does it include the manufacture of glass and porcelain ware made expressly for electrical purposes, that of bare iron and copper wire, or any of the group of electrochemical and electrometallurgical products. The total number of establishments in the United States in 1909 engaged in the manufacture of electrical machinery, apparatus and supplies, was 1,009. The total number of persons engaged in the industry was 105,600, of whom 102,950 were wage earners. The total capital employed was $267,844,432, and the total value of products was $221,308,563. The industry in 1909 was largely centralized in the six states of New York, Pennsylvania, New Jersey, Massachusetts, Illinois and Ohio. These states together reported 83.9 per cent. of the total average number of wage earners, 82.6 per cent. of the total value of products and 83.1 per cent. of the total value added by manufacture.

UNIVERSITY AND EDUCATIONAL NEWS

The Graduate College of Princeton University was formally dedicated on October 22. Professor Andrew F. West, dean of the graduate school, made the principal address, his subject being "The Household of Knowledge." Addresses of congratulation were made by Dr. Alois Riehl, professor and former rector in the University of Berlin; Dr. Arthur Shipley, master of Christ's College, Cambridge; Dr. Arthur Denis Godley, fellow of Magdalen College and public orator in the University of Oxford; M. Emile Boutroux, honorary professor in the University of Paris and president of the Foundation Thiers, and by President Nicholas Murray Butler, of Columbia University. The Cleveland Memorial Tower was then presented by Mr. Richard V. Lindabury, president of the Cleveland Monument Association, and accepted on behalf of the university by President John Grier Hibben. A memorial address on "Grover Cleveland" was then made by ex-President William Howard Taft. Earlier in the week the foreign guests gave public lectures, the subject of Dr. Shipley's address being "The Origin of Life."

Dr. Christian B. Holmes has been appointed dean of the medical department of the University of Cincinnati, succeeding Dr. Paul G. Woolley.

At the University of California, Frank LeRoy Peterson has been appointed assistant professor of farm mechanics, and Dr. Max Morse, instructor in physiology.

Charles T. Kirk, Ph.D. (Wisconsin, '11), has been appointed professor of geology in the University of New Mexico.

Miss Fanny C. Gates, formerly head of the department of physics at Goucher College, has been appointed dean of women and professor of mental and physical hygiene in Grinnell College.

Mr. George R. Johnstone, A.B. (Illinois, '13), has been appointed instructor in botany at the Michigan Agricultural College, making four instructors in addition to professor and assistant professor, who give the full time to instruction in botany, with two research assistants giving a quarter of their time respectively to plant pathology and plant physiology. Five hundred and twenty-one students have registered for work in the botanical department, being an increase of twenty-five per cent. over last year.

Mr. William C. Willard, C.E., M.Sc., Lehigh University, has been appointed assistant professor of railway engineering at McGill University, Montreal.

At Birmingham University Dr. F. C. Lee has been nominated to the chair of civil engineering vacated by Professor S. M. Dixon. Professor P. F. Frankland, F.R.S., has been elected dean of the faculty of science in succession to Professor Dixon.

DISCUSSION AND CORRESPONDENCE

COMMENTS ON PROFESSOR BOLLEY'S ARTICLE ON CEREAL CROPPING

It is now rather late to refer to Professor Bolley's article on "Cereal Cropping," published in Science on August 22, but I can not refrain from calling in question his statements in regard to the deterioration in the quality of wheat grown on soils which are "exhausted"

or "sick." The question of yield I shall not touch upon further than to say that the only instances which have come under my observation where a total crop failure has occurred (and which could not easily be accounted for by weather conditions or attacks of recognized diseases, insects, etc.) have been on *new* lands.

It is certainly a common idea of millers that the quality of wheat has steadily deteriorated in most localities where it has been grown for many years; but one can not be expected to receive as conclusive a popular opinion unsupported by evidence. As Professor Bolley says, "In late years there has been a vast amount of talk about cereal crop deterioration" both in regard to quantity and quality. But "a vast amount of talk" is one thing, and scientific proof quite another.

He asks:

> Why is it that fertile wheat lands do not produce wheat of reasonably normal quality?

Further on he refers to

> the evident rapid deterioration of the quality of grain which invariably accompanies the first few years of cropping upon the new land areas. Indeed, in some of the newer great wheat-producing regions the most fertile new lands do not produce wheat now either in yield per acre or in quality similar to that which adjoining lands did when first put under wheat culture. Commonly, the new lands at first, even though of light texture, and of low chemical fertility, are expected and usually do produce grain above the ordinary average as to quality in color, form and milling texture, but, very soon, the yield per acre and the quality drops off to such extent that the millers complain bitterly.

Again he refers to the "low yield and invariable deficiency in quality." Further on occur these words:

> In spite of these directions [by our best agriculturists] the wheat soon becomes soft and shows all of the peculiar characteristics which we find named in the literature of the chemical laboratory, or in the milling tests of wheat as previously indicated, "white-bellied," "piebald," or shrivelled, bleached and blistered, "black-pointed," in fact all the qualities of deteriorated grain.

Where farm manure is applied, he says:

> There may be increased yields, with vital deterioration in quality of seed produced.

I am not sure of the exact meaning of the word *vital* in this case, but presume that it means *hereditary*.

I hope I am not one of those who are "too cocksure of their scientific principles," but I certainly disagree with Professor Bolley and venture to bring forward a little evidence for my views.

It is a fact that "piebald" or "yellowberry" wheat, which is counted of poor quality by millers because of its softness, is often produced (in Canada) on newly cleared land. Some years ago when searching for very soft (*i. e.*, low grade) wheat in Manitoba, I was obliged to go to new land, on which the first crop was being raised. There I secured an extremely poor (though plump) specimen of Red Fife wheat, so soft that an ordinary miller would almost refuse to buy it. That this is a common occurrence is proved by a large number of examples, and I venture to say that every careful student of wheat in Canada will agree with me on this point. I have never seen any wheat grown on old land, in the great spring-wheat areas of Canada, as soft as some of the samples from new lands. Without being able to quote specific proofs, I believe it is true that these new lands gradually by cultivation become altered in their texture so as to produce wheat of harder grade, *i. e.*, superior wheat from a miller's point of view. In other words the actual process is one of gradual improvement and not of degeneration. I believe that the popular idea of "degeneration" (which is prevalent in eastern Canada) is due, in so far as there is any truth in it, to the farmers growing inferior varieties, which are supposed to give larger yields than Red Fife when grown on partially exhausted soil.

That wheat is not growing poorer in quality on this farm or in the Ottawa Valley is clearly shown by the excellent samples produced this season, and indeed in most seasons since 1902, which was a soft wheat year. If there is any tendency to gradual change it seems to be in the direction of improvement. I fully expect,

however, that when a suitable season for the production of soft wheat occurs again, the crop will be quite as soft as in 1902.

A careful series of milling and baking tests of wheat from highly fertilized and exhausted soils (or soils on which wheat had been grown repeatedly) was made by me a few years ago. These results have not yet been published, but they prove, in so far as one series of tests can prove anything, that there is no essential difference in flour quality between samples of wheat raised under the two extreme conditions. I have not seen any trustworthy evidence whatever that wheat grown on poor soil (whether "exhausted" or "sick") is inferior for milling and baking purposes to that grown under more favorable conditions, except as regards plumpness, and even there I am not at all sure that the smaller crop from poor soils is as a rule distinctly less plump. I suspect that the lower yield, which is, of course, obtained, is due essentially to a smaller number of kernels rather than to imperfect development of them.

I hope that Professor Bolley will find time to give to the public some of the evidence on which his statements are based, especially the milling and baking tests, and some instances of "vital deterioration in quality of seed," due to manuring.

Chas. E. Saunders

Experimental Farm,
Ottawa, Canada,
October 8, 1913

"QUITE A FEW"

To the Editor of Science: The criticism of T. G. Dabney, in Science of September 5, of the phrase "quite a few," used by Professor Bolley in his paper in Science of July 11, is calculated to excite a surprise among his readers equal, probably, to that which Mr. Dabney himself feels towards Professor Bolley. But "quite a few" conveyed Professor Bolley's meaning perfectly, and, for myself, I can not think of a satisfactory equivalent that could have been substituted. *Quite a number* is a phrase sufficiently commonplace, probably—if it had been used—to have escaped Mr. Dabney's eagle eye, but is no more precise. What more can an essayist ask, and what can a reasonable critic object to, if a writing is so worded—albeit slightly colloquial—that its meaning is taken instantly?

If purists are to pounce on all our colloqualisms whenever they happen to be found isuing "from a learned teacher, in a scientific disquisition in a scientific journal" and articles are to be reduced to the cast-iron requirements of such critics, then the readers thereof will lose some valuable time. For it takes time to get the meaning of a thoroughgoing pedant. What should be said, for instance, of the phrase "pretty nearly," which is *pretty* common, I believe, among good writers? "Pretty" refers to the looks of a thing. Would anybody say that "pretty nearly" must be taken to mean *nearly pretty?* Then there is "Now then," a favorite phrase of lecturers introductory to the elucidation of some point just previously dated. If it means *now,* Mr. Dabney might say, it can not mean *then.* Take the word "scientist," which is admittedly a barbarism and one that has been fought against for forty years, yet sticks in the language like a burr, because of its usefulness—what are we going to do with that? Why, use it, of course, and snap our fingers at etymology and consistency, for it takes the place of three words and can not possibly be misunderstood.

The fact is, the English language defies argument. Vagrant words, phrases and sentences, illogical and intolerable at first, are every now and then creeping into usage and refusing to be turned out. In the beginning they may excite loathing, then they are simply frowned on and avoided whenever possible—though often through considerable circumlocution—but in the end they become "good English." And the chances are that some day we are astonished to find some of them in Shakespeare—like "a bum bailiff," for example, which he who looks for will find there.

The meaning to be conveyed is the desideratum above everything else. That may be developed with much labor, in sentences always capable of parsing and always logical, or the writer may show a little more elasticity