

whose name is practically forgotten today, because, although a genius at invention and technic organization, he was not a learned nor political sort of man, took but one patent apparently¹⁰⁸ and published nothing. But today inventions of such importance would be reflected in hundreds of articles (and indeed there were many published notices of western steamboats, etc.). To a considerable extent, as we have said, our data reflect the advance of invention in scientific character, organization and expression in print, rather than the advance of invention *per se*. That the counts of scientific and technic articles, which should reflect this most strongly, present the gentlest slopes, is explainable by military secrecy of late, and by a probably falling ratio of inventive success to effort (§ 83). The laboratory staffs, which might come nearest to measuring invention proper, parallel our general average, but leave out the laboratories' growing supplement of subprofessional personnel (§ 58).

[92] Five of our six Abstract series show an especially swift rise at the start, probably reflecting enlarging coverage and possibly explaining the upward bulge of 1895-1920 in the combined Abstracts count (chart 4).

[93] To measure or evaluate the lower-level inventing would be obviously desirable, but difficult (save as it is included incidentally) just because it is less published, and its authors often obscure men. Still a vast amount of lower and lowest level invention *is* reflected in our indices, because it is an inescapable preoccupation of all laboratories, article writers, and inventors—scientific or not—to perfect their work in every detail.

[94] One of the lowest types of invention has been lately statisticized, in the inventions and other suggestions accepted by employees' suggestion systems, on which there is considerable recent accounting.¹⁰⁹ Data from 235 companies and Government offices, with 6.4 million employees, reported 1,686,265 suggestions from 319,084 employees, of which 435,774 suggestions were accepted, 26%, and rewarded with an average of \$33.49, the highest one receiving only \$12,475. Scarcely any of the accepted suggestions were patented, say 1 in 1,000.¹¹⁰ The estimated savings in the first year of use were \$20 million.¹¹¹ While a large part of the accepted suggestions are not inventions, we still see here a flood of lowest-order invention, which is neither rewarded with nor motivated by patents, and which has little direct connection with publication nor with any of our indices (§ 57).

[95] Having confessed that our graphs on the progress of invention and research, above all the organized and scientific type, have not so much to do with the lowest grade of invention, which is still important today and was relatively more so in past generations, we shall next observe that *patents* likewise have been growing more scientific, chemical often, lengthy, and their inventions oftener utilized (§ 116), though modern patents are not so successful in court. Patents too, as we just said, have little to do with low grade invention today. Their improving quality, enforced by courts and Patent Office, is one explanation for the precipitous decline in their count, relative to swift rising invention. So there is not so much unfairness when our statistics compare especially the modern, scientific type of inventing, with the modern, increasingly scientific sort of inventions that are patented today. But although patents have risen in scientific quality, they may