Table 21

Comparison of consumption in different years for working and middle-class families in Bengal

		ja	gaddal wo	rking-clas	s	С	alcutta mic	idie-ciussa	·\$
Item	Unit per head per	Consume capita p		Index-n 1945:			ntion <i>rer</i> per year	Index n 1945:	
	усаг	1945	1941	Con- sump- tion	Prices	1945	1939	Con- sump- tion	Prices
(D)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rice and products Wheat and products All coreals Pulses Potatoes Milk and products Butter and ghee Oil Sugar and gur Fish Meat Eggs Coal Fire wood Cloth (Jungi)	lbs.	214-0 133-3 345-6 68-3 50-2 18-3 0-66 20-5 12-0 26-4 12-1 3-0 297-1 302-0 6-9 0-6	321-8 113-6 435-3 70-0 64-8 43-2 3-9 15-2 15-9 15-0 13-1 12-0 405-7 9-9 0-5	66:5 117:4 79:4 97:6 77:5 42:4 16:8 134:7 75:6 .176:0 92:2 66:6 -106:5 74:4 69:7 120:0	273 187 — 366 533 300 210 304 190 185 290 343 — 377 3370 283 416	221-4 85-6 306-9 34-5 77-8 1-6 19-1 11-8 27-9 24-5 7-7 11-8	224-7 74 1 298-7 32-1 83-1 174-5 16-5 23-0 17-3 48-6 50-2 11-5 42-4	98:5 115:5 102:8 107:6 66:0 44:6 10:0 83:0 57:5 48:8 67:0 28:0	308 258 317 317 333 333 235 300 172 589 360 562
Number of families , persons persons per	_	755 2,313	6 1 1 1,866	_	_	610 4,335	1,151 10,539	=	=
family	-	3.06	2-91	-	-	7-11	9-16		-

The consumption of all cereals had dropped very appreciably to about 79 per cent. in working-class families, although there was an increase in the consumption of wheat, owing no doubt to more favourable prices. In middle-class families the cereal consumption (which had been originally much lower in comparison with working-class families) had remained more or less steady, but there was a higher consumption of wheat. The consumption of sugar had increased a great deal (to 176 per cent.) among working-class families, but had decreased appreciably in middle-class families, due almost certainly to rationing. The consumption of oil had increased somewhat in working-class families, which was probably due to partial rationing and as an offset against the practical discontinuance of the use of higher-quality fats like butter or ghee (clarified butter). In practically all other items the consumption had decreased very seriously in 1945 in both working-class and middle-class families at Jagaddal and in Calcutta.

Margin of error of index-number of earnings and consumption. As information had been collected about total earnings of different families in 1941 and 1945, it is possible to calculate the average increase in earnings. The geographical blocks had been kept the same in both years. It is possible therefore to calculate average earnings for each block separately in 1941 and 1945, and hence to calculate the ratio of earnings for each individual block. Similar material is also available for a number of other items, like monthly expenditure, consumption of cereals, pulses, vegetables, vegetable oil, meat and fish, dairy products, and clothing. Index-numbers for 1945 with 1941 as base can be therefore calculated for all these items for each of the five geographical blocks at Jagaddal. These index-numbers are shown in Table 22. Similar figures were available for index-numbers for 1942 with 1941 as base, but these have not been printed here.

Table 22 supplies some idea of variations in the index-numbers from block to block. It is possible to form an unweighted average index for the whole area, and also to calculate the unweighted standard error from the figures for the different blocks. These unweighted average index numbers for 1942 on 1941 are shown in col. 3, and for 1945 on 1941 in col. 4 of Table 24.

TABLE 22

Bengal Labour Enquiry—Jagaddal, 1945 and 1941.

		1	(a) P	er family	basis			(b) P	er capita	basis	
•				. 		Block 5	Block I	Block 2	Block 3	Block 4	Block
		Block I	Block 2					484	434	268 374	164
	и (1941	157	168 212	181	104	37	516 580	601	467	ì	1 -
	n (1945 Harmoni	c	188	186	101	-43	546	536	450	312	208
Items	mea	_		(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Cost of larnings expendit Cercals Pulses Vegetable Meat an Spices a Dairy por Clothing	es le oil d fish nd salt roducts	(2) 275 173 165 78 89 90 94 75 75 73	269 195 179 30 115 98 149 78 74 48 73	272 207 194 80 93 103 176 104 71 46 83	275 228 212 107 126 113 166 95 83 47 87	279 221 206 81 98 92 136 72 109 32 92	275 191 182 86 98 99 104 79 83 34	269 199 183 82 118 100 153 80 76 50	272 204 191 79 91 101 173 102 70 46 81	275 172 160 81 95 85 111 72 67 36 66	279 176 164 65 72 108 57 80

Information regarding the size of the samples in 1941 and in 1945 in the different blocks is given together with their harmonic means at the top of each column in Table 22. Using such harmonic means as weights, a series of weighted averages with standard errors were calculated, and are shown in col. 5 of Table 24.

Bengal Labour Enquiry—Jagaddal, 1941, 1942, and 1945. Average earning and expenditure and quantity consumed per month

Serial no.	Item	Unit of measurement per month	1941	1942	1945
		(3)	(4)	(5)	(6)
(I)	(2)		2.91	2.79	3.06
	average	size of family	!		
		(a) Pe	r family basis		· 55-40 ± 5-16
		rupees	26.93 ± 0.92	36.38 ± 1.22	57.61 ± 5.38 87.49 ± 7.63 15.93 ± 0.82
1	Earning	,	30-11 = 1-10	35.57 = 1.15	87 49 = 7 63
2	Expenditure	pounds	103.41 + 3.70	98.68 ± 5.53	15.93 = 0.82
3	Cereals	1 '	1 15.47 ± 0.70	12-61 ± 0-56 13-41 ± 1-52 3-48 ± 0-19 5-90 ± 0-33 5-74 ± 0-29	11.30 + 4
· 4	Puises	",	1 17-12 - 220	31.41 = 0.10	5·10 ± 0·4/
5	Vegetables		3.56 ± 0.19	5.00 = 0.33	5-(X) ± 0-53
6	Vegetable oil		3.56 ± 0.19 6.09 ± 0.35 5.74 ± 0.33	1 5.74 = 0.29	4.96 - 0.97
7	Meat and fish Spices and sait	,,,	5.74 ± 0.33	12.08 ± 1.46	5-10 0-88
2 3 4 5 6 7 8	Dairy products		13.31 ± 1.03	55·42 ± 2·52	49.77 ± 5.78
10	Clothing	yds, per year		33.42 = 2.24	
		(b) P	er capita basis	0 52	16-54 ± 1-05
		rupces	: 0·01 — 0·42	13.32 ± 0.53	17.20 = 1.1
i	Earning		9.93 ± 0.35	12.08 ± 0.55	26.08 = 1.41
1 2 3 4	Expenditure	pounds	9.93 ± 0.35 33.37 = 0.74	31.76 = 0.53	4.98 = 0.6
3	Cereais	,,	2.10 = 0.5	4.20 ± 0.16 10.55 ± 0.56	9.46 ± 0.6
	Pulses	,	10:45 - 0:43	1.13 = 0.02	1.52 ± 0.2
5	Vegetables	,,	1.15 0.0+	2.04 = 0.10	1 1·52 ± 0·1
. 6	Vegetable oil Meat and fish	,,,	1.97 ± 0.02	1.89 ± 0.06	i.40 ± 0.0
,	Spices and salt	39	1.85 ± 0.06	$ \begin{array}{c} 2.04 \pm 0.10 \\ 1.89 \pm 0.06 \\ 3.79 \pm 0.33 \end{array} $	1.50 - 0.0
3	Dairy products	, ,,	4.05 ± 0.23	18.33 ± 0.58	14.70 = 0.8
6 7 3 9 10	Clothing	yds. per yea	r 19.92 ± 0.64		

Mean values of monthly earnings, expenditure, and consumption of various commodities for working-class families in Jagaddai in 1941, 1942, and 1945 are shown in Table 23. In this table figures have been given both on a "per family" and "per capita" basis, and the standard errors have been calculated from the block figures in 1945 and 1942. From this material, index-numbers can be prepared for 1945 with 1941 as base by dividing the mean values in 1945 by the corresponding mean values in 1941. One measure of the standard error of the index-number can also be obtained by compounding the standard error of the two mean values. These index numbers are shown in cot. 6 of Table 24, in which the C.L. index-number has been also given at the top for convenience of reference.

in the Indian Statistical Institute

TABLE 24

Bengal Labour Enquiry—Jagaddal, 1941, 1942, and 1945. Index-numbers of carnings, expenditure, and consumption

		1942:1941	i ·	1945: 1941	
Serial no.	Item	Unweighted average of ratios	Unweighted average of ratios	Weighted average of ratios	Ratios of average
(D	(2)	(3)	(4)	(5)	(6)
	Cost-of-living index	122 ± 0.33	273 ± 1·64	272·S = 1·3	-
	. (a)	Index-number o	n " per family "	basis	
1 2 3 4 5 6 7 8 9	Earnings Expenditure Cerculs Pulses Vegetables Vegetable oil Meat and fish Spices and salt Dairy products Clothing	137 = 4-3 121 = 5-1 98 = 6-1 86 = 5-4 105 = 6-9 101 = 5-5 106 = 7-0 105 = 7-0 100 = 9-3 92 = 5-8	205 = 9·8 191 = 8·6 85 = 5·5 104 = 7·0 99 = 4·1 144 = 4·3 84 = 6·6 83 = 7·0 41 = 4·0 82 = 3·8	199-1 ± 8-3 186-0 ± 7-3 83-5 ± 4-4 103-1 ± 6-2 99-2 ± 14-0 44-1 ± 14-0 85-3 ± 6-1 77-7 ± 4-3 41-8 ± 3-5 78-9 ± 2-8	205-8 ± 20-50 191-3 ± 19-35 84-6 ± 8-73 103-0 ± 7-09 97-6 ± 10-33 143-3 ± 15-28 82-1 = 7-20 86-4 ± 17-61 78-3 ± 8-37 82-3 ± 9-98
	(b)	Index-number o	n " per capita "	basis	
1 2 3 4 5 6 7 8 9	Earnings Expenditure Cereals Pulses Vegetables Vegetable oil Meat and fish Spices and salt Dairy products Clothing	141 = 7·2 122 = 5·7 97 = 3·0 85 = 4·3 106 = 7·5 98 = 3·6 109 = 8·1 105 = 5·0 100 = 9·0 93 = 3·4	188 ± 6·3 1 176 = 6·0 79 = 3·6 96 = 6·5 92 = 5·5 130 = 14·0 78 = 7·3 77 = 3·8 35 = 4·3 75 = 2·8	191.5 = 5-1 179-1 ± 4-8 80-5 = 3-4 99-2 = 5-6 94-9 ± 4-1 133-4 = 5-8 80-5 = 6-5 76-3 ± 3-0 40-3 ± 4-2 76-4 ± 2-2	183-6 ± 14-83 173-2 ± 13-09 78-2 = 4-75 96-5 ± 13-22 90-3 ± 7-15 132-2 ± 18-52 77-2 ± 7-31 75-7 ± 4-14 37-0 ± 2-58 73-8 ± 4-95

Index-numbers for 1945, calculated in three different ways, are given in cols. 4, 5, and 6 of Table 24. It will be noticed that it does not matter very much which particular method of calculation is followed, as the three index-numbers are in broad agreement.

It is of course possible to make a deeper analysis by taking into consideration the sampling errors within each block, which, however, would entail a great deal of computational labour. My purpose here is to draw attention to the possibility of making rough but quick comparisons by using the mean values for replicated sub-samples.

I have no desire to discuss the economic implications, but may just note that, with a cost-of-living index of 273 and an index-number of earnings of 205, the index-number of real wages was 75 in 1945. The index-numbers of consumption shown in col. 5 of Table 21 or cols. 5 or 6 of Table 24 are in broad agreement with this value. Consumption of essential articles had naturally remained more steady, while consumption of other commodities had decreased more appreciably. I am not competent to discuss the economic aspects of the subject. My object is to point out that even approximate values of the margin of error are likely to be useful in obtaining a more critical appreciation of the economic situation.

I may mention here that in working-class family enquiries at Jagaddal arrangements had been made to keep a certain number of families common in the enquiries in different years. This enables a direct comparison of the change in the consumption pattern being made on a family or household basis. In fact the form in which the material has been collected makes it possible to undertake a critical study of such enquiries. Owing to lack of resources, we have not been able to take up this work seriously, but Ambika Ghosh and H. K. Chaturvedi are doing what they can.

TABLE 25

Bengal Sample Surveys (1936-42). Estimated consumption of food items in lb. per head per year by expenditure levels

Food items			Levels	of family	y expendi	ture in re	pecs per	month		. All
rood Reins		0-10	10-20	20-30	30-50	50-100	100-200	200-300	300 ÷	ievels
æ		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rice		310-22	371-93	370-28	360-41	342-31	278-95	257-55	262 49	341.48
Rice products		4-11	5.76	10-70	9-87	10-70	10-70	i 9.87	5.76	8-23
Wheat products		1.64	7.41	13-16	17-28	26-33	44-43	59-24	75-70	19-75
All cereals		315-97	385-10	394-14	387-56	379-34	334.08	326-66	343-95	369-40
Pulses		15.63	27.98	37.03	36-20	32.91	31-27	34.56	36.20	32.9
Salt		9.87	13.27	13.99	14:07	15.63	15-63	17.28	18-10	15.30
Potatoes		12.34	26.33	32.09	37-03	48-55	63-36	79.81	108-61	48-55
Vegetables		22.22	18-45	39-50	44-43	65-00	94.21	109-44	139.88	64-26
Oii	***	5.76	9.87	11.52	12.34	15-63	19-75	21-39	25-51	i4-8
Sugar and gur		3 29	9.05	12-34	14-42	23.86	54-31	36-20	41.96	24.31
Fish		6.58	8.23	11.52	14.81	23.86	41-96	49.37	57-60	25.51
Mcat		1.64	4.11	5.76	5.76	8-23	9.05	11.52	17:28	9.0
Eggs		0.13	0.16	0.25	0.70	2.01	3.28		6 0+	2.7.
Milk and milk products		5.76	10.70	23.36		83.93		[167-86]	236.98	84-75
Butter and ghee		0.53	0.82	1.64	2-47	5-76	10.70	13-16	23 86	6.58
No. of persons per family	i	3.67	4.52	4.66	5.68	7.19	9.12	11.52	15-36	5.29
lotal no. of families		2 2 2 2	4,142	2,885	2,510		649	268	224	15,409
Total no. of persons		11,788		13,443	14,247	10,919	5,916	3,088	3,441	81,554

TABLE 26
Estimated index-numbers of per capita consumption of various food items by expenditure level

	Units			Month	iy expen	diture in	rupees		
Food items	measure- ment	0-10	10-20	20-30	30-50	50-100	100-200	200-300	300 and
(D)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Rice	maunds	90.8	108-9	108-4	105-5	100-2	81.7	75-4	76.9
2. Rice products	.,	50·0	70-0	130-0	120-0	130-0	130.0	120-0	i 70 0
3. Atta flour, etc	,,	8.3	37.5	66.7	8 7·5	133-3	225-0	300-0	383-3
4. Ail cercals		85-5	104-2	106-7	104-9	102.7	90.4	88-4	93-1
5. Pulses	seers	47.5	85.0	112.5	110.0	100.0	95-0	105:0	110.0
6. Sait	.,	64-5	86-7	91-4	91.9	102-1	102-1	112.9	118-3
7. Potatoes	",	25.4	54-2	66-1	76-3	100-0	130-5	164.4	223.7
8. Vegetables	"	34.6	28.7	61.5	69-1	101-1	146.0	170-3	217.7
9. Oil		38.9	66.7	77-8	83-3	105-6	133-3	144.4	172-2
O. Sugar and gur	"	13.5	37.2	50-8	59-3	98-1	223.3	148-9	172 6
I. Fish		25.8	32.3	45.2	58-1	93.6	164-5	193 6	225-8
2. Meat	"	18.2	45.4	63.6	63-6	90.9	100-0	127.3	190.9
3. Eggs	number	4.9	5.7	13-1	25.5	73.2	119-8	177.0	220.6
4. Milk and milk products	seers	6.8	12-6	28.2	58.2	99-0	172.0	198-1	279.6
5 Dutter and abox		3.1	12.5	23.0	37.5	87.5	162.5	200.0	362.5
	"	3-1	1-3	230	3,5	6,5	1023	;	1023
ndex no. of persons per	٠	69-4	85.4	38-1	107-4	135-9	172.4	217.8	290-4

Statistical

Per capita consumption of food items by expenditure levels. I may give another illustration of the use of the sample survey in investigating consumption patterns. A number of enquiries were undertaken in both rural and urban areas in Bengal between 1936 and 1942. Although economic conditions and prices had changed during this period, the actual magnitude of such changes was small in comparison with that which occurred under war conditions. It has therefore been considered permissible to prepare a composite table showing the per capita consumption of various food items at different expenditure levels (in rupces per month per family) based on the above enquiries. Relevant data are given in Table 25. The same table has been expressed in the form of

index-numbers in Table 26 in which the over-all average consumption has been adopted as 100.

The consumption of all cereals is naturally fairly steady, but shows a slight falling off above the expenditure level of Rs.100 per month. Rice products and wheat are increasingly preferred with rising expenditure level in Bengal. Index-numbers for pulses and sait are also, on the whole, fairly steady. The consumption of all other items increased steadily with rising expenditure level. The disparity in consumption is very high in sugar, fish and meat, and still higher in the consumption of eggs, milk and milk products, and butter and ghee (clarified butter). Another point is worth noting—namely, the steady increase in the size of the household with rising economic status.

Radio Programme Preference Survey

I shall now give an example of what is usually called "listener research" in the United Kingdom. This work was undertaken at the request of the Government of India. The object was to ascertain public reactions to the broadcast of war programmes from the All-India Radio in the earlier part of 1941. It was apprehended, however, that any direct enquiry would meet with considerable psychological resistance. In this situation the Indian Statistical Institute undertook to organize a comprehensive public preference survey with a broad coverage, including reactions to war broadcasts.

As regards the design of the survey, it may be briefly mentioned that the sample was picked out of households possessing radio ficences, or which a list was supplied by the Government. The households were selected on the basis of pure space randomization, and arranged in the form of several inter-penetrating replicates. Information for each replicate or sub-sample was collected by an independent set of investigators. The field work was carried out in April-May 1941, and a comprehensive report was submitted to the Government in July 1941, but it was not published owing to wartime restrictions.

Four tables are reproduced below to give a general idea of the approach. Table 27 shows the frequency (in the form of percentages) of listening "often" to different items of the radio programme broken down by age, educational, and occupational groups. The size of the sample in each group is shown at the head of each column.

The nature of the fluctuations in different age-groups is of considerable interest, and is on the whole in keeping with what may be called common-sense expectations. For example, "war news" had practically the highest preference in almost every group, which is just what might have been expected. "News talk" and "foreign news" were also, on the whole, generally popular, as these were also mostly concerned with the war.

In the music and entertainment section it was found that "modern Bengali" and "(Rabindranath) Tagore songs," as well as "plays" and "instrumental music," were, on the whole, highly popular, with "devotional music" holding quite a good place: "classical music" was, however, distinctly less popular. There were also interesting age-variations in this group. Modern Bengali and Tagore songs, plays, and instrumental music were far more populariar among the younger people, and showed a definite and considerable decrease in popularity with increasing age. Devotional music, on the other hand, showed a sharp contrast and increasing popularity with age.

There are many other interesting points which, however, need not detain us. It is the sampling errors to which I should like to draw attention. The values for three independent but interpenetrating samples or replicates are shown in Table 28. The variance (calculated from three replicates—that is, on two degrees of freedom) for the different items is shown in col. 6. The within bionomial variance "for the whole material is given in col. 7; and the ratio of variances in col. 8. The population is not Gauss-Laplacian, and strictly speaking Fisher's F cannot be used to test the significance. The use of F may, however, give approximate results, and significance has been shown in the usual manner.

· ·		_ ₂	deutta	radio	progran By age-	HOGRAININE PREFERENCE By age-groups (in years)	ferences in years)	TABLEApril-A	Calculta radio programme preferences—April-May, 1941. By ago-groups (in years) By education	i i	requency groups		f liste	Frequency of listening ", al groups By			" often By occu
•	Item of radio		All	14-18	19-25	26-35	36-55	×	Non-	Under-	<u> </u>	ates	Gradu. Strident	Strdent Fet	Strdent Fet	Strdent Fet	Strdent Fet
	The Control of the Co	3	803	14-18 u = 24	19-23 n= 170	# = 278	-	-	matrics n = 156	ates u = 354		ates $n=29$)		# 149	#= 149 #= 11	# 149 # 11 # 300 /	n=149 n=11 n=300 n=184
	0		8	9	£	S	8	(7)	8	9		(10)	(1D) (0D)		(II)	(11) (12)	(11) (12) (13)
mb-	War news News talk Foreign news	.::: 	\$4.7 4.3.5	\$4.2 45.8 41.7	\$2.4 44-1	60:1 52:2 46:4	49.9 47.9 39.3	60.6 57.6 54.5	50.3 46.5 35.1	58-5 54-2 46-6	5/13/34	52 52 52 52 52 52 52 52 52 52 52 52 52 5		52·2 48·8 45·1	52-2 54-0 48-8 46-0 45-1 46-7	52.2 48.8 46.0 45.1 46.7 27.3	52.2 54.0 54.5 54.0 54 48.8 46.0 54.5 49.0 52 45.1 46.7 27.3 41.3 41
40,000	Music Modern Bengali Tagore Plays Instrumental Devotional Classical	::::::: ******************************	23.50	70.8 66.6 54.2 75.0 75.0	51-2 51-2 29-9 29-9	37.4 37.4 37.4 24.8 24.8	35.6 41.9 39.3 19.8	27:3 51:5 51:5	45.9 51.6 41.4 27.4	51.4 45.4 23.2 23.2	,	2296 2296 2296		41.0 40.3 33.1 29.0 21.2	42.0 58.7 40.3 49.3 33.1 48.7 36.5 46.7 29.0 30.0 21.2 26.6	42.0 58.7 54.5 40.3 49.3 27.3 33.1 48.7 45.5 36.5 46.7 54.5 29.0 30.0 27.3 21.2 26.6 27.3	420 587 545 410 403 493 273 383 33-1 487 455 420 365 467 545 397 290 300 273 353 21-2 266 273 220
55 <u>-</u> 5	TALKS Humorous Scientific Literary Educational	I I I I I	29.6 26.2 18.7 24.9	29:2 20:8 33:3	28.8 27.1 21.2 26.5	32.4 28.1 15.8 25.2	28-2 22-5 18-5 22-5	5555	29.3 20.4 17.8	224.9 25.7 25.7		2232 66346		27.6 24.5 26.6	27-6 26-7 30-4 28-0 21-5 24-7 24-6 37-3	27-6 26-7 36-4 30-4 28-0 9-1 21-5 24-7 9-1 24-6 37-3 27-3	27-6 26-7 36-4 30-7 30-4 28-0 9-1 27-9 21-5 24-7 9-1 22-7 24-6 37-3 27-3 26-3
2222	Miscre LANGOUS Children's Women's Folk music Kural	<u> </u>	75.54.7 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	37.5 20.8 125.0	21.8 17.6 17.0	155 153 153	e 5 5 5 4	18·2 24·2 21·2	55 <u>5</u> 5	18.9 18.7 12.4	2040	=5.4 5.4 5.4		15.9.3 15.4.3 19.4.4	12-3 9-9 15-4 11-9 11-0 11-0	12-3 9-9 22-7 15-4 11-9 16-0 9-1	12-3 260 9-1 11-7 9-9 22-7 9-1 10-0 15-4 14-7 0 17-0 11-9 16-0 9-1 11-3

TABLE 23

Calcutta radio programme preferences—April—May, 1941. Percentages of persons "listening often" to different items of programme

Calcutta radio programme item early 1941		į	Sam	ples (replic	ates)	Pooled Values	Vari	ance	Daviss
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			ı	2	3	with s.c.			Ratios of variance
War news	Hem comy 1741		n = 287	n = 268	n = 248			d.i. – 800	
War news 55.8 50.7 57.7 54.7 ± 2.52 3.340 2.477 News talk 54.0 42.9 55.6 50.8 ± 3.99 12.728 2.477 Foreign news 45.3 40.3 44.8 43.5 ± 1.59 2.032 2.461 Music Music 48.8 39.6 49.6 46.0 ± 3.38 8.284 2.472 Tagore 39.4 35.1 46.8 40.4 ± 3.42 8.98 2.91 Plays 43.6 41.4 42.3 42.4 ± 0.67 51.9 2.452 Instrumental 42.2 40.7 43.1 42.0 ± 0.70 40.2 2.444 Devotional 31.0 28.8 46.8 35.5 ± 5.67 24.734 2.225 1 Classical 26.1 20.1 23.4 23.2 ± 1.74 2.506 1,794 TALKS Humorous 28.9 28.0 32.7 29.9 ± 1.44 1,567 2.094 Scientific 27.9 21.3	(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)
News talk	WAR					ļ			
Music Modern Bengali Missic Missic Modern Bengali Missic Missic	War news	;				54.7 ± 2.52	3,340		1.35
Music Modern Bengali 48-8 39-6 49-6 46-0 ± 3-38 8.284 2.472 Tagore 39-4 35-1 46-8 40-4 ± 3-42 8.978 2.391 Plays 43-6 41-4 42-3 42-4 ± 0-67 319 2.452 Instrumental 42-2 40-7 43-1 42-0 ± 0-70 40.2 2.4444 Devotional 31-0 28-8 46-8 35-5 ± 5-67 24-734 2.225 1 Classical 26-1 20-1 23-4 23-2 ± 1-74 2.506 1.794 TALKS Humorous 28-9 28-0 32-7 29-9 ± 1-44 1.567 2.094 Scientific 27-9 21-3 29-4 26-2 ± 249 4.958 1.926 Literary 24-4 16-0 14-9 18-4 ± 3-00 7.364 1.506 Educational 23-7 20-9 30-6 25-1 ± 2-88 6.450 1.861 Music lessons 18-1 19-8 24-6 20-8 ± 1-95 2.953 1,639 Miscellaneous 12-9 9-3 22-6 14-9 ± 3-97 12,036 1,228	News talk	•;				50.8 ± 3.99			5.14
Modern Bengali 48.8 39.6 49.6 46.0 ± 3.32 8.284 2.472 Tagore 39.4 35.1 46.8 40.4 ± 3.42 8.978 2.391 Plays 43.6 41.4 42.3 42.4 ± 0.67 31.9 2.452 Instrumental 42.2 40.7 43.1 42.0 ± 0.70 402 2.444 Devotional 31.0 28.8 46.8 35.5 ± 5.67 24.734 2.225 1 Classical 26.1 20.1 23.4 23.2 ± 1.74 2.506 1,794 1 TALKS Humorous 28.9 28.0 32.7 29.9 ± 1.44 1,567 2.094 2.506 1,794 1 Literary 24.4 16.0 14.9 18.4 ± 3.00 7,364 1.306 1.306 1.306 1.861 1 1.93 1.861 1 1.93 1.861 1 1.93 1.609 1.94 16.2 ± 1.61 1.970 1,349 1 1.861 1.99 1.94 16.2 ± 1.61 1.970 1,349 1.909 1.208	Foreign news		45-3	+0⋅3	44.8	43.5 = 1.59	2,032	2,461	0.83
Tagore 39.4 35.1 46.8 40.4 ± 3.42 8.978 2.391 Plays 43.6 41.4 42.3 42.4 ± 0.67 319 2.452 Instrumental 42.2 40.7 43.1 42.0 ± 0.70 40.2 2.444 4 Devotional 31.0 28.8 46.8 55.5 ± 5.67 24.734 2.225 1 Classical 26.1 20.1 23.4 23.2 ± 1.74 2.506 1,794 TALKS Humorous 28.9 28.0 32.7 29.9 ± 1.44 1.567 2.094 Scientific 27.9 21.3 29.4 26.2 ± 249 4.958 1,926 Literary 24.4 16.0 14.9 18.4 ± 3.00 7,364 1,506 Educational 23.7 20.9 30.6 25.1 ± 2.88 6.50 1.861 Music lessons 18.1 19.8 24.6 20.8 ± 1.95 2,953 1,639 Miscellaneous Children's programme 14.3 14.9 19.4 16.2 ± 1.61 1,970 1,349 Women's 12.9 9.3 22.6 14.9 ± 3.97 12,036 1,228	Music	}		:		Ī			
Tagore	Modern Bengali		48.8	39.6		; 46 0 ± 3 38		2,472	3.35
Instrumental 42-2			39-4	35-1		: 40-4 = 3-42			3-75
Devotional 31-0 28-8 46-8 35-5 = 5-67 24.734 2.225 1	Plays		43.6	41-4					0.13
Classical 26·1 20·1 27·4 23·2 ± 1·74 2.506 1,794 TALKS Humorous 28·9 28·0 32·7 29·9 ± 1·44 1,567 2.094 Scientific 27·9 21·3 29·4 26·2 ± 2·49 4,958 1,926 Literary 23·4 16·0 14·9 18·4 ± 3·00 7,364 1.506 Educational 23·7 20·9 30·6 25·1 ± 2·88 6.450 1.861 Music lessons 18·1 19·8 24·6 20·8 ± 1·95 2.953 1,639 Miscellaneous Children's programme 14·3 14·9 19·4 16·2 ± 1·61 1.970 1,349 Women's 12·9 9·3 22·6 14·9 ± 3·97 12,036 1,228	Instrumental		42-2	40.7		420 = 0.70			0.16
TALKS Humorous	Devotional		31.0	28-8		35 5 = 5 67			11-12
Humorous	Classical		26-1	20-1	23.4	23-2 ± 1-74	2,506	1,794	1-40
Humorous	TALKS	1	-		!		i	1	
Literary 24-4 16-0 14-9 18-4 ± 3-00 7,364 1,506 Educational 23-7 20-9 30-6 25-1 ± 2-88 6,450 1,861 Music lessons 18-1 19-8 24-6 20-8 ± 1-95 2,953 1,639 Miscellaneous Children's programme 14-3 14-9 19-4 16-2 ± 1-61 1,970 1,349 Women's 12-9 9-3 22-6 14-9 ± 3-97 12,036 1,228			28-9	28.0	32.7	19 9 ± 1 44			G-75
Literary 24-4 16-0 14-9 18-4 ± 3-00 7,364 1,506 Educational 23-7 20-9 30-6 25-1 ± 2-88 6,450 1,861 Music lessons 18-1 19-8 24-6 20-8 ± 1-95 2,953 1,639 Miscellaneous Children's programme 14-3 14-9 19-4 16-2 ± 1-61 1,970 1,349 Women's 12-9 9-3 22-6 14-9 ± 3-97 12,036 1,228	Scientific				29-4	26.2 2.49	4,958	1,926	2-57
Educational 23.7 20.9 30.6 25.1 ± 2.88 6.450 1.861 Music lessons 18-1 19-8 24-6 20-8 ± 1.95 2.953 1,639 Miscellaneous Children's programme 14-3 14-9 19-4 16-2 ± 1-61 1,970 1,349 Women's 12-9 9-3 22-6 14-9 ± 3-97 12,036 1,228					14.9	18.4 - 3.00	7.364	1.506	4.89
Music lessons 18-1 19-8 24-6 20-8 ± 1-95 2,953 1,639 Miscellaneous Children's programme 14-3 14-9 19-4 16-2 ± 1-61 1,970 1,349 Women's 12-9 9-3 22-6 14-9 ± 3-97 12,036 1,228						25.1 - 2.88			3-47
Children's programme 14-3 14-9 19-4 16-2 = 1-61 1.970 1,349 Women's 12-9 9-3 22-6 14-9 = 3-97 12,036 1,228					24 6	20.8 = 1.95	2,953	1,639	1.80
Children's programme 14-3 14-9 19-4 16-2 ± 1-61 1.970 1,349 Women's 12-9 9-3 22-6 14-9 ± 3-97 12,036 1,228	Macres			:	!		!	į	ļ
Women's 12.9 9.3 22.6 14.9 ± 3.97 12.036 1,228			1.1.3	1.4.0	10.4	16.2 ± 1.61	1 970	1 349	1.46
	Waman'i					140 = 197			9-80
	Talle and the		147	16.0	21.0	17.1 = 2.01	3,130	1,404	2.23
						11.0 = 0.04			0.71

^{*} Significant at 5 per cent. level.

The important point to note is that, except in three cases, errors calculated from the replicated samples are greater than the theoretical binomial errors. This shows the need for caution.

I am giving below a table to indicate the practical use of such investigations. In this table the index-numbers of frequency of listening are shown separately for men and women in cols. 2.1 and 2.2 respectively. Index-numbers of demand (as expressed by the desire of persons interviewed to have more time given to particular items) are shown in cols. 3.1 and 3.2. Pooled index-numbers of preference were also calculated by taking the average of the two previous index-numbers, and are shown in cols. 4.1 and 4.2. Index-numbers of broadcast time actually allotted to various items at the time of the survey are shown in col. 5. Dividing the pooled index of preference in cols. 4.1 and 4.2 by the index of broadcast time we get index-numbers of disparity given in cols. 6.1 and 6.2 for men and women separately.

These index-numbers of disparity indicate to what items more time should be given. The disparity index cannot, of course, be treated as a quantitative measure of the time likely to be required for satisfaction. For example, the relative demand for talks is very high, but it is possible that a comparatively small increase would enable the satisfaction point to be reached. This merely means that the index of disparity has to be re-estimated as conditions change.

Finally, in Table 30 I give the reactions to war broadcasts. It is quite clear that early in 1941 enemy broadcasts were found more interesting as well as more convincing as compared to All-India Radio propaganda. The margin of error of the results (calculated from replicated samples) was reasonably small. In any case, the possibility of estimating the margin of error (by using independent net-works of samples) is clearly a great gain.

[†] Significant at 1 per cent, level.

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TABLE 29

Radio programme preference—Culcutta, April-May, 1941. Index-numbers of preference, broadcast time and dispurity by sexes

•							Inde	x-ոստb	ers of			
pros	Vame o	f it em		List	ening	De	mand	Pref (po	erence oled)	Broad-	Dis	parity
				Men	Women	Men	Women	Men	Women	cast time	Men	Women
	(1)		. !	(2.1)	(2.2)	(3.1)	(3.2)	(4.1)	(4.2)	(5)	(6.1)	(6.2)
	WAR		i		i				 			10.07
War news News talk		***		299 155	186 92	148 116	47 27	224 136	116 60	154 24	145 567	75 250
	Music		- 1									
Modern Bei Tagore	ngali	•••		140 123	148	207	210	174	179	262	66	68
Plays		***	***	130	188	184 172	236 236	15 4 151	182	47	323	387
nstrumenta	d	***		128	114	175	176	151	144	125 134	121 113	170 107
Devotional Classical	•••	•••	•••	107 71	114 87	142 47	155 54	124 59	90	219	57 28	61
	TALKS	,	- 1			**	-	29	30	208	28	43
Humorous	· ALKS			91	94	104	100		أ	_ [į
Scientific	•••	•••		έò	27	102	108	98 91	101 30	8	1,225 2,275	1,262
Literary	***			57	47	74	34 27 68	66	37	4	2,275 2,200	750
Educational		•••		76	67	90 28	68	83	68	20	415	1,233
Music lessor	1	•••	••••	63	101	28	94	-6	98	65	71	151
Misc	ELLANE	ous	:							:		!
hildren s	•••	•••		49	74	45	33	47	54	174	27	1.
Vomen's	•••	***		45	136	38	203	42	170	73	58	31 233
Folk music	•••	•••	••••	57	40	20	7	38	24	49	78	49
	•••	***	***	- 37	54	9	13	23	20	131	18	15

TABLE 30
War broadcast reactions: Calcutta sample, April-May, 1941.

,			Percent	age of pe	rsons lindi	ing the b	roadcası		
Source of broadcast		Interesting	7	;	Convincin	<u></u>	Effect	ive propar	randa
<u> </u>	n	mean	s.e.	п	mean	s.ė.	п	mean	ş.c.
(1)	(2)	(3)		(4)	(5)		(6)	(7)	
Enemy	56 34	36·1 14·5 8·8 40·5	2·02 1·11 0·74 1·74	133 41 50 161	34·5 10·6 13·0 41·8	2·18 1·10 1·15 2·77	156 57 19 153	40-5 14-8 4-9 39-7	2 60 1 30 0 62 2 72
Total	385	99.9%		385	99.9%		385	99-9%	

N.B.—Standard errors based on eighteen sub-samples.

Calcutta Public Preference Survey, 1941

I shall give another example of a different type, something like what is called public preference or "Galiup" polls in the west. The survey was carried out in certain sections of Calcutta middle-class families along with the broadcast reaction survey. The schedule covered a large number of items including preferences for classical and modern literature in both English and Bengali,

Hindus

Muslims

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different kinds of games, tobacco, pan (betel leaves), etc., and a number of social and political questions. A few tables are given here for purposes of illustration.

TABLE 31

Calcutta public preference survey, 1941. Possession of horoscopes

			:	И	umber of perso	ons	Difference	
Grou	P\$			Total	Having	horoscopes	between observed and expected	x ¹
			- 1	Total	Observed	Expected	expected	
(1)			!	(2)	(3)	- (4)	(5)	(6)
Total sample				1,470	919	$\rho = 0.625$!	l
				(a) B	y age group			
Below 18 years				33	23	: 23.8	- 0.8	0.07
10.36	•••		***	259	145	161-9	-16.9	4.70
14 75			•••	-̃86	297	303-8	- 6.8	0.41
1/ 22				601	405	375-6	29.4	6-14
No-23 Above 55			****	86	49	53-8	- 4.3	1.14
			Р		i, d.f. = 4, χ ² ucational gro			
Non-matrics				380	195	237-5	-42.5	20-28
Undergraduates			***	656	437	410.0	27.0	4.74
Graduates			••••	434	287	271-3	15-7	į 2.42
Chaddles		•••			, d.f. == 2, χ ¹	,		
		-		(c) By occ	rupational gro	oups		
Students			:	184	107	118-1	- i i · i	2:78
Petty trade	•••			101	! 43	63-1	- 20:1	17:07
Service	•••	•••		522	; 329	₹ 326·3	2.7	0.06
Business				390	245	243-8	1.2	0 16
Learned profession				177	125	110.6	14-4	∮ 5·00
Landlords	***	•••		91	70	56.9	13-1	8:04
			P	$(x^2) < 0.001$	$d.f. = 5, \chi^2$	 33·11		
•		(d)	By ex	penditure le	evels (per moi	nth per family)	ı	
Below Rs. 40			!	105	45	65.6	-20-6	17-25
Rs. 41-Rs. 100				370	2:0	231-2	-21:2	5-18
Rs. 101-Rs. 200		***		386	: 249	241-2	7-8	0.67
Rs. 201-Rs. 400		•••		316	216	197-5	18.5	4.61
Above Rs. 400	1	•••	***	241	173	150-6	22.4	3-89
· · - · - · · - ·					$d.f. = 4, \chi^2$	= 36.60		
			•		communities			
				(1)		0.00	. 30.0	. 4.2

Table 31 gives the percentages of persons having horoscopes, broken down by age, educational and occupational groups, expenditure levels, and communities. The total number of persons covered in the survey is shown in col. 2, and the number possessing horoscopes in col. 3. The over-all proportion of persons having horoscopes is 62-5 per cent. The expected number of persons having horoscopes is shown in col. 4, and the difference between the observed and expected number in col. 5. The corresponding value of χ^2 is given in col. 6.

 $P(\chi^2) < 0.001$, d.f. = 1, $\chi^2 = 83.62$

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Variations by age-groups are not important, but non-matrics have comparatively fewer horoscopes (possibly because non-matrics on the whole belong to lower expenditure levels). The eccupational distribution shows that the learned profession or landlords proportionately have note horoscopes. The distribution by expenditure levels clearly brings out that richer people

50.6

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on the whole have a proportionately larger number of horoscopes. Finally, from the distribution by communities it is clear that Hindus are much more interested in horoscopes than Muslims.

TABLE 32

Calcutta Public Preference Survey, 1941. Remarriage of widows and widowers

		imber of			Percent	tase opin	ion in fa	our of		
Groups	opinio	s giving n about riage of		ditional port		itional port		ditional sition	Indif	Terent
	Widows	Widow- ers	Widows	Widow- ers	Widows	Widow- ers	Widows	Widow- ers	Widows	Widow-
(1)	(2)	(3)	. (4)	(5)	(റ	(7)	(8)	(9)	(10)	(H)
	·	(a) By	educati	onal gro	· oups (ma	des only)			'
Undergraduates	367 658 436	348 634 410	19·07 17·02 26·15	22·42 16·56 24·15	52·32 62·31 62·16	58·05 67·67 65·60	21·15 14·44 6·19	13 78 9 78 4 88	7·36 6·23 5·50	5·75 5·99 5·37
Total	1,461	1,392	20-26	20-26	59-75	64-65	13-69	9-34	6-30	5.75
÷			(b) B	y sex (a	ii cards)					
11/	1,461	1,392 37	20·26 5·41	20-26 10-81	\$9-75 48-65		13.69 40.54	9-34 35-14	6·30 5·40	5·74 5·40
Total	1,498	1,429	19-89	20-01	59.48	64-24	14.35	10-01	6.78	5.74
			(c) By co	mmunit	y (all ca	rds)				
Hindus Muslims	1,408 90	1,341 88	17·47 57·78	17·52 57·95	60-87 37-78	65·92 38·64	15·13 2·22	10.59	6·53 2·22	5·97 2·27
Total	1,498	1,429	19-89	20-01	59-48	61-24	14-35	10-01	6.28	5.74

re-marriage of widows and widowers shown respectively in cols. 8 and 9 are of considerable interest. It is clear that there is much greater opposition to the re-marriage of widows. Opposition definitely decreased with increasing educational status, and women are more opposed to re-marriages than men. Finally, unconditional opposition to re-marriage is practically

restricted to Hindus.

Table 33 shows public opinion on inter-group marriages, broken down by educational groups. From col. 6 it is seen that unconditional opposition decreases in every case with increasing educational status. On the whole, there still exists considerable opposition to inter-marriage between sub-castes (28·2 per cent.) which is greater against inter-marriage between different castes (36·4x per cent.). It is interesting to observe that the opposition is greater (49·14 per cent.) against marriages within the same gotra (that is, within traditionally the same patrilineal family or clan) than against marriages between provinces (44·61 per cent.). Opposition against marriage between communities—i.e., Hindus and Muslims (60·64 per cent.)—is as strong as opposition to marriages between different nationalities (58·66 per cent.). It is interesting to

note, however, that on the whole 12 or 13 per cent. of the persons surveyed and about 20 or 22

Table 32 shows the distribution of opinion about the re-marriage of widows and widowers by educational groups, communities, and sex. Figures for unconditional opposition to the

per cent. of graduates are unconditionally in favour of inter-communal or international marriages. Finally, Table 34 shows public opinion about religious instructions in colleges, broken down by educational groups. From col. 6 it is seen that 59:34 per cent. are in favour of such instruction and 18:83 per cent. not in favour, while nearly the same proportion appears to be indifferent. From col. 7 it is clear that opinion in favour of religious instruction in colleges definitely decreases with increasing educational status and that nearly one-third of graduates are not in favour of such instruction.