,850
Subtract decrease			4,483,049
Net increase in farm acreage			177,451,801

Thus this lowest possible estimate of increased farm area exceeds the increase of 128,346,794, according to the census totals, by no less than 49,105,007 acres. According to the census totals the average area of the 1,348,922 new farms was only 95.1 acres. According to this lowest possible estimate of the areas assigned to these new farms in the table of specified classes, the average is 131.6. And adding this very lowest possible estimate of increased

average to that given for 1870, the total farm acreage of the United States in 1880 was 585,186,842 acres, instead of 536,081,835 acres, as represented by the Census Bureau, giving an average of 145.9 acres, instead of 134 acres, as reported.

Of course, such an estimate is preposterous, but it shows indisputably the glaring incorrectness of the Census Report.

To obtain from the table of specified classes an estimate of the true increase of farm acreage in the United States during the last decade, our only way is to ascertain from the census of 1870, also made under General Walker's superintendence, the average of class areas which would give the total for that year, and take them for our calculation.

To make the acreage of the specified classes for 1870 agree with the total acreage given, we must make some such estimate as the following:

ACREAGE BY SPECIFIED CLASSES FOR 1870.

Class.	Average acreage.	Number of farms.	Total acres.
I.—Under 3 acres...	2½	6,875	17,187
II.— 3 to 10 " ...	8¾	172,020	1,505,183
III.— 10 to 20 " ...	18	294,607	5,302,926
IV.— 20 to 50 " ...	44	847,614	37,295,016
V.— 50 to 100 " ...	90	754,221	67,879,890
VI.—100 to 500 " ...	400	565,054	226,021,600
VII.—500 to 1,000 " ...	900	15,873	14,285,700
VIII.— Over 1,000 " ...	14,900	3,720	55,428,000
Totals		2,659,985	407,735,502

This is about as close as I can figure with any regard to proportion, and it comes so close to 407,735,041, the acreage given for 1870, that the difference would not perceptibly affect any average.

Now, taking these averages of 1870 as a basis for calculating the true farm acreage in 1880, we have:

ACREAGE BY SPECIFIED CLASSES FOR 1880.

Class.		Acres.	Number of farms.	Acreage.
I.—Under	3 acres...	2½	4,352	10,880
II.— 3 to	10 " ...	8½	134,889	1,180,278
III.— 10 to	20 " ...	18	254,749	4,585,482
IV.— 20 to	50 " ...	44	781,474	34,384,856
V.— 50 to	100 " ...	90	1,032,910	92,961,900
VI.—100 to	500 " ...	400	1,695,983	678,393,200
VII.—500 to	1,000 " ...	900	75,972	68,374,800
VIII.— Over	1,000 " ...	14,900	28,578	425,812,200
Totals			4,008,907	1,305,703,596

This would make the average size of farms in the United States 325½ acres, instead of 134 acres as reported by the Census Bureau, an increase of 172½ acres, instead of a decrease of 19 acres as reported.

I do not, of course, say that this estimate is correct. I can only say that it is the best that can be made from the Census Reports. These reports show such a lack of intelligent superintendence and editing, that I doubt their reliability for any purpose. The only thing absolutely certain is, that the conclusions of the Census Bureau are not correct.

And further than the gross discrepancies I have shown, these returns of farms and farm areas give no idea of the manner in which the ownership of land is concentrating in the United States. It is not merely that in many cases the same person is the owner of separate farms, but it is evident from the returns that stock farms, cattle ranches, and the large tracts held by absentees, have not been included. This may be seen by the fact that the returns of farms of over 1000 acres number only 14 for Wyoming,

43 for New Mexico, 20 for Montana, 8 for Idaho, 74 for Dakota, and so on.

I have gone into this subject at such length because the authority of the census has been so generally invoked as conclusive proof that the ownership of land is not concentrating in the United States. The truth is, that it is concentrating so rapidly that, should present tendencies continue, it will not be many decades before we shall be a nation of landlords and tenants.

SUPERINTENDENT WALKER'S FURTHER EXPLANATION.

[*From Frank Leslie's Illustrated Newspaper, June 16, 1883.*]

To the Editor of Frank Leslie's Illustrated Newspaper:

Mr. George's attack upon the Census Statistics of the number and size of farms, in your issue of June 9th, affords a capital example of that writer's cleverness in imposing upon the careless reader. Indeed, although somewhat familiar with the subject-matter, I wasn't sure myself, until I had gone through the article more than once, that there might not be something in it, so portentous was the marshaling of figures, so loud and strenuous the assertion that the census was wrong in this and inconsistent in that; so artfully were all the resources of controversy used to produce the impression Mr. George desired. And yet there is absolutely nothing in it which cannot be readily and completely disproved. It is, from beginning to end, an utter sham.

Suppose a township of 25 square miles to have been divided, in 1870, into 64 farms of 250 acres each. These would have been reported, according to the classification in use at each census from 1850 to the present time, as farms of over 100 and under 500 acres; aggregate land in farms, 16,000 acres. Now, suppose precisely the same

territory to have been divided in 1880 into farms of 125 acres each. The official record would then read, 128 farms of over 100 and under 500 acres; aggregate land in farms, 16,000 acres. Ah, exclaims the critic, observe this monstrous blunder! Here is an increase of 64 farms in this class, and yet no increase whatever of acreage! Let us, he continues, concede, in the extreme spirit of fairness, that these farms were all of the very smallest size contained in this class, viz.: 100 acres each, we still ought to have, at the least, an increase of 6400 acres over the official return, which is thus shown on the face of it to be false.

This is Mr. George's reasoning, precisely. To omit minor classes, let us take the greatest class of all, that of farms between 100 and 500 acres, the increase in the number of farms of this class being no less than 1,130,929, against 217,993 only of all the other classes combined. Mr. George assumes that these 1,130,929 farms represent a pure net addition to the acreage of inclosed land. Having made such an utterly gratuitous, utterly unfounded, utterly dishonest assumption, Mr. George, with that inimitable show of candor which always characterizes him after a logical larceny of this sort, very graciously gives the Census Office the benefit of his concession that he will only exact 100 acres for each of these 1,130,929 farms; and having proceeded to deal this way with all the other classes, he brings the Census Office out a debtor in the sum of 49,105,007 acres. Perhaps, with that same remarkable candor, he would consent to strike off 105,007 acres and call it only 49,000,000.

Such is the wretched stuff which Mr. George imposes on his readers as a serious statistical argument. That the land of all the older States is in process of sub-division, every one above the grade of a plantation hand, who has lived three years east of the Rocky Mountains, knows perfectly well. In the main, the increase of farms in these

States is by the partition of land previously inclosed. Thus, Connecticut showed 2,364,416 acres in 25,508 farms in 1870, and 2,453,541 acres in 30,598 farms in 1880—an increase of nearly 20 per cent. in farms, and of but 5 per cent. in acreage. New York showed 22,190,810 acres in 216,253 farms in 1870, and 23,780,754 acres in 241,058 farms in 1880. Georgia, to take a State from another section, showed 23,647,941 acres in 69,956 farms in 1870, and 26,043,282 acres in 138,626 farms in 1880—a gain of about 10 per cent. in acreage, and of almost 100 per cent. in farms. This tremendous increase of farms in Georgia is due to the continuous sub-division of the old plantations in order to furnish small farms for the late slaves and the "poor whites" of that region. The same cause is operating, with great force, all over the South, and this it is which has brought about that reduction of the average size of farms in the United States from 153 acres in 1870 to 134 acres in 1880, which arouses such prodigious wrath on the part of Mr. George, who, having started out on a crusade against landed property with the cry that the country is going to the dogs through the aggregation of great estates—*latifundia*, as he magnificently calls it, to the confusion, there is reason to fear, of most of his disciples—is brought violently and injuriously up against hard facts, such as those just cited. The following table shows the increase of the number of farms in the chief cotton-planting States:

	1880.	1870.
Alabama	135,864	67,382
Arkansas	94,433	49,424
Georgia	138,626	69,956
Louisiana	48,292	28,481
Mississippi	101,772	68,023
North Carolina	157,609	93,565
South Carolina	93,864	51,889
Tennessee	165,650	118,141
Texas	174,184	61,125

Such, then, is Mr. George's main argument against the census figures. "Let me," he says, "prove this beyond question." We may, therefore, understand this to be Mr. George's idea of proving a proposition beyond question. And, in truth, it is very much the way he has taken to prove all the propositions I have read from his pen. To make any assumption whatever that suits his purpose, to reason therefrom most logically and felicitously, and to apply thereto, when required, arithmetical computations of the most minute accuracy, is the favorite method of this apostle of a new political economy and a regenerated humanity.

In the case under consideration, he assumes that new farms always represent new lands, a most gratuitous assumption, contrary to the known facts of the situation, and then proceeds, by a faultless series of additions and multiplications, to bring the Census Office in as debtor in the amount of 49,000,000 acres lost to the nation through its carelessness.

Again, Mr. George's assumption that the farms between 100 and 500 acres must be preponderatingly above 153 acres, inasmuch as the government sells land in 160-acre lots, "quarter-sections," as they are called, may be met by the assertion that five-sixths of the present farms of the United States were either not granted originally on the quarter-section plan (as in the Eastern States), or else have been long enough in private hands to allow, as Americans buy and sell, abundant scope for changes of area, in the way of partition, consolidation, etc.

The question at issue between Mr. George and the Census Office really turns upon the average size of the farms between 100 and 500 acres. Mr. George estimates that average at 400 acres! The reasonableness or unreasonableness of this will best be made to appear by

presenting the number of farms in the classes above and below:

20 to	50	acres	781,474
50 to	100	"	1,032,910
100 to	500	"	1,695,983
500 to	1,000	"	75,972

Any one who can look at these figures and not see, at a glance, that the probabilities are overwhelmingly in favor of the supposition that the great body of the farms of the third class, in the above table, are nearer, much nearer, very much nearer, to the lower than to the upper limit, is to be pitied for his defective eyesight and his defective mind-sight. If Mr. George cannot see that, there is reason to fear that a diagram would not help him. Who can believe it possible that, while the farms of Class IV. are only 1 in 22 of the farms in Class III., the farms of the latter class lie so close up to the limit of the fourth class as to average 400 acres each, or for that matter, 300 acres, or even 250 acres?

It is certainly to be regretted, since this controversy has arisen, that a new class, 100 to 150, or 100 to 200 acres, was not introduced. But the classification taken for this purpose is that which has always heretofore been employed, alike in 1850, in 1860, and 1870; while, so far as I am aware, no one has ever before complained of its inefficiency or suggested to the Census Office the subdivision of this class.

Mr. George is undoubtedly right in his captious correction of my phraseology in speaking of the effect produced by an increase in the number of farms, above or below the line, 153 acres, upon the average size of all farms in comparison of 1870 with 1880. I think no one would have failed to understand me who desired to do so, and what I

had in mind was perfectly just; yet, in a controversy with a gentleman so much more particular about phraseology than about facts, I should have done well to state my meaning more explicitly.

Respectfully,

FRANCIS A. WALKER.

BOSTON, June 10, 1883.

FURTHER ANALYSIS OF THE CENSUS REPORT.

[*From Frank Leslie's Illustrated Newspaper, June 30, 1883.*]

In his reply to my exhibition of the utter inconsistency between the census figures and census conclusions as to the size of farms, Professor Walker, instead of furnishing the diagrams with which he, in the first place, proposed to enlighten my ignorance, resorts to something more resembling diatribes. To such controversy I cannot descend.

Professor Walker complains that I estimate the average size of farms in the class between 100 and 500 acres at 400 acres, and devotes much space to showing that this estimate is too great. But this estimate is not mine. Had I been making a guess, without reference to the Census Report, I should certainly not have put the average of this class at above 250 acres. But at any such average it is impossible to make the aggregate acreage of the specified classes for 1870 correspond with the total acreage given. As I showed in detail, to make the acreage of these classes agree with the total acreage given, such averages as 90 acres for the class between 50 and 100 acres, 400 acres for the class between 100 and 500, 900 acres for the class between 500 and 1000 acres, and 14,900 for farms over 1000 acres must be assumed. These averages seem to me preposterous; but I am not responsible

for them. Professor Francis A. Walker, Superintendent of the Tenth Census, must settle this matter with Professor Francis A. Walker, Superintendent of the Ninth Census.

And to clench what I have already said as to the size of farms in Class IV., I challenge Professor Walker to give to the public any computation of acreage by specified classes by which, putting the average of Class IV. at 153 acres, and having any regard whatever for proportion in the other classes, he can make the total acreage correspond with that given in the Census Report.

As for Professor Walker's effort to prove that increase in the number of farms does not necessarily involve increase in total area, it would be as pertinent for him to attempt to prove that in changing a dollar into ten dimes one gets no more money, or that a big piece of cloth may be cut into small pieces without increase in the amount of cloth. This I have never heard denied, unless by Professor Walker himself, who, in his previous letter, asserted that a greater increase in the number of farms below than above a certain point necessarily showed a decrease of average area. The absurdity of this—a principle which he offered to illustrate with diagrams—I previously pointed out, and he now admits, but in a style which reminds me of a dispute I once heard between two colored citizens. One, who gloried in the title of Professor Johnson, was boasting that he could polish twelve dozen pairs of boots in half an hour. A fellow boot-black disputed this, and pressed him with a bet. Driven into a corner, Professor Johnson, with much indignation, declared that when he said twelve dozen pairs of boots he meant six pairs of shoes, and any "fool nigger" ought to know what he meant. So, Professor Walker, driven to admit the absurdity of his statement of principle, speaks of my captious correction of his *phraseology*, and declares that no one would have failed to

understand him who desired to do so. This is a rather unbecoming descent from the altitude of an offer of diagrams! A frank admission that he had been betrayed by carelessness would have inspired more respect.

But it is to be feared that such carelessness is a habit with Professor Walker. This letter shows as curious confusion of thought as his first, and, with seemingly utter unconsciousness of the fallacy, he essays, with what the logicians call an *ignoratio elenchi*, to break the force of my marshaling of census figures. To prove the absolute inconsistency of the census, I showed that the lowest possible estimate of increased acreage by specified classes gives an aggregate acreage of 49,105,107 acres in excess of the census total. To this conclusive proof of gross inaccuracy Professor Walker replies by supposing a township of twenty-five square miles. [It may be worth while to remark that a United States township is thirty-six, not twenty-five, square miles.] He supposes this township to have been divided in 1870 into 64 farms of 250 acres each, which would be returned by the census in the class between 100 and 500 acres. In 1880 the same township is divided into 128 farms of 125 acres each. But the acreage of 64 additional farms at the lowest class limit of 100 acres, added to the previous total acreage, would give 6400 more acres than the township contains; which proves, according to Professor Walker, that, in assuming that the net increase of acreage of specified classes must represent an addition to that acreage, I have made "an utterly gratuitous, utterly unfounded, utterly dishonest assumption."

In fact, however, Professor Walker's unfortunate example proves nothing in point, unless it be the truth of the old rhyme:

> If *ifs* and *ans* were pots and pans,
> There'd be few blundering tinkers.

What Professor Walker omits in his example—as, of course, he will see when his attention is called to it—is the essence of the matter, the division into classes. By supposing the farms in his township to be all within one class, Professor Walker ignores this essential element. The case he presents is not analogous to the case presented by the census, but analogous to the case which would be presented by the census were no returns by classes given. If the census report merely gave us the total acreage and total number of farms, we could go no further in verifying what it told us as to increase or decrease of average than by testing the division. But the census gives us more than this. Besides total acreage and total number, it gives us the number of farms in eight specified classes as to area.

To make Professor Walker's supposed township analogous to the case in point, we must suppose its farms to vary in size from under three acres to over 1000 acres, and that we are given for each decade, not merely the total number of farms and total area, but also the number in eight classes of specified areas. This given, in case the average size of the farms in the township had decreased from 250 acres to 125 acres, should we not expect the class returns to show an increase in the number of farms in the classes of smaller acreage, and a decrease in the classes of larger acreage? And if they were to show just the reverse of this—a decrease in the number of smaller farms and an increase in the number of larger farms—should we not say that they were inconsistent with the reduction of average? This inconsistency is just what the Census Report shows.

Professor Walker asserts that I have made a gratuitous assumption, contrary to the known facts of the case, in assuming that additional farms represent additional land. If he will show me, with or without diagrams, any other

basis of computation, I shall be obliged to him. I do not know what arithmetic they may use in the Boston Technical School, but I will take an example after the manner of the old arithmetics:

"A boy's trousers contain two yards of cloth; his father's, three yards. Last year they had each two pairs of trousers; this year they have each three pairs. How much more cloth have they in their trousers this year than last?"

Any one—outside, perhaps, the Census Bureau or Technical School of Boston—would say: "One more pair of trousers for the boy, two yards; one more for the father, three yards. Answer—five yards."

Supposing somebody should reply: "You have made in your calculation an utterly gratuitous, utterly unfounded, utterly dishonest assumption, contrary to all the known facts of the case. You have assumed the boy's new trousers to have been made from new cloth, whereas they were cut down from his father's old ones!"

Any little child would smile, and answer: "That makes no difference. Whether the father's trousers have been cut down for the boy, or the boy's trousers have been pieced out for the father, the boy has one more pair of trousers with two yards in them, and the father one more pair of trousers with three yards in them, and together they have five yards more cloth in their trousers."

And so, though it is true that in many cases farms of one class are formed from previously existing farms of another class, the only method of computing increase of area is by taking the increased number at the given area. An acre of land may form part of a farm of one class at one time, and of a farm of another class at another time. But we cannot suppose it to be in two farms at the same time.

Without meeting the facts and figures which I gave from the Census Report in disproof of the assertion that

the average size of farms had been reduced in the last decade, Professor Walker reiterates that assertion. He says:

"That the land of all the older States is in process of sub-division, every one above the grade of a plantation hand, who has lived three years east of the Rocky Mountains, knows perfectly well. In the main, the increase of farms in these States is by the partition of land previously inclosed. Thus, Connecticut showed 2,364,416 acres in 25,508 farms in 1870, and 2,453,541 acres in 30,598 farms in 1880—an increase of nearly 20 per cent. in farms, and of but 5 per cent. in acreage. New York showed 22,190,-810 acres in 216,253 farms in 1870, and 23,780,754 acres in 241,058 farms in 1880. Georgia, to take a State from another section, showed 23,647,941 acres in 69,956 farms in 1870, and 26,043,282 acres in 138,626 farms in 1880—a gain of about 10 per cent. in acreage, and of almost 100 per cent. in farms. This tremendous increase of farms in Georgia is due to the continuous sub-division of the old plantations in order to furnish small farms for the late slaves and the 'poor whites' of that region. The same cause is operating, with great force, all over the South, and this it is which has brought about that reduction of the average size of farms in the United States from 153 acres in 1870 to 134 acres in 1880, which arouses such prodigious wrath on the part of Mr. George."

It is a very pleasant theory that the old plantations in the South are being sub-divided in order to furnish small farms for the late slaves and the "poor whites," and it would be still pleasanter if it involved any presumption that they were getting these small farms as owners and not as rack-rented tenants. But, unfortunately, while it is not borne out by any information from the South that I have been able to get, it is absolutely disproved by the census returns. Professor Walker parades, as though it were proof of this sub-division of plantations, a table giving

the total number of farms in nine cotton-growing States in 1870 and 1880, which shows a large increase in the number of farms; but he very prudently neglects to specify the classes in which this increase took place. He could not have done this without showing to the eye of the reader that, instead of a continuous sub-division of the old plantations, the general tendency in those States is to an increase in the size of farms. Whoever will glance over the census returns by specified classes will see that, whereas there was in the decade ending 1870 a striking decrease in the number of large farms, and a striking increase in the number of small farms, yet in the decade ending 1880 the striking increase is in the large farms, and the striking decrease in the small farms. If old plantations are being cut up, then new plantations in greater number are being formed; for in all these States the most striking increase is in the larger classes. The farms having 500 and 1000 acres, and over 1000 acres, are in all these States much more numerous in 1880 than in 1870, and even much more numerous than in 1860.

The following table, drawn from the census reports, shows the number of farms of each class in the nine States referred to by Professor Walker—viz., Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas—for the last three censuses:

NUMBER OF FARMS IN COTTON STATES BY CLASSES.

Class.	1860.	1870.	1880.
I.—Under 3 acres.....	No returns	2,053	1,308
II.— 3 to 10 "	11,248	47,088	36,644
III.— 10 to 20 "	37,494	101,272	111,111
IV.— 20 to 50 "	123,977	223,444	277,112
V.— 50 to 100 "	101,576	124,852	229,006
VI.—100 to 500 "	112,193	91,370	410,066
VII.—500 to 1,000 "	11,976	6,407	37,843
VIII.— Over 1,000 "	3,557	1,500	17,394

These figures show that the movement in these nine Southern States was in the last decade the reverse of the movement in the previous decade, and was to the increase, not to the decrease, in the size of farms. This will be even more strikingly shown to the eye of the reader by the following table, which exhibits the percentage of increase or decrease in each class for the decade ending 1870 and the decade ending 1880:

PERCENTAGE OF CHANGE IN NUMBER OF FARMS IN COTTON STATES.

Class.	1870. Per cent.	1880. Per cent.
I.—Under 3 acres..	No returns for 1860	31 decrease
II.— 3 to 10 " ..	319 increase	22 "
III.— 10 to 20 " ..	170 "	10 increase
IV.— 20 to 50 " ..	80 "	24 "
V.— 50 to 100 " ..	23 "	77 "
VI.—100 to 500 " ..	19 decrease	349 "
VII.—500 to 1,000 " ..	47 "	491 "
VIII.— Over 1,000 " ..	58 "	1,060 "

In the face of this exhibit, what could be more preposterously false than the census declaration, reiterated by Superintendent Walker, that the average size of farms in these States decreased in the last decade, and decreased almost as much as in the previous decade!—viz., 32 per cent. in the decade ending 1880, and 42 per cent. in the decade ending 1870!

It is a work of supererogation to show in further detail the utter incompatibility of census figures with census conclusions; but inasmuch as Professor Walker calls attention to the three States of Connecticut, New York, and Georgia, let us follow him on the ground he has selected, and look briefly at the returns for these States. We shall see that they too utterly disprove the census conclusions.

For Connecticut the census totals give:

CONNECTICUT.

	Total acreage.	Number of farms.	Average size of farms.
1870—	2,364,416	25,508	93 acres
1880—	2,453,541	30,598	80 "
Increase ...	89,125	5,090	13 acres decrease

Now let us see how this averred reduction in average size of farms from 93 to 80 acres is borne out by the returns of increase by classes. These show:

CHANGE IN NUMBER OF FARMS IN CONNECTICUT, DECADE ENDING 1880.

Class.		Change in number.	Change per cent.
I.—Under	3 acres.....	37 decrease	52 decrease
II.— 3 to	10 "	545 increase	32 increase
III.— 10 to	20 "	310 "	10 "
IV.— 20 to	50 "	145 decrease	2 decrease
V.— 50 to	100 "	569 increase	8 increase
VI.—100 to	500 "	3,725 "	64 "
VII.—500 to	1,000 "	107 "	412 "
VIII.— Over	1,000 "	16 "	1,600 "

Net increase in farms under 100 acres 1,242
Increase in farms over 100 acres 3,848

Could anything more conclusively disprove the assertion of reduced average?

Take now New York. The census totals give:

NEW YORK.

	Total acreage.	Number of Farms.	Average size of farms.
1870—	22,190,810	216,253	103 acres
1880—	23,780,754	241,058	99 "
Increase..	1,589,944	24,805	4 acres decrease

Turning to the tables of specified classes, we find the increase has been:

CHANGE IN NUMBER OF FARMS IN NEW YORK, DECADE ENDING 1880.

Class.	Change in number.	Change per cent.
I.—Under 3 acres	298 increase	414 increase
II.— 3 to 10 "	1,537 "	12 "
III.— 10 to 20 "	916 decrease	6 decrease
IV.— 20 to 50 "	14,495 "	26 "
V.— 50 to 100 "	3,295 "	4 "
VI.—100 to 500 "	49,325 increase	72 increase
VII.—500 to 1,000 "	1,106 "	542 "
VIII.— Over 1,000 "	245 "	681 "
Net decrease in farms under 100 acres		16,871
Increase in farms over 100 acres		41,676

In the face of these figures, will Professor Walker assert that the average size of farms in New York has decreased from 103 acres to 99 acres?

Now, let us take the case of Georgia, in which Professor Walker dwells, as the typical Southern State.

The census totals give:

GEORGIA.

	Total acreage.	Number of farms.	Average size of farms.
1870—	23,647,941	69,956	338 acres
1880—	26,043,282	138,626	188 "
Increase..	2,395,341	68,670	150 acres decrease

From the table of specified classes we find the increase to have been:

CHANGE IN NUMBER OF FARMS IN GEORGIA, DECADE ENDING 1880.

Class.	Change in number.	Change per cent.
I.—Under 3 acres	No return for 1870	
II.— 3 to 10 "	147 decrease	4 decrease
III.— 10 to 20 "	1,752 increase	25 increase

Class.			Change in number.		Change per cent.	
IV.— 20 to	50	acres...	14,553	increase	66	increase
V.— 50 to	100	" ...	7,683	"	41	"
VI.—100 to	500	" ...	56,145	"	206	"
VII.—500 to	1,000	" ...	5,511	"	365	"
VIII.— Over	1,000	" ...	3,702	"	733	"

After verifying these figures, will Professor Walker again assert, on the authority of the census, that during the last decade there has been a gain of about 10 per cent. in acreage, and almost 100 per cent. in farms in Georgia, and that the average size of farms has been reduced from 338 acres to 188 acres?

It is, of course, manifest in the case of Georgia as in the cases of Connecticut and New York, and of the United States at large, that the real movement has been in the other direction—to the large increase instead of to the reduction of the average of farms. If we endeavor, from the data which the census gives us, to work out some approximation to the true average, our first step will be to ascertain what averages in the various classes reported for 1870 will give the total acreage for that year. The moment we attempt this we run against an astounding fact. The figures I am about to give I expressly commend to Superintendent Walker, but I request him to remember that it is he, not I, who is responsible for them. What has he to say to the fact that, in order to make the acreage of the farms returned for Georgia by specified classes for 1870 correspond with the total acreage given for that year on which his calculation of average has been based, *it is necessary to assume the very highest limit of each class as the average of that class, and even then to assume the average of the class over* 1000 *acres to be* 24,558 *acres*?

Here is the tabulation:

FARM ACREAGE OF GEORGIA, 1870.

Total farm acreage of Georgia for 1870, as given by the Census Report	23,647,941
Total number of farms	69,956

ACREAGE BY SPECIFIED CLASSES.

Class.				Average acreage.	Number of farms.	Acres.
II.— 3 to	10	acres	....	10	3,257	32,570
III.— 10 to	20	"	....	20	6,942	138,840
IV.— 20 to	50	"	....	50	21,971	1,098,550
V.— 50 to	100	"	....	100	18,371	1,837,100
VI.—100 to	500	"	....	500	17,490	8,745,000
VII.—500 to	1,000	"	....	1,000	1,506	1,506,000
VIII.— Over	1,000	"	....	24,558	419	10,289,802
					69,956	23,647,862

After this, it would be wasting space and time to go further. Whoever wants to figure out what, at this rate, has been the increase of farm acreage in Georgia during the decade, or what was the average in 1880, may do so. The Census Report offers opportunities for much amusing arithmetical exercise; but save for this purpose, it is evidently not worth the paper on which it is printed. I have conclusively shown its utter unreliability, both as a whole and in its parts, and with this, must decline further controversy.

HENRY GEORGE.

NEW YORK, June 15, 1883.