

practically, has it been done and but sparsely and weakly as yet. To be sure, the motive to teach a science or art is proportional to its development, perfection and power. But how does it acquire these? By being studied, taught, and used.

[613] Teaching specifically to invent is as yet almost confined to engineering staffs in a few great corporations. Instruction in chemistry, physics, and other sciences in graduate schools has long been better handled than with engineering (almost always undergraduate), through paying more attention to the methods and supreme value of discovering things, so that here less need is felt for separately teaching origination. But Kubie⁶⁰⁹ points out that most people trained in graduate schools of science never become fully creative scientists. Children are full of free-ranging imagination, but the repressions of society, the drill and grill of schools, or masked neuroses, rub it out of most of us, sooner or later, usually sooner. We may hope that in all the sciences, as well as in engineering, the same logical course can ultimately be followed, of first identifying and separating out the creative from those more fitted to be routine practitioners, administrators, teachers, or salesmen, and then training the creatives in the art of Discovery.

[614] Due to the inspiration of Osborn's "principle of deferred judgment"⁶⁴⁷ (§ 584) and the psychological studies, efforts to teach creativity in general, and in artistic and less scientific lines, have become widespread lately. Guilford in 1958 wrote,⁶¹⁰ "I have been told there are about 2,000 courses [in creativity] being offered in universities, in industry, and in governmental agencies." The number seems questionable; and most university students in such a course would be far removed from real, economic invention or scientific discovery, especially if the enrollment were open to any student looking to fill up his time card. As Guilford says, how much creativity can be carried over from one field, say art, to a very different one, say chemistry, is a classic difficult question, and would depend on the teacher, to show art as a part of living in general. But heightened creativity could serve many other good purposes beside invention proper. General courses have been offered notably in the Universities of Buffalo, Boston, Minnesota, Nebraska, Drake, Northwestern,⁶¹⁶ and the Industrial Relations Center in the University of Chicago.⁶¹²

[615] For important advancement of technology or science we should first find candidates of most potential for such a course. Much has been learned about how to test people for creativity; e.g., by the AC Test for Creative Ability⁶¹³ devised and used by GM. GE has tried all sorts of tests, and found best a true account of boyhood inventions.⁶¹⁴ Next best was familiarity with a wide variety of machines, because a man picks up such information as interests him.

[616] In the teaching of invention proper GE has been the leader. They began in 1937 with a system of apprenticing engineering graduates to able inventors, then moving them through departments, giving instruction in sketching, graphics, materials and methods of manufacture, and having the student carry through a big personal,

⁶¹² A 10-session course took up the psychology of creativity, brainstorming, checklists, analytical techniques, getting one's idea accepted, and started each student on a problem from his own business. Renck & Livingston, N 613.