

ing.”⁵⁵⁸ Nicholson⁵⁵⁹ considers the method too round-about, time-consuming, and requiring more abstract thinking than most people are capable of. (§ 620, etc.)

[594] CHANCE, luck,⁵⁶⁰ is a factor that seems to intrude pervasively; indeed every clever step seems to depend on happening to think of something, and every failure to put together the sufficient and known elements seems a case of bad luck. But as with all games of chance, in the long run of a lifetime the chances are evened out by multiplicity, and competence of mind, equipment and effort are sufficiently assured their reward; i.e., in the long run lucky accidents happen to the right people. For illustration, take an accident that has happened to each of us—we saw a bottle fall from a table to the floor and not break. What did this accident teach us? *Nothing!* But when a like accident happened to Pipkin it taught him an invention worth, say, a hundred millions, one by which, like as not, you are reading these words—the inside frosted bulb. Why such a difference. when this ever recurring accident happened to Pipkin? It was because he was a Ph. D. working with assistants in a laboratory for 3 years by then, trying to learn just what the accident taught him. His mind was prepared for the revelation, and so was the stage. That bottle was no ordinary one, but a light bulb, filled with dilute hydrofluoric acid, one of countless such that his laboratory team had been stubbornly trying, to find one that would be thin, and etched inside, yet remain strong enough.⁵⁶¹ The accidents that matter happen to those who deserve them. This is why patents are granted for invention that seemed to require a lucky accident, but refused to those requiring only logical thinking (§ 162, 206).⁵⁶²

RETURNING TO THE LOGICAL

[595] After all these nonlogical methods, or psychological hocus-pocus, for getting the hog-tied human mind to find out the rational solution for a problem, we turn back to our usual recourse in science, strictly logical reasoning. We have been considering since § 557 the very many cases where the logical method had failed. But it would not have to fail so often, if our scientific understanding were better. The laws of science, however certainly proved, are apperceived in our mind, and phrased in English, in ways that may mislead us.

[569] For instance, Claude said (ftN 539, p. 180), it is a well-known “law” or “fact,” that copper is a good conductor. Yet it is the most perfect *non*conductor, under some conditions. Again, Linde⁵⁶³ proposed a certain liquid air process, but ruled it out because the lubricant would freeze. Claude reading this at once said to himself: “It won’t freeze if it isn’t freezable.” So he cast about, picked out petroleum ether, and with it made the process useful. Then he showed the same liberated mind in using concentrated sulfuric acid as the lubricant for liquifying chlorine. Still another example, which suggests how an electronic machine, and/or Ruly English, Esperanto, or an artificial “philosophical” language might be brought to bear, or simply more carefully formulated science. Any informed person would say

⁵⁶¹ To be sure, the same process had been twice found before (a second treatment with more dilute acid, to round the sharp angles of the etching) but by inventors who did not realize its usefulness for a light bulb. Bright, N 229, p. 327.