PERSEVERATION AND PERSONALITY: SOME EXPERIMENTS AND A HYPOTHESIS.

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I. INTRODUCTION.

So far the attempts to relate measurements of perseveration empirically to types of personality, whether in the normal or the psycho-pathological field, have not given rise to such coherent results as might lead to any comprehensive general hypothesis.

Broadly, it is true to say that perseveration shows an appreciable negative correlation with strength of character—" w "—and that, over and above this, extremely high or low perseverators tend to be of poor character, as Pinard and the present writer have shown (6, 2). Both these investigators have also attempted to find the traits which distinguished the character abnormality of high perseverators from that of low perseverators (7, 2), but the resulting lists of character traits are related to no known type, and lead to no intelligible explanation regarding the manner in which perseveration might give rise to them. Stephenson's measurements upon psychotic subjects, though they are significantly different for various groups, likewise fail to relate themselves to the main classifications of mental disease in such a way as to connect perseveration with some general trend of personality (10, 11).

Countless observations have convinced the present writer that it is entirely wrong to connect high and low perseveration with introversion-extraversion, or, to be more precise, with surgency-desurgency (1, 2). The latter, which appears to constitute the true nucleus of qualities in extraversion-introversion, definitely relates itself to the measurable quality—" fluency of association " (2). On the other hand, a few qualities erroneously thrown in with surgency-desurgency to make up the composite picture introversion-extraversion do appear to be related to perseveration.

Some of the confusing indications with regard to perseveration correlates may be due to the low validity of the early perseveration tests. The validity and reliability of " p " tests is now clearly on the increase (9). Nor is there any further reason to doubt that they are measuring a definite group factor " p " in motor and sensory tests. No attention will therefore be given here to the sensori-motor " p " tests on which this inquiry is based. For their

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validity and reliability have been established elsewhere in a separate inquiry into the technique of " p " tests (4).

The aim of the present experiments was to make a more qualitative approach to the problem of distinguishing the personalities of high and low perseverators, since the quantitative and statistical approach has not yielded a complete solution.

II. Observed Differences in High and Low Perseverators.

Since the differences of high and low perseverators are evidently of a very subtle kind, the experimenter decided to use as subjects a number of relatives and friends who would be well known to him. Their age range was necessarily wide (19 to 60), but they were all of approximately the same intelligence and, with two exceptions, were occupied in work of a professional kind. It has been shown elsewhere (4) that age has little effect on " p "-score after adolescence. In the course of two and a half years, 52 persons—23 men and 29 women—were tested. They were ranked in order of total perseveration score (8 tests), and the topmost 10 persons were contrasted with the lowermost 10.

From prolonged observation of, and cogitation upon, the behaviour of these 20 extreme perseverators, the experimenter came to the conclusions that the following differences exist between the two groups :

Low Perseverators.	High Perseverators.
Prone to action in dissatisfaction. Masterful ; not afraid of a scene or hurting others' feelings.	Resigned, but sometimes seeking expression in tortuous ways. May be deceitful. Sometimes cruel or spiteful. Often self-denying.
Enterprising, though enterprises may often be dropped unfinished. Adventurous. Self-reliant. Sometimes naïve. Individualistic. Erratic.	Lacking in initiative in practical matters. Sceptical of their own success or anyone else's. Fail to carve out a career in any but safe conventional channels. Conservative in habits.
Irritable. Insistently assertive. Inclined to drive and lead others ; ruthless, readily bored by inactivity. Fussy.	More restful and quiet. Disposition more inclined to helplessness or to affection. Sensitive consideration for feelings of others. More thoughtful, imaginative and " deep " in general. More emotional, though emotion is not shown.
Greater span of consciousness evidenced in greater general alertness and intense awareness of environment ; seeming to suffer more under unpleasant stimuli. More alternatives held in focus in making decisions. Hence more quick to grasp full implications	Absent-minded. Impressed by one thing at a time. Drifting to decisions by going over matters again and again (owing to experience of their own weaknesses ?). Forgetful ; liable to slips and oversights. Sometimes making unbalanced emotional decisions.

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LOW PERSEVERATORS—*cont.*	HIGH PERSEVERATORS—*cont.*
of a proposition. Shrewder judgment in limited practical matters. More decisive, yet no difference of speed of decision was found when tested objectively. (Mean time of reply in answering twelve questions when the subject did not know he was being tested.) The correlation of "p" and quickness with 62 students was ·04 ± ·09). Powerful in argument. Tasteful if they wish to be. Self-composed.	Readily drop out things (unconsciously) to which they do not wish to attend.
Have definite taste (creatively) (as a result of above greater awareness and sensitiveness to a mass of stimuli ?). Never dowdy clothes and furnishings "follow through" in style. Intrinsic quality of things matters.	Lacking in taste. Sometimes dowdy or untidy and often ludicrously pretentious or inapt. Things not appreciated as a whole. Inclined rather to be affected by emotional and sentimental associations.
Practical and objective in thought. Considerably interested in detail. Fastidious about material things.	Dreamy and contemplative. Inclined to be careless and sloppy as regards detail.
Sure of themselves.	Much more sensitive and "touchy" regarding self-esteem. Easily resentful. Deeply wounded by chance remarks. Insecure.
Fond of an audience. Do things for effect. Strongest loyalties towards particular persons and groups of persons.	Work equally well alone; indifferent to an audience. Loyal ties not so intense and directed more to principles. Inclined to analyse things down to principles which are greatly reversed, but which may only affect practice spasmodically. Affections more dispersed.
Do not exhaust themselves in the service of a "cause". Put personal balance before anything else. Attention on themselves rather than the job. Put job aside easily when day is done. Fund of common sense and balance. Inclined even not to take things seriously enough, especially when young (irresponsible, playing the fool, lazy).	Over-serious. Use last atom of energy in things in which they invest energy. Sometimes opiniated. Lose sense of proportion. Emotional enthusiasms and fanaticisms, which they cannot drop when they want to.
In crisis of danger, difficulty or sudden deprivation, generally become overtly angry. Occasionally burst into (hysterical) laughter. Inclined to the view: "Laugh and be merry, remember, better the world with a song; Better the world with a blow in the teeth of a wrong."	In similar crises become more silent and depressed. Sometimes weep.

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Low Perseverators—*cont.*	High Perseverators—*cont.*
Moods take form of short periods of intense depression, which has a quality mainly of dissatisfaction and restlessness.	No sharp ups and downs, but slow, polymorphic changes of disposition, including periods of gentle melancholy disposition and temporary high cheerfulness.
Fonder of music, sometimes creatively musical.	Fonder of poetry and drama. Often definite absence of any interest in music.
Sex characters not obtrusive in personality. Lacking in sexual colouring.	Deeper sexual colouring. Whole personality more obviously masculine or feminine.
Fond of alcohol for its effect.	Indifferent to drink.

A comparison of these differences with those found independently in a preliminary and less intensive study of another group (2) may give some indication of the reliability of various items. The majority of the earlier distinctions are confirmed, though sometimes with a slightly different interpretation of the true origin of the behaviour. One of them, however, the supposed tendency for high perseverators to be busybodies, much interested in scandal, is found not to be sufficiently marked to warrant a generalization. Neither does the association of hysterical behaviour with low perseverators appear to be an invariable one. Of four people—all women—of whom there is a record of hysterical behaviour, two were in the low perseverators' group, one was among the moderate perseverators and one was just in the high perseverators' group. Three other women in the low perseverators' group showed not a trace of the hysterical constitution.

III. Discussion of Implications of Differences.

Of all these differences the most striking is the first one. Faced with Hamlet's alternative " whether 'tis nobler in the mind to suffer the slings and arrows of outrageous fortune, or to take arms against a sea of troubles and by opposing end them " the high perseverator chooses the first, the low perseverators the second. Among the ten low perseverators were (1) a girl who had run away from home and got a job because her parents (who were well-to-do) would not give her sufficient freedom ; (2) a husband who divorced his wife because they failed to get on together ; (3) a young man who had been sent down from college because he refused to obey regulations which he considered irksome and stupid ; and (4) two people who had insisted to their employers (at the risk of losing their jobs) upon certain changes being brought about in their work. Not a single instance of this kind occurred among the high perseverators, though there were equally intolerable situations and an equal amount of (half realized) dissatisfaction.

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The low perseverators are children of the morning, vital, impatient of discouragement, optimistic, sometimes apparently ruthless or naïve; the high perseverators are seemingly old, resigned, forbearing, willing to take things as they are. The low perseverators, of whatever age, possess a certain child-like freshness and gusto in their attitude to difficulties. In many ways one might summarize the difference by saying that the low perseverator is American in outlook, the high perseverator French.

With regard to item 5 above, it is interesting to notice that one or two observers thought that the 10 low perseverators must be of a higher social class than the 10 high perseverators. This was not true, either from the point of view of wealth or family culture or occupations of parents and grandparents. Yet undoubtedly there was a certain style, a certain poise and "aristocratic manner" about this group which readily gave such an impression.

On the other hand, when the whole group was divided up according to what slight differences of social status existed (of the individual and his home background) into three sub-groups, a clear trend emerged.

	Number of persons.	Average "p" score.
Highest social status	18	46·2
Middle social status	21	50·3
Lowest social status	14	57·7

If we now turn to our main point, the elucidation of the nature of the character deficiency which distinguishes the extreme low perseverators and high perseverators from the moderate perseverators and from each other, we encounter the indubitable fact that certain low perseverators and high perseverators are in no way lacking in character. The connection of "w" with "p" would appear not to be a necessary one. True, there was only one case of definite dishonesty and unreliability in the 10 moderate perseverators, whereas there were 3 individuals of marked unreliability among the low perseverators and 2 minor rogues among the high perseverators. Major character deficiencies are, however, hardly to be expected in a group of this kind.

In a previous group, in which "w" was estimated, it was simply found that "w" was, on an average, low for extreme high or low perseverators. Since "w" is a related group of traits varying together, it seemed unlikely that the character deficiency of high perseverators would be distinguishable from that of low perseverators, and the closest observation failed then to reveal any obvious manner in which these character deficiencies differed. One is almost forced to the conclusion that low and high perseverators are essentially the same individuals—individuals characterized by very high "p" variations—who would be one day in the low perseverator group and on another day among the high perseverators. Although we have definite evidence that "p" score varies for any individual over a clearly appreciable range from

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day to day, we have no evidence for such " planets " among the relatively " fixed stars " of the normal population.

Now the above classified differences between high perseverators and low perseverators do suggest how both may be lacking in " persistence of motive ", " reliability " and " tact "—the chief " w " qualities—and yet lacking in a different way. On the other hand, " steadiness of emotional mood ", " energy " and " freedom from wilfulness "—the remaining " w " qualities—do not appear to change in a parallel fashion as we pass from moderate perseverators to high perseverators on the one hand, and low perseverators on the other. This perseveration inquiry may, therefore, in passing, show that some of the " w " traits vary independently of others, accounting for the absence of high or complete correlation among " w " traits.

On the whole, the high perseverators rank low in " w " because they are lacking in drive, inclined to miss opportunities, and to fail to cut out a career for themselves commensurate to their abilities. They readily slip into protected backwaters and avoid toilsome struggles (compared to the median group, which is composed of people who, with one exception, have marked drive and tenacity). The only actual delinquencies registered against them, however, were two instances of deceitful roguery (which the individuals justified to themselves) and several cases of evasion of duty.

The low perseverators, on the other hand, were not lacking in drive, but lacked persistence (relative to the median group) because they took up enterprises without full thought about what they were doing and without seriousness. Their unreliability and tactlessness arose from " studied wilfulness ". We have pointed out above that " energy " does not apparently behave in a parallel way to the other " w " qualities in passing from median to low perseverators. But it must not be forgotten that the " energy " as estimated for " w " is energy in relation to the main life task. Energy would seem to decrease continuously in passing from low perseverators to high perseverators. But the energy of low perseverators is dispersed in all sorts of unimportant matters, and also invested in themselves in a narcissistic fashion. High perseverators rank low because they have little energy for any purpose ; low perseverators rank low because they try to have energy for every purpose.

The type of unreliability of the low perseverator group is particularly evident in the adolescent members who are headstrong, vain, openly (naïvely) selfish, and gaily irresponsible. Yet some of the older members (and the younger ones, when wisely educated) are practically the strongest characters in the whole group.

Curiously enough, these characteristics, which marked the life courses as a whole, came out very neatly paralleled in the matter of car driving (6 of the high perseverators, 5 of the moderate perseverators and 6 of the low perseverators were drivers). The high perseverators were rather slow and cautious in general, but occasionally given to erratic moments, absent-mindedness or

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poor judgment. In the past three years one had had a bad skid, two had knocked down cyclists, failing to observe unusual movements on the part of the cyclists; another, by failing to signal a turn, had caused an oncoming car to skid and overturn. The moderate perseverators had only two slight accidents (to themselves) caused by high speeds. Of the low perseverators (in the same period) two had been convicted for dangerous driving; another had crashed into a tree through speeding on a dark night. A fourth had had a serious collision at a cross-road. One of those convicted for dangerous driving had since crashed through the parapet of a bridge, on a quiet road. All in this group were hard and fast drivers, and generally very skilful and capable. They drove with accelerator pedal and brake, took risks, and averaged high speeds. Two drivers in this group had clear records, and were the best, safest and most capable drivers in any group.

Although the above listed differences distinguish high and low perseverator groups, it is obvious from the preceding paragraph that there are anomalous individuals in each group. When similar exceptions occurred in the previous research (in that case instances of undoubted fine character among extreme high and low perseverators) it was conjectured that some individuals had been falsely classified owing to the inexactness of the tests. Such an explanation is still possible. For although the new tests were much more reliable, the experimenter had not then discovered that the score is much affected by fatigue (4), and consequently did not test all individuals religiously at the same time of day, etc. (though about 90% were measured between 4 and 6 p.m.). If allowance is made for this, the exceptions decrease, but observation still suggests that, though no high perseverator may possess qualities found among low perseverators (and vice versa), both groups may contain individuals who fail to take on the characters typical of the group. In the low perseverator group are individuals possessing only the alertness and restless irritability, lacking most of the other qualities and showing an entirely sound, or, indeed, superior character. Similarly in the high perseverator group are persons showing no deceitfulness, spitefulness, sensitive resentfulness or emotional opinionatedness, and manifesting only a generally resigned and asthenic attitude.

If the connection of "p" score is not a necessary one with each and all of these traits, then the general nature of the hypothesis as to the origin of their connection becomes very different, but this may be left until some further facts have been considered.

IV. Further Evidence of High and Low Perseverators' Differences.

New evidence has recently become available with regard to the group of subjects formerly (2) studied. This group was divided into four groups with regard to increasing perseveration. The subjects then answered a questionnaire, of which some of the important items (including all those with a positive

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result) are set out below. The answers are scored numerically, according to a convention indicated at the side, and the mean score is given for each of the four groups.

First, two questions to throw light on the mode of upbringing :

	L.P.	Mod. L.P.	Mod. H.P.	H.P.
(1) Was the atmosphere in your home when you were a child strict (1 pt.), moderately strict (0·5 pt.), or free, even lax (0 pts.) ? . .	·57	·50	·39	·37
(2) As a child did you react with obstinacy (1 pt.), moderate obedience (0·5 pt.), or ready obedience (0 pts.) on most occasions ? . .	·36	·32	·57	·25

Then an attempt to distinguish between the types of mood variation in high perseverators and low perseverators :

(3) Do you find that your general emotional mood at one time of the year is totally different from that of other times, so that you have difficulty in recapturing your outlook or ways of feeling on the earlier occasions, or do you feel very much the same person at all times of the year ? (1 for changeability) . . .	·30	·13	·10	·25
(4) Do you have times when nothing seems to satisfy you, followed by others when you find everything in the world cheerful and bright ? At about what intervals do these changes occur ? (1 for changeability) . .	·56	·68	·70	·73

Next some questions to show whether dislike of change is associated with high perseveration :

(5) Are you, in general, inclined to stick to things that you know well and love, or to be constantly trying the new, experimenting and wandering in new fields (e.g., in taste in architecture, love of old tunes, favourite writers, gramophone records) ? (1 for liking for new, 0 for reverse)	·36	·38	·32	·50
(6) Are you, on the whole, inclined to find your thoughts turning to incidents of the past, to happy reminiscing, etc., or are you more inclined than most people to neglect the past and to live, in your thoughts, very much in the future ? (1 for forward-looking interests) .	·53	·64	·76	·61

Observation suggested that, in art, high perseverators were more attracted by vivid colour and flamboyancy, low perseverators by form, and especially by austere, disciplined forms. Also we wished to see what relation Jaensch's alleged " colour dominant " and " form dominant " types had to " p " score. Hence two questions :

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	L.P.	Mod. L.P.	Mod. H.P.	H.P.
(7) On the whole, are you most interested in the architectural side of art or in painting ? (1 for painting, 0 for art, 0·5 no discrimination)	·80	·36	·86	1·00
(8) Do you most appreciate a picture for its colour or design ? (1 for colour, 0·5 for both, 0 for design)	·46	·32	·57	·54

A related difference of taste in literary matters was suspected, and the subjects were asked :

(9) In art and literature do you like effects that are restrained, closely in touch with humanity, and realistic, or, rather, impressions that are idealized, superhuman, strained and emphatic. (1 for former, 0 for latter)	·26	·21	·23	·11
(10) In each of the following pairs of poets underline the one you prefer : Shakespeare—Shelley ; G. K. Chesterton—R. Brooke ; Pope—Wordsworth. Here the second of each pair was intended to correspond with the latter of the two descriptions in (9) above, but in fact little correlation was found among the right-hand members. Actually Shakespeare and Wordsworth were more appreciated by the high perseverators, Shelley by the low perseverators as follows :				
Shakespeare	·14	·26	·30	·31
Shelley	·21	·10	·05	·05
Wordsworth	·25	·23	·27	·34
This may indicate, however, nothing more than greater conventionality among the high perseverators (already indicated in a previous work [(2), p. 33]. High perseverators less frequently crossed out a poet as unknown to them.				

A question as to the occupation which would have been chosen if the subject had not been going in for teaching revealed no significant differences.

All these questions were mixed up together and with others in such a way that questions on related topics were widely separated, not classified together as here, in order that the subject's testimony might be obtained without his suspecting the general trends being examined.

From the above answers it seems reasonable to conclude, pending further inquiry, that high perseverators and low perseverators are alike given to more changes of mood than are moderate perseverators, but that high perseverators are especially liable to changes on the cheerfulness-depression axis, and that low perseverators are brought up, or feel they were brought up, under more precise and rigid parental supervision.

Likeness for painting and colour as distinct from form is much more marked among high perseverators, yet the preference also follows the distribution of poor will character—being least connected with moderately low perseveration, more connected with very low perseveration, and most closely connected with

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very high perseveration. This is one of the many things which suggests that Jaensch's temperament differences are more related to "w" than to temperament types as we know them.

Other questions do not permit of such simple numerical answers. The subjects were asked, "Are you much subject to any of the following?":

Blushing.
Nervous tics and spasmodic contraction of muscles.
Impulses to count things, to touch every lamp-post in the street or walk on every flagstone in the pavement.
Sweating of the palms of the hands in excitement.
Feeling of sickness if excited.
Any other nervous symptoms.

There was no significant difference in frequency for any or all of these. In each perseveration group the order of frequency was the same (blushing, impulses, tics, etc.). Nevertheless there was a slight tendency for sickness to be commoner in the two high perseverator groups, and a distinct tendency for nervous tics to be distributed among the four groups in a pattern exactly parallel to strength of character.

In choice of academic subjects in college there was perhaps a tendency for high perseverators to be fonder of languages and low perseverators of science.

	Number of times chosen by 16 subjects.			
	L.P.	Mod. L.P.	Mod. H.P.	H.P.
Languages (including English)	9	10	16	16
Science	13	16	8	11

In other subjects no differences of this magnitude were shown. Each student was asked to name his favourite school subjects. The only noticeable differences between the groups were in history, science and handicraft, as follows:

	Number of times chosen as favourite subject among 16 students.			
	L.P.	Mod. L.P.	Mod. H.P.	H.P.
Science	4	5	3	2
History	1	0	4	3
Handicraft	2	1	0	0

Questioned as to hobbies and matters of interest, the groups showed no differences in fondness for drama, painting, theatricals, religion, philosophy, music or natural history, but there was a tendency for low perseverators to be fonder of mechanical hobbies and mathematics, and for high perseverators to be fonder of history.

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	L.P.	Mod. L.P.	Mod. H.P.	H.P.
Mechanical construction and handwork	5	4	0	0
Mathematics	6	3	2	1
Historical reading	0	1	6	3

(Score in each of these tables is the number of persons out of 16 who chose this subject.)

The next inquiry was into frequency and nature of illnesses, for as the present writer has agreed elsewhere (2), high perseveration is in many ways an aspect of low vitality, and might conceivably arise from poor health.

Hours of sleep (mean of seven consecutive nights) showed no systematic differences from group to group. The frequency of "nervous breakdown" in a group of this size was not enough to give clear indications. One high perseverator and two moderately high perseverators had had "nervous breakdowns" characterized by lassitude, giddiness, melancholy, sleeplessness and helplessness. Among the parents, on the other hand, a nervous breakdown was recorded for one moderately high perseverator. One low perseverator had a parent insane.

Present illnesses showed no significant differences. In every group there was rheumatism, anæmia, asthma, catarrh, and about four times as much short sight as long sight. Neither was there any trend evident in the chronic illnesses of the parents, unless it was a slight tendency for high perseverators to have more rheumatic parents. With regard to past and more pronounced (usually infectious) illnesses, however, a general trend was evident.

	L.P.	Mod. L.P.	Mod. H.P.	H.P.
Number of illnesses during childhood	2·20	2·21	3·9	3·7
Were you considered to be a very robust child (0), moderately robust (0·5), or ailing (1)?	·14	·14	·25	·47

An ailing childhood must be considered as contributing to high perseveration (or vice versa).

Finally we examined the influence of position in the family, with the following results:

	L.P.	Mod. L.P.	Mod. H.P.	H.P.
Average size of family	2·9	3·5	2·5	3·1
Positions:				
Youngest child	0	2	6	8
Middle ,,	3	6	3	0
Only ,,	2	3	2	0
Eldest ,,	10	4	4	7

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The lowest perseverators have no youngest child among them, and have the greatest number of eldest children. Definitely, to be the youngest child is to be prone to high perseveration score in adult life.

V. The Heredity and Racial Factor in Perseveration.

For a variety of reasons it seemed likely that racial differences in perseveration would exist; and, indeed, the examination of this point promises to be the quickest way of deciding whether any hereditary factor enters into the determination of perseveration.

In the first group of subjects (62 students) measurements of height and cephalic index were made. For statistical expression of colouring, an "index of nigrescence" was worked out as follows: The subject received from 1 to 5 points according to darkness of hair and 1 to 5 points according to darkness of eye. A person with jet black hair and very dark eyes would thus have an index of 10 and a platinum blonde with light eyes an index of 2.

On the basis of stature, cephalic index and colouring (as well as a few qualitative features), and using Ripley's figures for European races, the group was divided up into the following racial sub-groups:

	Number of persons.	Mean index of nigrescence.	Mean stature.	Mean cephalic index.	Mean "p" score.	P.E.
Nordic	20	3·25	5 ft. 9½ in.	75·7	−·04	·065
Mediterranean	6	8·5	5 ,, 7 ,,	74·7	+·05	·17
Alpine	11	5·7	5 ,, 7½ ,,	81·1	+·229	·17
Nord.-Med.	12	6·17	5 ,, 8½ ,,	76·6	+·13	·08
Nord.-Alp.	11	5·45	5 ,, 9 ,,	80·4	−·281	·081
Alp.-Med.	2	8·5	5 ,, 7½ ,,	80·0	−·81	..

(The "p" scores are in deviations from the mean of the large group.)

From the point of view of racial classification, the surprising feature is the number of Alpine and mixed Alpine types, which are normally decidedly in a minority in England—(Have Alpines an aptitude for being school teachers?) The classification is, in any case, a relative one. The Alpine group, for instance, is not quite brachycephalic enough for a true Alpine type (which should have a cephalic index around 85–90), neither are the Mediterranean quite short enough in stature.

Only two "p" score differences approach significance, namely, that between Nordic and Alpine (·34 ± ·18) and between Alpine and Nordic Alpine (·58 ± ·19). Nevertheless, there is a clear general tendency for the Nordic and Nordic Alpine mixtures to be decidedly lower in perseveration than Mediterranean and Mediterranean mixture.

Let us compare with this the evidence from the second group (52 adults.)

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Here the division was made by inspection, taking into consideration all the racial features considered above :

	Number of persons.	Mean " p " score.
Nordic	17	45·82
Mediterranean	8	53·25
Nordic-Mediterranean . . .	21	52·81
Nordic Alpine	6	44·0

Again the Mediterranean groups are of higher perseveration than the Nordic, and again the Nordic-Alpine group shows lowest perseveration.

The differences between these selected racial groups are here significant :

Difference Nordic and Mediterranean . . .	$7{\cdot}43 \pm 2{\cdot}6$
,, Nordic and Nordic-Mediterranean . .	$6{\cdot}99 \pm 1{\cdot}7$

If any weight is to be placed on the high " p " score for Alpines in the first table this very low " p " score for Nordic-Alpine mixture is anomalous—unless we suppose that racial mixture shifts the perseveration score away from the mean of the two mixing groups. It is noteworthy that in both groups racial mixture itself seems to introduce a lowering of " p " score from the mean of the groups mixed. On the other hand, the Nordic-Mediterranean mixtures are higher than the average for the two races. In connection with this Alpine-Nordic group, it is interesting to observe that in both research groups the Nordic-Alpine mixtures, though rounder-headed and darker than the Nordics, were as tall or taller. If this unexpected physical deviation can be explained by the anthropologists, the psychological findings may also be cleared up.

From the parallelism of these results it seems reasonable to conclude that the " p " score of Mediterraneans is significantly higher than that of Nordics. Now Rangachar (8) has already shown that the perseveration score for Jews is significantly higher than for Anglo-Saxons, and the Jews are a racially mixed people in whose composition the Mediterranean element is large. These two inquiries, therefore, point in the same direction.

Elsewhere I have brought evidence to show that there is a tendency in this country for the upper classes to be more Nordic and the lower more Mediterranean (5). Since there is some evidence in the present article that lower perseveration goes with higher social status, the question arises as to whether the higher Mediterranean score is due to relative social position. This seems most improbable, since both in the present inquiry and in Rangachar's the racial groups were chosen to be of equal social status. Perseveration according to this conclusion varies independently both with social status and with inborn racial type.

Some recent and as yet unpublished work of Wynn Jones also points to an

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inborn factor in perseveration. He obtained a correlation of $0{\cdot}36 \pm 0{\cdot}11$ between the perseveration scores of siblings in schools. If "p" tests were as reliable as "g" tests, it is conceivable that this would approach the figure 0·5 commonly found for "g" and for such physical measurements as stature. On the other hand, it is conceivable and indeed probable that some similarity in "p" score would arise within the family because of the common family atmosphere. The variation of "p" score with social status, with position in the family, with a history of illness and, as I shall hope to show later, with temporary emotional difficulties in the child, would seem to argue that although "p" score is to some extent inborn, it is affected by environment far more than are such features as intelligence or stature.

VI. Summary: Hypothesis of Deep Frustration.

The main indications of this inquiry may be summarized as follows:

(1) Some, but not all, low perseverators may be distinguished from some high perseverators by a greater proneness to action on the part of the former and a greater resignedness and absent-mindedness on the part of the latter (see other qualities, pp. 152 and 153).

(2) The type of accident to which they are prone and the type of character failing which distinguishes them from the more reliable moderate perseverators follow from these qualities of high and low perseverators.

(3) Low perseverators report that they were more strictly brought up as children.

(4) Low perseverators are less liable to dreaming (in sleep).

(5) Low perseverators are more given to mechanical construction, scientific and mathematical interests; high perseverators to history and languages.

(6) High perseverators have more frequently been ailing as children and have suffered a greater number of illnesses.

(7) The situation of having been the youngest child in the family favours high perseveration.

(8) There are indications of an hereditary influence in perseveration. In the same social group those of Mediterranean racial type are decidedly higher in perseveration than Nordic types. Siblings also correlate (Wynn Jones) positively. Nevertheless, the general indication seems to be that environment is more important than heredity, and that perseveration is not comparable in this respect with intelligence.

(9) There are some indications that lower perseveration goes with higher social status.

To these conclusions should be added the findings reported elsewhere (4) that perseveration increases rapidly with fatigue.

Two hypotheses now suggest themselves to account for these facts; in fact some of our later experiments were undertaken in the hope of deciding between them. One is that perseveration is essentially an indication of nervous

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debility—high perseveration indicating nervous exhaustion. In agreement with this are many of the above distinguishing qualities—lack of initiative, absent-mindedness, dreamy contemplative outlook—of high perseverators; the frequency of illness in the history of high perseverators; possibly the inverse relation of "p" with social status, possibly the position of youngest child (mother exhaustion?), and finally the increase of "p" with fatigue. Against this is the fact that no difference could be discovered in the number of hours of sleep required by high and low perseverators. Also the existence of racial differences (unless we assume that Mediterraneans are "born tired") fails to relate itself. The second and alternative hypothesis is that high perseveration is an indication of deep conflict, discouragement and inhibition induced in very early life. In the first place many of the qualities of high perseverators are those of individuals profoundly chastened and inhibited, though not lacking in emotional life and vitality; for the latter shows itself in emotional enthusiasms, opinionation, cruelty or sentimentality. Other qualities, it is true, are those of low vitality, but this might be a secondary result of the conflict.

Consider the situation of being the youngest child in a family of several children. Although this may occasionally mean favouritism from one or both parents, it invariably means frustration by older children in attempts at self-assertion. The child from the beginning has inhibitions imposed upon him which the older children escape, and has no chance of compensation by "lording it over" or looking after younger children. The growth of the self-regarding sentiment—the will—is upset. If low perseverators report that they were more strictly brought up, this may only mean that they, being less fundamentally inhibited, were more inclined to kick against the pricks, whereas the high perseverators, who were already subdued, timid or sensitive by three or four years of age would, through this inhibition which has become part of their constitutions, be relatively unaware of the restrictions imposed upon them. Stricter upbringing may also mean less liability to emotional conflicts. The correlation with social status could equally agree with the "deep frustration" hypothesis. For, as the writer and others are constantly finding in clinical work, unintelligently severe treatment of very young children is more common in poorer homes, and in any case the frustrations of the parents themselves, which are obviously greater in poorer homes, are passed on by being vented upon the children.

A glance at the temperament traits of low perseverators, however, suggests that they do in fact arise from a stricter discipline and supervision. As is well known in child-guidance work, the child who is brought up in a framework of consistent strict and objective discipline is less likely to suffer from emotional conflict and frustration than the child who lives on a lax, but emotional and inconsistent home atmosphere. The latter, frequently bound by a close affection to his parents, and governed by the sometimes capricious withholding of

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that affection, is more likely to be deeply affected by his transgressions. Self-subordination becomes a part of himself (as in the melancholic), whereas in the low perseverator the essentially intact ego, or what in analytical terms would be the "id", is held in check only by an outer shell of disciplined habits. Equally, in accord with the supposition of deeper conflict in higher perseveration, is their greater proneness to dreaming. On the other hand, the greater frequency of illness in childhood is hard to bring into relation with this notion, unless we suppose that the temporary petting and spoiling which accompanies illness encourages regression, and merely gives rise to more vivid conflict afterwards and so to a deeper sense of frustration. The low perseverator, brought up under rather strict supervision, but in an encouraging atmosphere, misses the more profound conflicts; the high perseverator, frequently spoilt at the very beginning and later intimidated, is left to find his own salvation or to retreat into regressions. This combination of spoiling and neglect, with later discouragement, is very common among the high-"p" children encountered by the writer in clinical work.

A piece of evidence from a very different angle—namely, from social psychology—by which the ultimate hypothesis can also be checked, is the finding (3) that high perseverators have significantly fewer friends and more enemies than low perseverators. The supposition that high perseverators are more warped natures, less free and natural, and more given to mental conflict, would not fit in ill with this finding.

Is it possible that even the racial and family resemblances may be explained as due to environment? Brothers would tend to be exposed to the same type of parental discipline. Again, racial characters in the parents not themselves connected with high perseveration might produce high perseveration in children exposed to them. Thus the greater sensitiveness and emotionality of Mediterranean racial types might easily be the cause of more conflict in the children exposed to such characters in the parents, and so lead to higher perseveration.

For the present, however, it seems better to suppose that a person's perseveration score at any moment depends upon three things: (1) Racial hereditary endowment, (2) degree of general fatigue, (3) amount of deep frustration incurred in emotional development. Thus a particular "p" score should be interpreted with regard to the time when the measurement was taken and to the racial type of the person. A very high "p" score in a Mediterranean type would not be so indicative of unusual repression as if it occurred in a Nordic type, and conversely with extremely low "p" scores.

By "deep frustration" is meant frustration of some major instinct, particularly the self-assertive instinct, not occurring at a fully conscious level, and which may no longer be caused by environment itself, but may be the product of conflict (discouragement and an ensuing deadlock of impulses) engendered by the environment of early childhood.

The character failings of the low perseverator are, therefore, those arising

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from inadequate inhibition and thoughtfulness, those of the high perseverator from too profound conflict and discouragement.

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