

tice some recommend for inventors, have definite artistic interests, do not spend much time outdoors, and do not believe in a life hereafter.⁵⁸⁵ Roe says⁵⁸⁶ that productive scientists "have a dislike for introversive and affect-associated preoccupations, except for their own research. They have a liking for the calculated risk, but it must involve nature, not people, and must not depend on simple luck. * * * They dislike interpersonal controversy." * * * Creative people in general are observed to have strong sexuality, like other introverts, but late developing among scientists. An esthetic sense is common, and schizothymic and neurotic traits are not rare, nor necessarily hurtful.⁵⁸⁷ Offishness is common.⁵⁸⁸ Guilford,⁵⁸⁷ our leader for theory, seeking always to identify typical traits by factor analysis, finds in creative people a tolerance of ambiguity, willingness to accept some uncertainty in conclusions and categories, and divergent, alternative solutions. They show, too, flexibility, originality, perhaps a preference for novel ideas, though he found no proof of unconventionality; and they have fluency in expressing and getting ideas. The Air Force found its creativity best correlated with Guilford's tests for sensitivity to problems, ideational fluency, and originality.⁵⁸⁹ MacKinnon⁴⁰⁷ found the scientists and the patenting inventors in the same laboratories to be similar in most psychological traits, but markedly distinct in their personal "research styles," the inventors being more social, and quick with improvisations, the scientists more opinionated, methodological, and immersed in a scientific tradition. In a later study MacKinnon⁵⁷⁹ found his 45 scientists on R&D, largely engineers, physicists, and Ph. D.'s, 12 foreign born, to be strong for the theoretic and the esthetic. They did not rank high on the concept mastery test, which depends on the rapid comprehension of abstract words: they scored 94.5 versus 156 for creative writers, creative architects 113, undergraduate students 102, engineering seniors 80.4, military officers 60.3. The most highly creative of these scientists preferred, like artists, complicated, asymmetrical drawings to simple, symmetrical ones. *All* of them were less inclined to sensation of reality, than to intuition of deeper meanings that might be present, compared to 86% of the less creative, 59% of the better engineering seniors, and 25% of the general population. In a test for introversion/extraversion the more creative were 67% introverts, the less creative 60%. The creative came from unhappy homes and would not imitate their fathers.

[605] Physical scientists in general have an average social class origin which though well above the national mean is not so high as that of the social scientists, and still less that of the humanists. Knapp⁵⁹⁰ finds one-third of their parentage in non-white-collar occupations, another three-fifths from the lower middle class, and only 9% from the upper middle and higher class families. Requiring no capital, provided the education can be obtained somehow, nor connections, culture nor social graces, today science and engineering, like thievery, are *la carrière ouverte aux talents*. Stein⁵⁹¹ even found among 46 industrial chemists that the more successful had the lower status of parents, an extraordinary reversal of the usual. However, Van Zelst & Kerr⁵⁹² found scientific productivity well correlated with disbelief in equalitarian practices.