to fight with. Our experiences in the courts have indicated that we did not overestimate the money needed." [280]

[274] A yet worse instance is that of Domagk, who in the 1920's made the accidental discovery that a family of azo dyes had bactericidal power. His company, I. G. Farben, clamped on secrecy for 5 years, until they could find something good to patent, Prontozi. Promptly on publication researchers in three other countries not only broke the patent, but perfected better drugs, the sulfa family. From that 5-year delay caused by the competitive invention system, millions of men may have died, and the present writer lay at death's door, with a ruptured appendix and no sulfa drugs, in 1926.[281]

[275] A patent protects only the details which it explicitly claims, or which are not practically usable without the protected elements. It is supposed by law to tell everything needful to work the invention in the best form known to the inventor at the time of application, but this requirement is frequently violated,[282] and does not cover even legally all of know-how.[283] Furthermore, patents are often written as incompletely and obscurely as can get by, as we said before (¶ 164). And in all cases the inventor gets further ideas, both before and after his application, beside those put in the patent. So there is commonly a mass of know-how that is needed to complete a patent; and this is often held more or less secret, and sometimes sold, with perhaps instructors furnished, when a patent is licensed. The latest study [165] of assigned patents finds that know-how was a necessary supplement to half of them.[284] We shall later (¶ 419, 482–4) consider sold know-how as a distinct substitute for the patent system.

[276] Furthermore, the prospect of patenting forbids all publication more than a year before the date of patent application, since that would bar a patent; and to keep on the safe side discourages all publication before the patent's issue and even longer, until all the developments, bearings, useful hints that the inventor or his rivals might derive from the invention, have been worked out and either found of small value or patent applied for on them, as Melman says.[285] Publicity is not always harmful to a new patent interest; it may be helpful; but it always involves dangers too.

[277] We have here to deal with two separate though related institutions: the patent system, and competitive, commercial enterprise. The former certainly combats secrecy when and where patents work; but we see great shortcomings from what it *might* do, particularly through delays. The defects of patents as conveyors of publicity are due not to patents as such, but to delays and to the competitive commercialism back of patents. When and as published, they may be said to reveal much and conceal nothing; but the commercial rivalry back of them may conceal a host of details and scientific knowledge not patented nor patentable. That underlying competitive institution almost inevitably favors secrecy for all its production methods and knowledge, and publicity only where it is selling or buying something of the public. The shortcomings of patent divulgation could be alleviated in various ways to be discussed. The close-holding tendency

[280] Fred C. Kelly in his authorized biography *The Wright Brothers*, 1943, 340 pp., confirms their avoidance of early publicity, but in correspondence doubts the quoted statement, and points out that they sued in 1909, with less than that money, but promptly after incorporating. The quotation is from an editorial in *Outlook* 106: 607, 1914. Their patent was applied for Mar. 23, 1903.