

Perhaps the idea has been successfully modified to teach some originality in these fields. More anon anent it in the next chapter (§ 616-9). In any case something of the sort is practiced in every laboratory, in the discussions within project teams, both stimulating⁵⁵⁰ and informative, and in talks with any person thought likely able to help from his special knowledge. Criticism,⁵⁵¹ which the brainstormers consider so withering to imagination, is presumably less so in circles professionally devoted to origination.

[586] Our last normal recourse for getting the best of both worlds, evoking free imagination from a brain well stored with useful items and bad habits for their interconnection, is one regularly acclaimed by the students of the subject. This is to rest the conscious, and invite unconscious cerebration to do the job. It is particularly called for when, after long-continued, avid, tense striving for a solution, characteristic of good inventors, involving the emotional drive which was found necessary even for problem-solving by chimpanzees,⁵⁵² the mind has become weary and exasperated, and does nothing but ever recur to the same old plans for combination.⁵⁵³ The inventor or scientist should here stop, drop it all, and engage in any recreation, go to bed, do household chores, shave, converse, almost anything that is not hard, wearisome, nor vexatious. A sudden inspiration may come; or if it does not he may turn to other tasks for days or months. Sooner or later, if he is lucky and has "done his homework," then all of a sudden, in the midst of the light activity or sleeping, or likeliest of all on awakening, he finds that he has the solution, or a good new try at it, pretty fully formulated.⁵⁵⁴ Like leprechauns his unconscious thinking has done the work for him unbeknownst, save that occasionally he feels a premonition of imminent success. Now exhilarated, he fastens it down clearly on paper, and feels a happy relief, of victory won, but proceeds to test everything with conscious, critical mind, and may well find errors. Half of research men "purposely use some means to create conditions favorable for scientific hunches."⁵⁴³

[587] Dreaming is the time when the subconscious mind is most open to examination, and we know the exuberant, illogical fancy of dreams, and yet how they follow and work out the strongest emotional drives of the daytime, conscious mind. So in sleep, or much oftener at other times of light, extraneous activity, the subconscious or as Usher⁵⁵⁷ would say the less disciplined and more emotional mind, works out for the inventor a solution, provided there be present the mental capacity, the needed elements assembled by study, and the emotional drive to keep turning the kaleidoscope and watching for the right combination.⁵⁵⁴

[588] The much desired solution, often called inspiration, hunch, intuition, or insight, may owe its success to release from the trammels of habit, as with Columbus' egg, or to the inclusion of a new element never thought of before, as with Watt's separate condenser, or to a

⁵⁵¹ "With true creative thought, ideas are never thought of as right or wrong, but merely accepted as ideas." Reed, E. G.: *Developing Creative Talent*; *Mach. Des.* 26: 142-6, Nov. 1954.

⁵⁵² But Purdy finds a favorable effect from fatigue and pressures. Probably this means that sometimes the emotion of exasperation leads to wide leaps from the logical, provided there is enough pressure to continue despite fatigue. N 617.

⁵⁵³ Ives said that his great half-tone invention came in his sleep, and appeared complete as if projected on the ceiling when he awoke. Banting's insulin came similarly; and Archimedes' *Eureka!* bath is a familiar instance. Platt & Baker, N 543, its p. 1979.