DERMATOGLYPHIC VARIATION IN THE SOUTH MIDLANDS

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1. Introduction

In Britain the continuing existence today of genetic variation between local populations is clear. Dr Kopec's (1970) unparalleled survey demonstrates statistically the existence of two types of variation in ABO gene frequencies; there is either homogeneity over a defined area and abrupt variation along its border, or there is a clearly directed gradient. Less detailed analyses of variations in frequency of colour blindness, some inherited diseases, the ability to taste PTC, and variations in hair colour show that the population of Britain is far from uniform in the gene frequencies governing these characters. One can detect gross regional variation, local variation within regions, and differences between urban and rural populations.

Francis Galton (1892) first suggested " that local (dermatoglyphic) peculiarities exist in England, the children in schools of some localities seeming to be statistically more alike in their patterns than English children generally ". Regional variation in the features of palm- and finger-prints was demonstrated by Abel (1935) and Poll (1937) among samples living in various parts of Germany. By and large, however, dermal traits have been little used in investigations into local population differences. Yet on account of the strong genetic contribution to a number of dermatoglyphic traits—the heritability of total ridge count for instance is one of the highest established in man—it is in such problems that they may perhaps be of particular use.

The object of the present survey was to inquire into the existence of local dermatoglyphic variation in the South Midlands. Here in Oxfordshire and Berkshire the population, although subjected to a considerable amount of change during the last few decades, was previously predominantly rural and it is likely that in some localities it remained relatively static geographically. There is good evidence from archaeological, historical, place-name and other sources that the original colonisation of the area took place at different times and by different strains of people. Has the population then become genetically homogeneous as assessed by dermatoglyphics or, despite the relative accessibility, are differences still detectable within it? This problem is of more than academic interest. The last few years have seen the emergence of a number of studies of dermatoglyphics in various types of disease, and several associations have been claimed between specific dermal traits and diseases such as schizophrenia and various types of congenital heart defects. Most such studies rely on comparisons with normal general samples. If there is indeed local variation, such as Galton claimed, then the results of such comparisons may be of dubious validity.

2. Material and methods

A survey was made of dermal characters in a sample of some 3000 school children of secondary school age, between 11 and 18 years of age, of both sexes, resident in the South Midlands in 1963-66.

The Directors of Education for Berkshire and Oxfordshire were asked for and gave permission for 37 day secondary schools to be visited. They kindly sent an introductory letter to the head teachers of these schools, briefly explaining the purposes of the survey, and this was followed by direct interview with each head teacher at which arrangements were made to take prints. With his co-operation a letter was sent to the parents of each child in the school, requesting their permission, giving guarantees regarding the use to be made of the prints and their subsequent disposal. Parental written consent was thus obtained, together with details of the child's home address, age, place and date of birth, and the places of birth of both parents. The names of close relatives still at school were also noted, so that they could be excluded for sampling purposes.

From these consent slips, children were selected for inclusion in the sample. Only the prints of children with one or both parents born locally, *i.e.* within a radius of 15 miles of the child's home, were retained in the analysis since it was thought that the inclusion of children with non-local parents would distort any geographical pattern that may exist. The prints of children with one parent born locally and the other born outside the United Kingdom were rejected for the same reason. Thirdly, where prints were obtained from more than one child from each family, relatives were excluded, the child incorporated being selected randomly. Thus the samples of school children used in the analysis are composed of normal healthy males and females (*i.e.* sufficiently normal and healthy to be attending local day schools), not closely related, with one or both parents born locally.

Fingerprints were taken using the inkless material supplied by the Reed Research Company, by standard methods. From the prints ridge counts were made, and pattern types classified, by standard methods, as set out in Cummins and Midlo (1943).

The total number of sets of fingerprints collected was 3223. After elimination of particular individuals as set out above, there remained 1193 sets of male and 1365 sets of female fingerprints. This material was divided for analysis into geographically delimited local samples. Within the three broad divisions of Berkshire, north Oxfordshire and south Oxfordshire, the data were further subdivided into urban and rural on the basis of residence, urban areas being taken to be towns of more than 5000 inhabitants. Rural data were divided into as fine geographical subdivisions as possible, these being made on the basis of topography, human ecology and local history, and were composed of blocks of like parishes. Where such subdivision resulted in too small a sample, adjacent subdivisions were pooled. Berkshire was divided into twelve, north Oxfordshire into six, and south Oxfordshire into four rural localities.

Analyses of variance of total ridge count within and between regional and local samples, and χ^2 analyses for the qualitative features, were undertaken using the Oxford University KDF9 Leo Computer for which the appropriate programmes were written.

3. Results

(i) *Total ridge count*

The means and standard deviations of total ridge counts for males and females in rural and urban areas are presented in table 1, and the frequency

TABLE 1

Total ridge count: means and standard deviations by locality

	Males			Females		
	Mean	No.	S.D.	Mean	No.	S.D.
			RURAL			
Berkshire						
Faringdon	112·52	23	45·97	110·97	29	46·52
Vale of White Horse	123·21	14	40·32	116·50	16	63·53
Wantage Heights	130·88	34	51·73	114·97	31	53·39
Cumnor	138·57	14	57·84	126·63	16	56·92
Abingdon	130·61	18	40·54	138·60	30	42·94
East Downs	136·57	54	46·18	118·80	55	59·66
Central Downs	137·00	32	53·57	128·73	41	53·49
West Downs	145·94	31	57·93	112·07	29	67·77
Didcot	143·74	19	53·92	143·42	12	31·54
West Thames Valley	141·16	38	42·58	126·04	54	52·54
Kennet Valley	142·59	46	55·75	130·13	47	56·79
Hungerford	147·42	24	47·40	130·04	24	60·21
North Oxfordshire						
Bampton	151·50	18	45·23	127·43	14	33·09
Burford	155·08	24	47·32	126·73	22	47·59
Wychwood	155·41	37	44·71	119·76	42	52·76
Chipping Norton	147·47	32	41·49	123·22	37	56·51
Hook Norton	131·08	66	52·51	137·74	76	51·03
Cherwell Valley	137·15	52	50·28	110·54	48	51·76
South Oxfordshire						
Watlington	138·54	24	50·93	112·87	23	53·25
Woodcote	146·11	27	50·75	132·87	30	53·14
Sonning	151·88	26	51·65	125·03	33	59·60
East Thames Valley	150·74	23	49·25	113·25	20	41·79
			URBAN			
Berkshire						
Faringdon	112·00	11	53·11	118·52	25	56·51
Wantage	135·11	46	46·75	122·85	54	39·87
Oxford	110·50	16	65·19	103·86	14	42·64
Abingdon	136·92	25	53·75	124·92	50	48·43
Didcot	138·59	58	49·95	135·04	26	42·16
Wallingford	141·50	28	40·94	134·84	37	35·12
Reading	134·05	38	50·26	140·00	38	51·60
Thatcham	145·03	36	49·59	132·17	41	50·98
Newbury	140·14	43	40·75	128·05	111	56·20
Hungerford	133·33	27	44·87	123·75	20	62·72
North Oxfordshire						
Chipping Norton	137·17	36	37·83	133·47	34	47·55
Banbury	138·78	116	55·99	127·17	142	49·96
South Oxfordshire						
Henley	141·67	24	55·47	128·20	25	43·39
Caversham	149·08	13	35·59	147·79	19	55·68

distributions in fig. 1. The analyses of variance are given in table 2. The geographical variation in the rural locality means is illustrated in fig. 2.

In *Berkshire* a geographical pattern is suggested in the means of rural samples. The means increase eastwards and southwards from (*a*) the relatively low means of the north-west of Berkshire (Faringdon, the Vale of

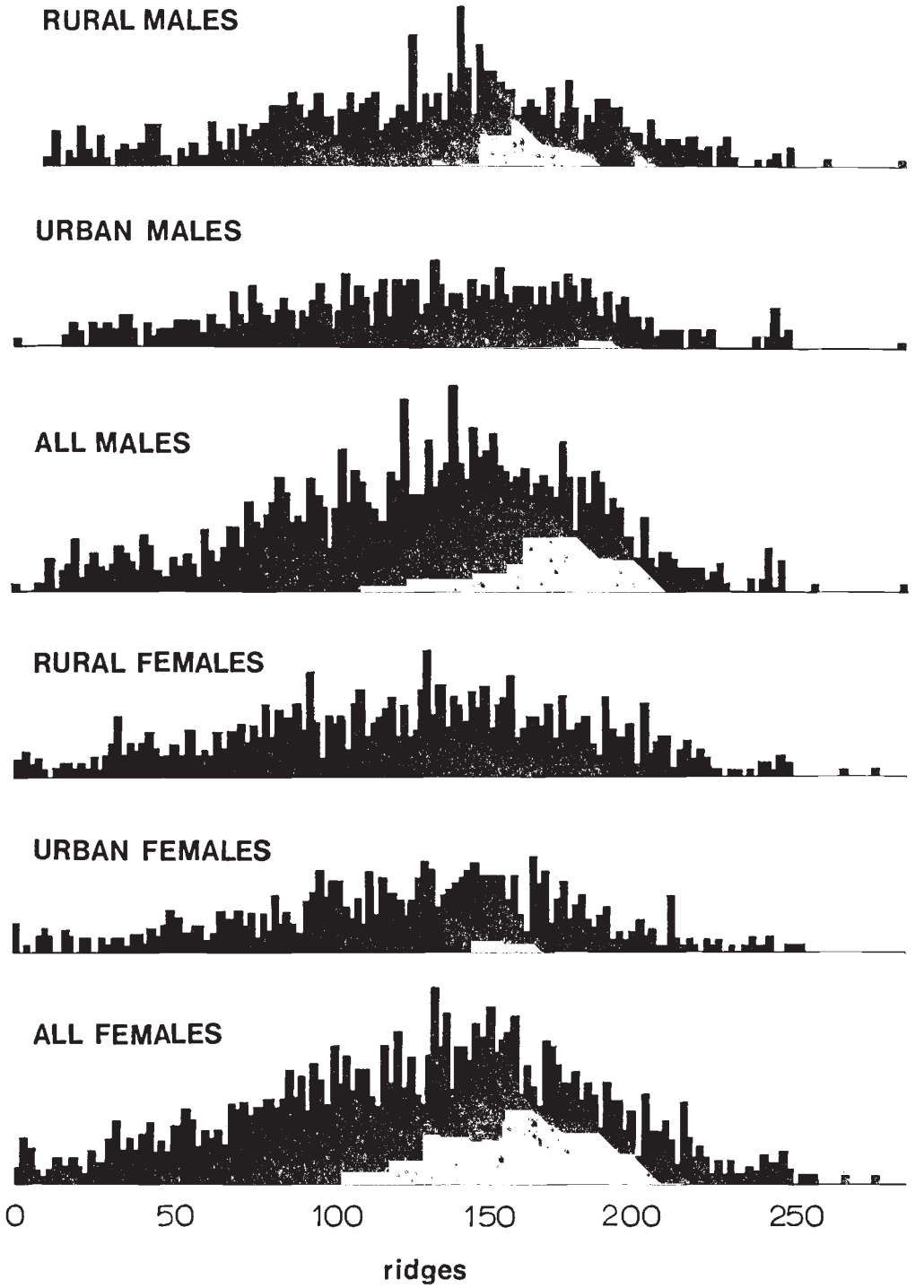

FIG. 1.—Frequency distribution of individual total ridge counts, according to sex and rural/urban residence.

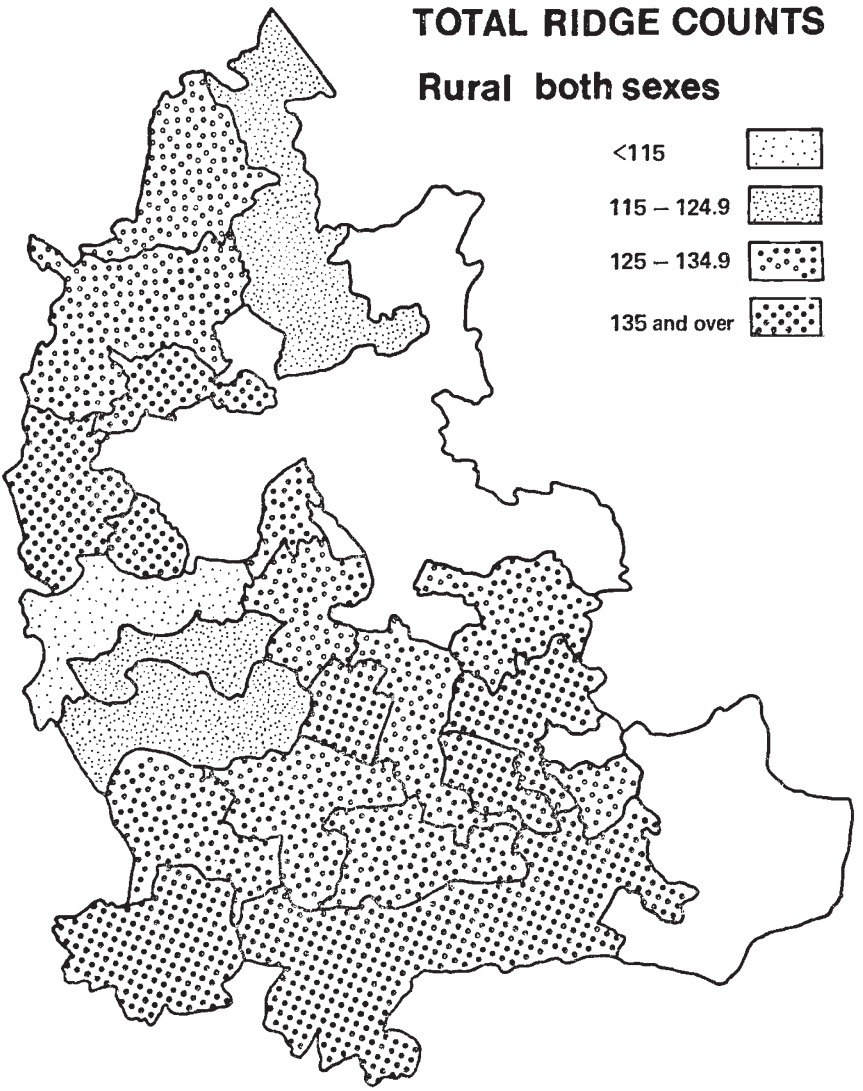

FIG. 2.—Geographical distribution of mean total ridge counts (both sexes), showing the gradients (*a*) of increasing mean southwards and eastwards in the southern half of the area, (*b*) of decreasing mean northeastwards through north Oxfordshire in the northern half of the area.

the White Horse and Wantage Heights), through (*b*) the intermediate means of central and north-east Berkshire (Cumnor, Abingdon and Berkshire Downs), to (*c*) the high total ridge count means of south and east Berkshire (the Thames and Kennet valleys). The gradient is particularly pronounced in rural males but its regularity in females is interrupted by high values in the Abingdon-Didcot localities. In these rural samples there is a highly significant difference between sexes, and highly significant within sex variation among the three regions north, central and south Berkshire, while the variation among localities within regions is not significant.

TABLE 2

Analyses of variance: total ridge count

	RURAL				URBAN			
	sum of squares	degrees of freedom	mean square	F	sum of squares	degrees of freedom	mean square	F
Berkshire								
Within localities	1973976·8	718	2749·3		1761718·2	733	2403·4	
Within region, between localities	24726·8	9	2747·4	1·00	26090·9	7	3727·3	1·55
Between regions	30579·8	2	15289·9	5·56*	17822·0	2	8911·0	3·70†
Within sexes	2029283·5	729	2783·7		1805631·1	742	2433·5	
Between sexes	30174·5	1	30174·5	10·98**	11647·5	1	11647·5	4·84†
Total sample	2059458·0	730			1817278·6	743		
North Oxfordshire								
Within localities	1131926·9	461	2455·4		837233·0	325	2576·1	
Between localities	46056·7	5	9211·4	3·75*	1161·2	1	1161·2	2·22
Within sexes	1177983·7	466	2527·9		838394·3	326	2571·8	
Between sexes	36012·0	1	36012·0	14·66**	8180·4	1	8180·4	3·18
Total	1213995·7	467			846574·7	327		
South Oxfordshire								
Within localities	537833·3	201	2675·8		186957·4	78	2396·9	
Between localities	9920·3	3	3306·8	1·24	4605·8	1	4605·8	1·92
Within sexes	547753·6	204	2685·1		191563·2	79	2424·9	
Between sexes	30771·5	1	30771·5	11·50**	1164·3	1	1164·3	2·06
Total	578525·1	205			192727·5	80		
Combined Male and Female								
Within sexes within regions	3724441·1	1399	2662·2		2817766·5	1147	2456·6	
Within sexes between regions	40758·5	4	10189·6	3·83*	23477·3	4	5869·3	2·39†
Within sexes	3765199·6	1403	2683·7		2841243·7	1151	2468·5	
Between sexes	91767·9	1	91767·9	34·47**	20962·3	1	20962·3	8·53*
Total	3856967·5	1404			2862206·0	1152		

† P <0·05. * P <0·01. ** P <0·001.

In the urban samples variation between sexes and between regions is significant at only 5 per cent. No meaningful pattern emerges from an inspection of the variances of the Berkshire rural or urban samples.

In *north Oxfordshire* overall, and in the male samples particularly, the rural total ridge count means show a clear geographical pattern. The high means of the south of the area, Bampton, Burford and Wychwood, fall away northwards and eastwards through Chipping Norton to Hook Norton and the Cherwell Valley. A curious elevated female mean in Hook Norton interrupts an otherwise smooth gradient in females. The difference between sexes is highly significant and so is the variation within sexes between localities. There are no significant differences between sex or locality in the urban samples from north Oxfordshire.

In rural *south Oxfordshire* high means tend to occur, extending the Berkshire gradient eastward. Within the area there is no clear local pattern, though in both sexes the lowest means occur in the north. The difference between sexes (rural) is highly significant, but there are no significant within-sex differences among localities. Again the urban samples appear different in that the difference between sexes is not significant.

The means and standard deviations for the *total sample* as well as for the five regions (three in Berkshire, and one each for north and south Oxfordshire) are given in table 3. Highly significant differences within sexes occur among the means of the five rural regions and between the sexes, but not among the urban samples.

TABLE 3

Total ridge count: means and standard deviation by region

	MALE			FEMALE		
Area	No.	Mean	S.D.	No.	Mean	S.D.
RURAL						
North Berkshire	71	123·42	47·90	76	113·76	52·54
Central Berkshire	149	138·08	50·48	171	124·25	56·90
South Berkshire	127	143·24	49·73	137	129·66	53·69
North Oxfordshire	229	142·80	48·76	239	125·25	51·69
South Oxfordshire	100	146·86	50·19	106	122·41	53·31
URBAN						
North Berkshire	57	130·65	48·42	79	121·48	45·46
Central Berkshire	41	126·61	59·14	64	120·31	47·72
South Berkshire	230	138·87	46·37	273	131·60	51·43
North Oxfordshire	152	138·40	52·15	176	128·39	49·43
South Oxfordshire	37	144·27	49·00	44	136·66	49·44
Total sample	1193	139·04	49·68	1365	126·30	51·90

There is a strong suggestion then in these data that the populations of the area cannot be regarded as homogeneous in respect of total ridge count. Admittedly the pattern of variation is not so clear as could be wished, perhaps on account of the small sample sizes for each locality. But:

1. Highly significant differences occur between sexes in the rural samples.
2. Within sexes there are highly significant differences between the five regions in rural samples and also between localities in north Oxfordshire.

3. The pattern of local variation of rural means is quite regular, particularly in males, the highest means occurring in the south and east of the area, diminishing north-westwards to the lowest values in the Faringdon Heights and Vale of the White Horse localities, rising abruptly again in the Burford-Bampton area, then tending to diminish northwards again. In females the pattern of variation of means, though interrupted, is generally parallel to that in the male.
4. The variation of the variances in both sexes shows no meaningful pattern, again perhaps on account of sample sizes.
5. The urban areas appear to differ from the rural in that they do not show such pronounced differences; in the urban samples there are no significant differences between the five regions or between localities, while the differences between sex are either not significant or barely significant in urban samples. There is, however, a general tendency for the pattern of the urban means to follow that of the rural, especially in males.

(ii) *Finger patterns*

The total numbers of arches, loops and whorls for Berkshire, north Oxfordshire and south Oxfordshire local samples are shown in table 4. Inspection suggests appreciable differences in both male and female samples for the 12 rural localities in Berkshire, arising from an increased frequency of arches and decreased frequency of whorls in north-west Berkshire and the converse in the Thames and Kennet valleys. Large differences also occur between urban samples and are suggested in the north and south Oxfordshire samples. It appeared worth while making a statistical analysis, for which individual fingers have to be examined separately. The results are summarised in table 5.

Significant differences are found between the three regional divisions of Berkshire rural males in the distribution of pattern types on the middle digits, digits 3 and 4 on the right hand and 2 and 3 on the left hand. The deviant area for all four digits is west Berkshire, with an excess of arches or a low frequency of whorls. No significant differences appear amongst the Berkshire rural female samples or between localities in either sex. For the urban male Berkshire samples significant differences among the three regional divisions occur on right hand 4 and left hand 1, due to an excess of whorls for the former in south Berkshire and an excess of arches in the latter in west Berkshire. Berkshire urban females show highly significant differences between the three regional divisions, in the right hand, 1, 2, 3 and 4 and left hand 2, 3 and 4; the differences arise mainly from the decrease of whorls in west and central Berkshire and an excess of arches in west Berkshire. Significant differences are also apparent among the ten urban areas of Berkshire females, in right hand 1, 2 and 4 and in left hand 2 and 3. No significant differences occur in north or south Oxfordshire rural males. For females, significant differences occur in both north and south Oxfordshire, respectively due to fewer whorls on right hand 1 in Burford, and to too few whorls on right hand 4 and left hand 2 in the east Thames Valley.

It appears then that the frequencies of pattern types vary within the area surveyed. The number of significant differences (table 5) during the analysis of separate fingers is greater than would occur by chance. Thus the limited qualitative analysis of the fingerprint pattern types supports the

TABLE 4

Finger patterns: numbers by locality

	Males				Females			
	Arches	Loops	Whorls	Total fingers	Arches	Loops	Whorls	Total fingers
RURAL								
Berkshire								
Faringdon	19	175	36	230	31	224	35	290
Vale of White Horse	5	109	26	140	23	104	33	160
Wantage Heights	21	258	61	340	34	224	52	310
Cumnor	10	97	33	140	14	123	23	160
Abingdon	8	138	34	180	8	209	83	300
East Downs	19	226	75	320	29	317	64	410
Central Downs	19	400	121	540	50	385	115	550
West Downs	13	198	99	310	40	182	68	290
Didcot	11	125	54	190	1	92	27	120
West Thames Valley	8	262	110	380	43	377	120	540
Kennet	27	305	138	470	35	330	105	470
Hungerford	1	187	52	240	15	173	52	240
Total	161	2480	839	3480	323	2740	777	3840
North Oxfordshire								
Cherwell Valley	32	351	137	520	54	345	81	480
Hook Norton	36	450	174	660	45	537	178	760
Chipping Norton	4	237	79	320	33	257	80	370
Wychwood	17	235	118	370	33	303	84	420
Burford	6	166	68	240	18	159	43	220
Bampton	6	129	45	180	1	122	17	140
Total	101	1568	621	2290	184	1723	483	2390
South Oxfordshire								
Watlington	13	161	66	240	26	171	33	230
Woodcote	11	183	76	270	13	208	79	300
Sonning	9	157	94	260	31	208	91	330
East Thames Valley	4	151	75	230	12	171	17	200
Total	37	652	311	1000	82	758	220	1060
URBAN								
Berkshire								
Faringdon	14	82	14	110	29	180	41	250
Wantage	15	348	97	460	35	445	50	530
Oxford	31	104	25	160	17	115	8	140
Abingdon	15	172	63	250	38	403	69	510
Didcot	31	433	116	580	13	197	50	260
Wallingford	5	213	62	280	14	279	77	370
Reading	17	270	93	380	22	263	95	380
Thatcham	12	254	94	360	29	283	98	410
Newbury	8	282	80	370	81	634	225	940
Hungerford	12	211	47	270	16	147	37	200
Total	160	2369	691	3220	294	2946	750	3990
North Oxfordshire								
Banbury	69	776	315	1160	78	1013	329	1420
Chipping Norton	10	255	95	360	15	242	83	340
Total	79	1031	410	1520	93	1255	412	1760
South Oxfordshire								
Caversham	6	91	33	130	15	109	66	190
Henley	16	182	42	240	12	177	61	250
Total	22	273	75	370	27	286	127	440

TABLE 5

Fingers which show significant differences

	Right hand	Left hand
Berkshire rural samples		
Twelve localities		
Males	0	0
Females	0	0
Three regions		
Males	3, 4	2, 3
Females	0	0
Berkshire urban samples		
Ten localities		
Males	0	0
Females	1, 2, 4	2, 3
Three regions		
Males	4	1
Females	1, 2, 3, 4	2, 3, 4
North Oxfordshire rural samples		
Males	0	0
Females	1, 5	0
North Oxfordshire urban samples		
Males	0	0
Females	0	0
South Oxfordshire rural samples		
Males	0	0
Females	4	2
South Oxfordshire urban samples		
Males	0	0
Females	0	0

quantitative analysis, since both indicate the existence of regional and local differences. Berkshire areas with more arches and fewer whorls than expected correspond generally to the areas of low total ridge count. This is not unexpected since there is a high positive correlation between total ridge count and triradius number (Pons, 1962; Parsons, 1964). The analysis of pattern type frequency on the separate fingers to some extent supports results of the inspection of total pattern frequencies, though the results of the analysis on the individual fingers are not always consistent, perhaps on account of the small size of some samples.

4. DISCUSSION

These two analyses are not independent, and it is not surprising that they give similar results. Both show, the quantitative treatment perhaps more elegantly, the existence of regional and local dermatoglyphic differences in the area studied. Yet concordance between the findings is not exact. Both agree that the variation in Berkshire lies between the three regions rather than among localities within regions. For the Berkshire urban samples, however, while both show differences between the three regions, there appear to be differences between localities by pattern analysis which are barely significant by quantitative treatment. For rural north Oxfordshire, pattern analysis does not suggest the highly significant locality

variation that is shown by quantitative treatment, and suggests differences in south Oxfordshire rural samples that are not significant quantitatively.

For this discrepancy between the results of the two analyses there are several possible explanations. First is the small size of several of the samples. This is difficult to discount and only investigation of larger samples will show how far it is responsible. Secondly, the method of counting ridges may be at fault, not through error in actual counting but in conception; it is possible that by taking only the larger count on each digit where two triradii are present, some bias is introduced into the final figure for total ridge count, and some other method of using digital counts should be investigated. Thirdly, the fact that the patterns on different fingers are not independent, but say the presence of a loop on one digit renders more likely the occurrence of a loop on adjacent digits, means that it is not sufficient merely to count up the number of digits on which statistically significant differences occur. An individual's digits are not independent of each other for ridge count or pattern type, as can be shown by any of the published series of correlation coefficients between digits, so that each individual should be regarded as a whole with respect to his digital features. A multivariate approach to the problem is currently under investigation.

Interpretation of the differences

This study suggests the existence of local differences in the South Midlands region. The limitations of the study are fully realised, the small samples, the limited parallelism between sexes and between urban and rural samples. However, the fact that some parallelism does occur, especially in the Berkshire male and female rural samples, is taken as indicative that the differences are real and are of biological significance. Moreover, the fact that the variation that does occur tends to be clinal in nature, *e.g.* across north Oxfordshire, across Berkshire, reinforces this interpretation. It is obviously necessary therefore to repeat this investigation, using larger samples from each locality and employing more sophisticated methods of analysis. In the meanwhile, however, on the assumption that the differences are real, their existence must be explained.

It is this type of information that makes only too clear how little is known of the biological significance of dermatoglyphic variation. Interpretation would certainly have been facilitated had the area been surveyed for other genetic traits. It is of interest that the cline from north-west Berkshire to south Oxfordshire is paralleled by clines in blood groups, particularly B and A, the inclusion of urban donors in the samples notwithstanding. Only through such local genetic knowledge is it possible to indicate whether local differences should be explained in terms of original settlement and local history or in terms of selection and the action of other evolutionary forces on the gene frequencies of the population. For example, the continued existence of an intrusive population in an area is a more likely hypothesis if it shows differences in more than one genetic character from the surrounding populations. In the present state of knowledge, therefore, it is not possible to discount local selection, or some other process modifying gene frequency, as being responsible for the pattern of differences observed.

However there may be an historical explanation of these findings. The urban/rural differences are what would be expected if the towns were originally overgrown villages with populations akin to the adjacent rural

areas, each with its own dermatoglyphic characteristics, and if some subsequently attracted population from other and more distant areas, again with characteristic dermatoglyphics.

For Berkshire, a distinctive feature is the low total ridge count of north-west Berkshire, Faringdon, the Vale of the White Horse and the Wantage Heights rural areas, and also the towns of Faringdon and Wantage. There is evidence from the history of settlement to suggest that north-west Berkshire was first colonised during the Neolithic and early Bronze ages, and that it was then left virtually untouched by later waves of immigrants into the area, such as the west Saxon tribes, though penetration by other Saxons via the rivers from the Wash is likely. Archaeological findings point to the occupation of the northern slopes of the Downs by Neolithic people who had come from the south. Fleure and Whitehouse (1916) remarked that the Wantage Heights area shows features typical of the movement of Neolithic populations as, for instance, the distribution of old villages along the slopes leading from the crest of the downs. They conclude that " the descendants of Neolithic upland fold are the characteristic inhabitants of . . . the inland villages of these uplands ". The relative isolation of north-west Berkshire from the main routeways of the lower Thames and Kennet valleys and the lack of population mobility in a wholly rural community may have helped to preserve the distinctive dermal features of the population of this region.

For north Oxfordshire an area of high total ridge count in the south of the area is shown particularly by male but to a lesser extent also by female samples. Bampton, Burford and Wychwood have similarly high mean total ridge counts. Buxton *et al.* (1939) commented, " we became impressed by the possibility that in certain areas, notably within the bounds of the Wychwood forest, there existed a community which was darker than the general population ". The Wychwood forest forms a considerable part of the high total ridge count region of south-west Oxfordshire. The very name of the area is derived from the Hwicce, who penetrated from the adjacent north-west settlements in Warwickshire, Gloucestershire and Worcestershire. These were of quite different stock from the surrounding Mercians, Angles and west Saxons. Like north-west Berkshire, this region is isolated from the main routeways crossing the South Midlands, and even today retains its almost wholly rural character. By contrast, for south Oxfordshire the history of settlement has been one of continuous diffusion of peoples over the less well-wooded parts of the Chilterns and along the east banks of the Thames. Consequently no isolated enclaves of high or low total ridge count were expected, and none were found. There is no evidence from either ridge count or pattern type to suggest the survival of an ancient population in the south Chiltern region.

Such an explanation of genetic differences between modern populations in terms of early history and settlement must be largely hypothetical. There is no way of checking hypotheses about the origin of the modern population, except to the extent that evidence from a large number of different genetic traits is mutually supporting, and for this the information is not yet to hand. In the case of dermatoglyphic details, there are no comparable data from other populations presumed to be derived from the same stocks. The suggestion is however offered in the absence of any other explanation for which there is any evidence at all, and in the hope that it may stimulate, while there is still time, relevant studies of other characters before modern mobility destroys the last vestiges of local heterogeneity.

5. Summary

1. Dermatoglyphic analysis of some 2500 school children in the South Midlands shows the existence of heterogeneity in digital total ridge count and pattern type frequency among local populations.

2. The variation appears to be clinal, with those areas of most aberrant ridge count and pattern type frequency coinciding with those of greatest historical isolation.

3. It is suggested that the variation represents the continuing existence of differences in local gene pools, stemming originally from the pattern of settlement of the area.

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