

through thick and thin. I cannot banish the sorrowful thought from my head that poor Lupton will have had to suffer very much on the route to Kordofan from the robber bands of Baggara and the fanatical Danaglas. We are also without news as to the course of events in Khartoum; in fact the whole of the outer world seems to have completely vanished from our ken. We have now begun to manufacture for ourselves the most indispensable articles—very passable shoe-work, soap, and, more recently still, cotton cloth for clothes. Candles made of wax prove very useful, and instead of sugar we use honey. We have not, however, yet succeeded in our endeavours to make vinegar, but I am not without hope that we shall have success in that direction. Temperance is naturally compulsory, for the drinks of native manufacture can only be consumed by children of the soil. Coffee, which we have long missed, we have at last replaced by roasting the seeds of a species of hibiscus, and brewing from it a fairly passable drink; tea naturally does not exist. I thank God for His protection hitherto, and hope and have faith enough to believe that He will still protect us, and at last enable my few poor people to return to their homes in peace.

"10th January. Our fate it seems is soon to be decided; we hear that 400 armed men from Bahr-el-Ghazal have joined the rebels and that 1,500 more are on the way. Only a miracle can save us. I send at once as many as possible of my people to the south, for the route to Mtesa is still in existence. If I escape I will follow with my soldiers. But I can hardly expect to escape. It is shameful of our Government to have abandoned us.

"12th January. Dr. Junker goes in the meantime to Anfiuas; he takes with him all my letters. If I see him again, as I hope I may, for I have some belief in my good star, I will write more. May God preserve you.

"EMIN PASHA."

GOOD AND BAD TEMPER IN ENGLISH FAMILIES.

It will probably be within the recollection of some of my readers that I obtained, more than two years ago, in response to an offer of prizes, a valuable collection of family records, from which I have already drawn theoretical laws of heredity, published in technical memoirs, of which the two more important appeared last year in the *Proceedings of the Royal Society*. To these it is unnecessary now to do more than allude. One of the questions put to the compilers of the records referred to the "character and temperament" of the persons described, who were distributed through three and sometimes through four generations, and who consisted of those who lay in the main line of descent, together with their brothers and sisters.

Among the replies to this question, I find that much information has been incidentally included concerning what is familiarly called the "temper" of no less than 1,981 persons. As this is an adequate number for many inductions, and as temper is a strongly marked characteristic in all animals; and, again, as it has social interest through the large part it plays in influencing domestic happiness for good or ill, I thought it a proper subject for investigation.

The best explanation of what I myself mean by the word "temper" will be inferred from a list of the various epithets used by the compilers of the records, which I have interpreted as expressing one or other of its qualities or degrees. The epithets are as follows, arranged alphabetically in the two main divisions of good and bad temper:—

Good temper.—Amiable, buoyant, calm, cool, equable, forbearing, gentle, good, mild, placid, self-controlled, submissive, sunny, timid, yielding. (15 epithets in all.)

Bad temper.—Acrimonious, aggressive, arbitrary, bickering, capricious, captious, choleric, contentious, crotchety, decisive, despotic, domineering, easily offended, fiery, fits of anger, gloomy, grumpy, harsh, hasty, headstrong, huffy, impatient, imperative, impetuous, insane temper, irritable, morose, nagging, obstinate, odd-tempered, passionate, peevish, peppery, proud, pugnacious, quarrelsome, quick-tempered, scolding, short, sharp, sulky, sullen, surly, uncertain, vicious, vindictive. (46 epithets in all.)

I further subdivided the epithets as well as I could into the following five smaller classes: 1, mild; 2, docile; 3, fretful; 4, violent; 5, masterful.

Though the number of epithets denoting the various kinds of bad

temper is three times as large as that used for the good, yet the number of persons described under the one general head is about the same as that described under the other. The first set of data that I tried gave the proportion of the good to the bad-tempered as 48 to 52; the second set as 47 to 53. There is little difference between the two sexes in the frequency of good and bad temper, but that little is in favour of the women, since about 45 men are recorded as good-tempered for every 55 who are bad, and conversely 55 women as good-tempered for 45 who are bad.

I will not dwell on the immense amount of unhappiness, ranging from family discomfort down to absolute misery, or on the breaches of friendship that must have been occasioned by the cross-grained, sour, and savage dispositions of those who are justly described by some of the severer epithets; or on the comfort, peace, and goodwill diffused through domestic circles by those who are rightly described by many of the epithets in the first group. We can hardly, too, help speculating uneasily upon the terms that our own relatives would select as most appropriate to our particular selves. But these considerations, interesting as they are in themselves, lie altogether outside the special purpose of this paper, and cannot therefore be treated at length in this connection.

In order to ascertain the facts of which the above statistics are a brief summary, I began by selecting the larger families out of my lists, namely, those that consisted of not less than four brothers or sisters, and by noting the persons in them who were described as good or bad-tempered, also the remainder about whose temper nothing was said either one way or the other, and whom perforce I must call neutral. I am at the same time well aware that, in some few cases, this tacit refusal to describe the temper should be interpreted as reticence in respect to what it was thought undesirable even to touch upon.

I found that out of a total of 1,361 children, 321 were described as good-tempered, 705 were not described at all, and 342 were described as bad-tempered. These numbers are nearly in the proportion of 1, 2, and 1, that is to say, the good are equal in number to the bad-tempered, and the neutral are just as numerous as the good and bad-tempered combined.

The equality in the total records of good and bad tempers is an emphatic testimony to the correct judgments of the compilers in the choice of their epithets, for whenever a group is divided into only three classes, of which the second is called neutral, or medium, or any other equivalent term, its nomenclature demands that it should occupy a strictly middlemost position, an equal number of contrasted cases flanking it on either hand. If more cases were recorded of good temper than of bad, the compilers would have laid down the boun-

daries of the neutral zone unsymmetrically, too far from the good end of the scale of temper, and too near the bad end. If the number of cases of bad temper exceeded that of the good, the error would have been in the opposite direction. But it appears, on the whole, that the compilers of the records have erred neither to the right hand nor to the left. So far, therefore, their judgments are shown to be correct.

Next as regards the proportion between the number of those who rank as neutrals to that of the good or of the bad. It was recorded as 2 to 1; is that the proper proportion? Where nomenclature is somewhat arbitrary, a doubtful term should be interpreted in the sense that may have the widest suitability. Now a large class of cases exist in which the interpretation of the word neutral is fixed. It is that in which the three grades of magnitude are conceived to result from the various possible combinations of two elements, one of which is positive and the other negative, such as good and bad. These are supposed to occur on each occasion at haphazard, but in the long run with equal frequency. The number of possible combinations of the two elements is only four, and each of these must also, in the long run, occur with equal frequency. They are: 1, both positive; 2, the first positive, the second negative; 3, the first negative, the second positive; 4, both negative. In the second and third of these combinations the negative counterbalances the positive, and the result is neutral. Therefore the proportions in which the several events of good, neutral, and bad would occur is as 1, 2, and 1. These proportions further commend themselves on the ground that the whole body of cases is thereby divided into two main groups, equal in number, one of which includes all neutral or medium cases, and the other all that are exceptional. Probably it was this latter view that was taken, it may be half unconsciously, by the compilers of the Records. Anyhow, their entries conform excellently to the proportions specified, and I give them credit for their practical appreciation of what seems theoretically to be the fittest standard. I speak, of course, of the Records taken as a whole; in small groups of cases the proportion of the neutral to the rest is not so regular.

The results shown in Table I. are obtained from all my returns. It is instructive in many ways, and not least in showing to a statistical eye how much and how little value may reasonably be attached to my materials. It was primarily intended to discover whether any strong bias existed among the compilers to spare the characters of their nearest relatives. In not a few cases they had written to me, saying that their records had been drawn up with perfect frankness, and earnestly reminding me of the importance of not allowing their remarks to come to the knowledge of the persons described. It is

almost needless to repeat what I have published more than once already, that I treat the Records quite confidentially. I have left written instructions that in case of my death they should all be destroyed unread, except where I have left a note to say that the compiler wished them returned. In some instances I know that the Records were compiled by a sort of family council, one of its members acting as secretary; but I doubt much whether it often happened that the Records were known to many of the members of the family in their complete form. Bearing these and other considerations in mind, I thought the best test for bias would be to divide the entries into two contrasted groups, one including those who figured in the pedigrees as either father, mother, son, or daughter—that is to say, the compiler and those who were very nearly related to him—and the other including the uncles and aunts on both sides.

TABLE I.—DISTRIBUTION OF TEMPER IN FAMILIES (per cents.).

Relationships.	Temper.					Total.	No. of Cases observed.
	1. Mild.	2. Docile.	3. Fretful.	4. Violent.	5. Masterful.		
a. Fathers and sons . . .	35	12	32	12	9	100	188
b. Mothers and daughters . .	39	18	31	8	4	100	179
c. Uncles . . . *	32	13	25	18	12	100	272
d. Aunts . . .	39	14	29	9	9	100	238
a + b. Direct line . . .	74	30	63	20	13	200	367
c + d. Collaterals . . .	71	27	54	27	21	200	510
	Good.		Bad Temper.				
a + b. Direct line . . .	104		96			200	367
c + d. Collaterals . . .	98		102			200	510

On comparing the entries, especially the summaries in the lower lines of the Table, it does not seem that the characters of near relatives are treated much more tenderly than those of the more remote. There is little indication here of the compilers having been biased by affection, respect, or fear. I should suspect more cases to occur in the direct line, in which a record was left blank where a bad temper ought to have been recorded, but do not see how to test my suspicion. The omission may be due to pure ignorance, as I find it is not uncommon for compilers to know very little of some of their uncles or aunts. The Records seem to be serious and careful compositions, hardly ever used as vehicles for personal animosity, but written in much the same fair frame of mind that most people force themselves into when they write their wills.

The sexes are separated in the table, to show the distribution of the five classes of temper among them severally. There is a large proportion of the violent and the masterful among the men, of the fretful, the mild, and the docile among the women. On adding the entries it will be found that the proportions of those who fall within the several classes are, 36 per cent. of mild-tempered, 15 per cent. of docile, 29 per cent. of fretful, 12 per cent. of violent, 8 per cent. of masterful.

The importance assigned in marriage-selection to good and bad temper is an interesting question, not only from its bearing on domestic happiness, but also from the influence it may have in promoting or retarding the natural good temper of our race, assuming, as we may do for the moment, that temper is hereditary. I cannot answer the question directly, but give some curious facts in Table II. that throw indirect light upon it. There a comparison is

TABLE II.—COMBINATIONS OF TEMPER IN MARRIAGE (per cents.).

Temper of Husbands.	Observed Pairs.					Haphazard Pairs.					
	Temper of Wives.					Temper of Wives.					
	Good.		Bad Tempers.			Good.		Bad Tempers.			
	1	2	3	4	5	1	2	3	4	5	
Good	1	6	10	9	6	2	13	5	10	3	2
„	2	4	2	5	2	—	5	2	4	1	1
Bad	3	14	4	9	3	2	11	5	8	2	2
„	4	7	3	3	2	1	6	2	5	1	1
„	5	3	—	2	—	1	4	2	3	1	1
Good	22		24			25		21			
Bad	31		23			30		24			

made of (a) the actual frequency of marriage between persons of each of the various classes of temper, with (b) the calculated frequency according to the laws of chance, on the supposition that there had been no marriage-selection at all, but that the pairings, so far as temper is concerned, had been purely at haphazard. There are only 111 marriages in my lists in which the tempers of both parents are recorded. On the other hand, the number of possible combinations in couples of persons who belong to the five classes of temper is very large, so I make the two groups comparable by reducing both to percentages.

It will be seen that with two apparent exceptions in the upper left-hand corners of either table, there are no indications of predilection for or avoidance of marriage between persons of any of the five

classes, but that the figures taken from observation run as closely with those made from calculation as could be expected from the small number of observations, the apparent exceptions being that the percentage of mild-tempered men who marry mild-tempered women is only 6, as against 13 calculated by the laws of chance, and that those who marry docile wives are 10, as against a calculated 5. There is little difference between mildness and docility, so we may throw the entries together without much error, and then we have 6 and 10, or 16, as against 13 and 5, or 18, which is a close approximation. Or if we compare the frequency of marriages between persons of like temper in each of the five classes, they will be seen to run, if the tabular figures be read diagonally, as (6), 2, 9, 2, 1, in the observed cases, as against (13), 2, 8, 1, 1, in the calculated ones. The irregularity of the 6 and 13, which are put in brackets for distinction sake, is here conspicuous. Elsewhere in the lists there is not the slightest indication of a dislike in persons of similar tempers, whether docile, fretful, violent, or masterful, to marry one another. The large initial figures 6 and 13 catch the eye, and at a first glance impress themselves unduly on the imagination, and might lead to erroneous speculations, as that mild-tempered persons find one another rather insipid; but the reasons I have given show conclusively that the recorded rarity of their marriages is only apparent. Lastly, if we disregard the five smaller classes and attend only to the main divisions of good and bad temper, there does not appear to be much bias for or against the marriage of good or bad-tempered persons into their own or into the opposite division.

The admixture of different tempers among the brothers and sisters of the same family is a notable fact, due to various causes which act in different directions. It is best to consider them before we proceed to collect evidence and attempt its interpretation. It is clear enough, and may be taken for granted, that the tempers of progenitors do not readily blend in the offspring, but that some of the children take mainly after one of them, some after another, but with a few threads, as it were, of various ancestral tempers woven in, which occasionally manifest themselves. If no other influences intervened, the tempers of the children in the same family would on this account be almost as varied as those of their ancestors, who married at haphazard, so far as their tempers were concerned; therefore the numbers of good and bad children in families would be regulated by the same laws of chance that apply to a gambling-table. But there are other influences to be considered. There is a well-known tendency to family likeness among brothers and sisters, which is not due to the blending of ancestral peculiarities, but to the prepotence of one of the progenitors, who has stamped more than his or her fair share of qualities upon the children. It may also be due to a familiar

occurrence that deserves but has not yet received a distinctive name, namely, where all the children are alike and yet their common likeness cannot be traced to their progenitors. A new variety has come into existence through a process not of individual but of "co-fraternal" variation. The most strongly marked family type that I have personally met with first arose simultaneously in the three brothers of a family who transmitted their peculiarities with unusual tenacity to numerous descendants through at least two generations. Other influences act in antagonism to the foregoing; they are the events of domestic life, which instead of assimilating tempers tend to accentuate slight differences in them. Thus if some members of a family are a little submissive by nature, others who are naturally a little domineering are tempted to become more so. Then the acquired habit of dictation in these reacts upon the others and makes them still more submissive. In the collection I made of histories of twins who were closely alike, the statement was constantly met with that one of the twins was guided by the other. I suppose that after their many childish struggles for supremacy, each finally discovered his own relative strength of character, and thenceforth the stronger developed into the leader, while the weaker contentedly subsided into the position of being led. Again, it is sometimes observed that a member of an easy-going family discovers that he or she may exercise considerable power by adopting the habit of being persistently disagreeable whenever he or she does not get the first and best of everything. Some wives contrive to tyrannise over husbands who are mild and sensitive, who hate family scenes and dread the disgrace attending them, by holding themselves in readiness to fly into a passion whenever their wishes are withstood. They thus acquire a habit of "breaking out," to use a term familiar to the warders of female prisons and lunatic asylums; and though their relatives and connections would describe their tempers by severe epithets, yet if they had married masterful husbands their characters might have developed more favourably.

To recapitulate briefly, one set of influences tends to mix good and bad tempers in a family at haphazard, another set tends to assimilate them so that they shall all be good or all be bad, a third set tends to divide each family into contrasted portions. We have now to ascertain the facts and learn the results of these opposing influences.

In dealing with the distribution of temper we can only make use of those families in which at least two cases of temper are recorded; they are 146 in number. I have removed all the cases of neutral temper, treating them as if they were non-existent, and dealing only with the remainder that are either good or bad. We have next to eliminate the haphazard element. Beginning with families of two persons only, either of whom is just as likely to be good

as bad tempered, there are, as we have already seen, four possible combinations, resulting in the proportions of 1 case of both good, 2 cases one good and one bad, and 1 case of both bad. I have 42 such families, and the observed facts are that in 10 of them both are good tempered, in 20 one is good and one bad, and in 12 both are bad tempered. Here only a trifling difference is found between the observed and a haphazard distribution, the other conditions having neutralised each other. But when we proceed to larger families the test becomes shrewder, and the trifling difference already observed becomes more marked, and is at length unmistakable. Thus there are 55 families, each containing 3 cases of temper. The haphazard distribution, according to the law of chance, is such that there are 8 possible combinations, namely, 1 case in which all are good, 3 cases in which all are good but one, 3 cases in which all are good but two, 1 case in which all are good but three—in other words, in which all are bad tempered. I multiply these proportions all round by 7, in order to bring the total to as near 55 as possible without using fractions, and then get the series of 7, 21, 21, 7; now the observed series is 11, 15, 21, 8, where the first and last terms begin distinctly to exceed the calculated values. There are 29 families, each containing 4 cases of temper. The case of haphazard distribution would here be 2, 8, 12, 8, 2; that of the observed distribution is 5, 6, 9, 8, 1. There are only 6 cases of five in a family, and 14 cases of six in a family; they tell the same tale still more effectively, for the haphazard series in the first case is 0, 1, 2, 2, 1, 0, as against the observed series of 1, 0, 2, 1, 0, 2; and in the second case, as 0, 2, 4, 5, 4, 2, 0, as against 1, 0, 1, 3, 3, 2, 4. If we add together all the first terms, and again all the last terms of the last three series of observed values, we obtain 5, 1, and 1, or 7 cases in which all of these large families were good tempered, and 1, 2, and 4, or 7 cases in which they were all bad tempered (recollecting, of course, that neutral cases are excluded). Hence it follows that the domestic influences which differentiate temper are too weak in 14 cases out of 49 (29, 6, and 14) to overcome even the secondary influences in the general course of heredity, caused either by the prepotency of a single ancestor or by co-fraternal variations.

As regards the direct evidence of heredity of temper, we must frame our inquiries under a just sense of the sort of materials we have to depend upon. They are but coarse portraits scored with white or black, and sorted into two heaps, irrespective of the gradations of tint in the originals. The processes I used in the memoirs alluded to in the beginning of this article in discussing the heredity of stature, and those employed in confirming the results thereby obtained by means of the heredity of eye-colour, cannot be employed

in dealing with the heredity of temper. I must now renounce those refined operations and set to work on my rough materials with rude tools.

The first inquiry will be, Do good-tempered parents have, on the whole, good-tempered children, and do bad-tempered parents have bad-tempered ones? I have 43 cases where both parents are recorded as good-tempered, and 25 where they were both bad-tempered. Out of the children of the former, 30 per cent. were good-tempered and 10 per cent. bad; out of the latter, 4 per cent. were good and 52 per cent. bad-tempered. This is emphatic testimony to the heredity of temper. I have worked out the other less contrasted combinations of parental temper, but the results are hardly worth giving. There is also much variability in the proportions of the neutral cases.

I then attempted, with still more success, to answer the converse question, Do good-tempered families of brothers and sisters have, on the whole, good-tempered ancestors, and bad-tempered families bad-tempered ones? After some consideration of the materials, I defined—rightly or wrongly—a good-tempered family as one in which at least two members were good-tempered and none were bad, and a bad-tempered family as one in which at least two members were bad-tempered, whether or no any cases of good temper were said to be associated with them. Then, as regards the ancestors, I thought by far the most trustworthy group was that which consisted of the two parents and of the uncles and aunts on both sides. I have 46 good-tempered families, with an aggregate of 333 parents, uncles, and aunts; and 71 bad-tempered families, with 633 parents, uncles, and aunts. In the former group, 26 per cent. were good-tempered and 18 bad; in the latter group, 18 were good-tempered and 29 were bad, the remainder being neutral. These results are almost the exact counterparts of one another, so I seem to have made good hits in framing the definitions. More briefly, we may say that when the family is good-tempered as above defined, the number of good-tempered parents, uncles and aunts, exceeds that of the bad-tempered in the proportion of 3 to 2; and that when the family is bad-tempered, the proportions are exactly reversed.

I have attempted in other ways to work out the statistics of hereditary tempers, but none proved to be of sufficient value for publication. I can trace no prepotency of one sex over the other in transmitting their tempers to their children. I find clear indications of strains of bad temper clinging to families for three generations, but I cannot succeed in putting them into a numerical form.

I hope that I shall not be thought to have dealt with temper as if it were an unchangeable characteristic, or to have assigned more trustworthiness to my material than it deserves. Both these

objections have been discussed; they are again alluded to to show that they are not dismissed from my mind, and partly to give the opportunity of adding a very few further remarks.

Persons highly respected for social and public qualities may be well-known to their relatives as having sharp tempers under strong but insecure control, so that they "flare up" now and then. I have heard the remark that those who are over-suave in ordinary demeanour have often vile tempers. If this be the case—and I have some evidence of its truth—I suppose they are painfully conscious of their infirmity, and through habitual endeavours to subdue it, have insensibly acquired an exaggerated suavity at the times when their temper is unprovoked. Illness, too, has much influence in affecting the temper. Thus I sometimes come across entries to the effect of, "not naturally ill-tempered, but peevish through illness." Overwork and worry will make even mild-tempered men exceedingly touchy and cross.

The accurate discernment and designation of character is almost beyond the reach of anyone, but, on the other hand, a rough knowledge and description of its prominent features is easily practicable; and it seems to me that the testimony of a member of a family who has seen and observed a person in his unguarded moments and under very varied circumstances for many years, is a verdict deserving of much confidence. I shall have fulfilled my object in writing this paper if it leaves a clear impression of the great range and variety of temper among persons of both sexes in the upper and middle classes of English society; of the great admixture of its good and bad varieties in the same family; and of its being, nevertheless, as hereditary as any other quality. Also, that although it exerts an immense influence for good or ill on domestic happiness, it seems that good temper is not especially looked for, nor is ill temper especially shunned, in marriage-selection.

FRANCIS GALTON.

GENERAL LANGIEWICZ AND THE LAST POLISH RISING.

It is now over twenty-four years—it was in the first days of January, 1863—since the envoy of the Secret Committee at Warsaw (afterwards called the National Government) made to me the confidential communication:—"Between the 21st and 22nd of this month the armed rising will take place in Russian Poland."

I still remember the spot, the very corner of the room of the house we then occupied, in which these surprisingly positive and precise words were spoken. Nay, even the peculiar colouring of the wintry daylight shining at that moment through the window is yet in my mind's eye; for even insignificant circumstances when connected with a striking occurrence often make a deep impression.

The rising so foretold took place at the very time mentioned, to the consternation of the Russian authorities, and to the amazement of the whole body of diplomatists and statesmen of Europe. For more than two years the "unarmed movement," that is, the peaceable yet highly impressive public manifestations at Warsaw, had lasted—manifestations often brutally broken up by the Czar's troops—when the Polish capital became the scene of one-sided bloodshed and tragic incidents of a highly pathetic character. But even then nobody dreamt that the Poles would venture, with arms in hand, upon an attempt for the recovery of their national independence, like the one in 1830.

Even when the conscription ordered by Count Wielopolski was in full swing, the closest observers in the country allowed themselves to be strangely deceived by appearances. On the eve of the revolutionary outbreak, journals such as the *Dziennik Powszechny* were naïve enough to publish reports speaking of the "gay readiness with which the Polish recruits were joining the Russian standards." This gaiety of theirs might be compared, barring the final issue, to that of Armin, the deliverer of Germany from the Roman yoke, before the battle in the Teutoburg Forest.

On January 14th the conscription began in Warsaw. It was, to use the words of an English statesman then in a responsible position, "rather a decree of proscription." Yet on January 19th, immediately before the rising, the English Consul-General in the Polish capital, Colonel Stanton, so little understood the real situation that he reported to Lord John Russell, the Foreign Secretary, that the Russian Government measure had been carried out with perfect order and complete success. Colonel Stanton also wrote:—