

REPORT
ON
Economic Planning in the
United Provinces



LAHABAD:
AND STATIONERY, UNITED PROVINCES, INDIA
1937

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APPENDIX I

United Provinces Government's Schemes for the Economic Development and Improvement of Rural Areas

1. *Introduction*—During the 1935 budget session of the Central Legislature the Government of India placed before that legislature a demand for grants to the provinces and minor administrations for expenditure on approved schemes for the "economic development and improvement of rural areas," i.e. for the "betterment of their economic position" interpreted in its broadest sense so as to cover not only measures designed to improve the actual money incomes of villagers but also their health and education and to make them self-reliant.

2. *Total cost*—Leaving aside the share (about Rs.65,000) which this province expects to get out of the allotment (Rs.15 lakhs) earmarked by the Central Government for the furtherance of co-operative activities, the share of the United Provinces out of the funds specifically allocated for rural development in general is Rs.15 lakhs. The local legislature has already sanctioned Rs.1,00,000 under Grant no. 34—Agriculture (Account head 34—KK—Rural Reconstruction) and it is proposed to place before the next budget session of the Council another demand for an equal amount. The total available for expenditure on rural development in two years will thus be Rs.15+1+1=17 lakhs.

3. *Spread over two years*—The Government of India's grant is not a recurring one, but the expenditure out of it can, and is proposed to, be spread over a longer period than one year; as a matter of fact the schemes for this province have been spread over two years. All the United Provinces schemes have been approved by the Government of India and the necessary sanctions for expenditure have already been issued.

4. *Main Scheme*—The Main Scheme which, in certain respects, is a special feature of the United Provinces Schemes, is expected to cost about Rs.9 lakhs, i.e., about Rs.4½ lakhs per year and is intended to stimulate and promote the spirit of self-help in the villages and rouse it into action. For the present 72 villages have been selected in each of the 45 plains districts; the selection has been so made as to focus, as far as possible, the benefits resulting from Government's normal activities in various departments, e.g., Irrigation (tube-wells), Agriculture (cane development), Public Health, Industries, Co-operative, on the villages under the Main Scheme.

To this end the Local Government have engaged, for about two years, a special temporary staff for each such district consisting of (i) six organizers, and (ii) one inspector to guide and supervise the work of the organizers. The organizers are to work more or less on the lines followed by the "village guides" of the co-operative movement.

Conditions in the Kumaun Division differ materially from those obtaining in the other divisions of the province, and neither the Main Scheme nor the departmental schemes could be applied to that division;

hence special schemes suited to local conditions and requirements have had to be worked out.

The staff has been put through special training in sanitation and hygiene, agricultural practice and co-operative methods and is to work under the control of the district officers.

District rural development associations, with consultative functions, have been set up in the districts.

For the execution of minor local works of public utility a sum of at least Rs.5,000 (on the average) has been placed at the disposal of each of the 45 district officers. The cost of the staff and the district allotments together with a small reserve for unforeseen opportunities is estimated at Rs.9 lakhs for the two years. Out of this the Local Government propose to provide Rs.2 lakhs; this will be utilized towards the expenditure on the staff. The balance, viz. Rs.7 lakhs, will be debited to the Central Government's grant.

The organizers were selected by the district officers of the respective districts and sent up, in two batches, for training at three centres, namely, Benares, Gorakhpur and Bulandshahr. The inspectors were selected by Government on the recommendations of a departmental committee. Almost the whole of the staff has now been appointed and trained; generally speaking, it is already at work. The sanctioned emoluments are Rs.80 *plus* fixed travelling allowance Rs.20 = Rs.100 for the inspectors and Rs.25 *plus* fixed travelling allowance Rs.10 = Rs.35 per mensem for the organizers. The Rural Development Officer will be the formal controlling authority for accounts purposes; district officers are, however, to have unfettered control on the allotments for the staff and for minor local works of public utility in their respective districts.

Besides this paid staff two honorary organizers have also been appointed, viz., Rai Bahadur Pandit Gur Sewak Upadhyaya for Benares and Azamgarh Districts and Khan Bahadur Bashir-ud-din Ahmad Khan for Allahabad division. Suitable amounts have been provided for their travelling allowances.

For the supervision and co-ordination of these activities in the districts Government have selected Mr. C. S. Venkatachar, I.C.S., as Rural Development Officer and have attached him to their headquarters. Through his tours he keeps Government in touch with developments in the districts, and advises district authorities on the lines to be followed. He has also prepared a Manual of Rural Development, copies of which have been placed on the table of the House; this Manual explains the lines which in this Government's opinion should be followed in tackling the problems of rural development.

5. *Departmental Schemes*—Apart from the provision for the Main Scheme funds aggregating 8 lakhs have been allocated to certain departments for what may be called departmental schemes of development and improvement.

A—AGRICULTURAL IMPROVEMENTS

A sum of Rs.3.28 lakhs has been allotted for agricultural schemes. The approved schemes on which this allotment will be spent relate to

(i) subsidies (of up to one-third of the total cost) for borings within existing wells, (ii) guarantees against complete or partial failure of such well-borings, (iii) subsidies (of up to one-third of the total cost) for the construction of earth embankments to prevent or reduce erosion and/or to enable moisture to be retained or controlled, (iv) cost of a tractor (including its maintenance for two years) for constructing embankments and for the eradication of *kans*, (v) the development of fruit in about 800 out of 3,240 villages selected for the Main Scheme through the supply of grafts, plants, seed, etc. and the employment of trained fruit *chaudhris*, (vi) buying up of deteriorated village seed and supply of fresh seed to take its place, (vii) subsidies to 75 seed stores under private management, (viii) grant-in-aid for poultry farming and goat improvement.

B—PUBLIC HEALTH AND MEDICAL RELIEF

For public health and medical relief the sanctioned allotment for the two years, is Rs.3.16 lakhs. It is proposed to set up nine health units, one in each division except Kumaun. These units are adaptations of the health unit which has been at work in a certain area of the Partabgarh District, the main deviations from the Partabgarh type being the utilization of the existing departmental staff, ruralized programme of work and simplification in keeping with the rural environment. Each unit would cover an exclusively rural, and as far as possible, compact area of about 50 villages with a population of about 30,000 at an estimated average cost of about Rs.11,000 per annum and would aim at the development of the sense of personal hygiene and "social" sanitation among the villagers themselves. Each public health unit will undertake the simpler forms of medical relief in the villages; this medical complement of the scheme is estimated to cost Rs.2,540 per unit per year. Public health work and medical relief have been dovetailed into each other, and the selection of centres for the health units has been so made as to utilize the services of the district health staff, wherever available. A scheme estimated to cost Rs.36,000 per annum for the supply of about 3,000 village medicine chests so as to furnish medical aid against minor ailments to those villages which have been selected for the Main Scheme has also been inaugurated; any surplus left over after serving these villages will be utilized for the benefit of villages outside that scheme.

C—INDUSTRIAL AND CO-OPERATIVE WORK

Marketing is now held to offer an obvious and promising direction for State aid to village and cottage industries. The following marketing schemes, which are a speciality of the United Provinces, have therefore been approved :

(i) Rupees 8,000 will be allotted to the Emporium of Arts and Crafts, Lucknow (a Government institution under the Industries Department) to cover the cost of initial outlay on account of intelligence and publicity work for the benefit of village and cottage industries and as insurance against the risk of possible loss from the marketing of the products of such industries by the Emporium.

(ii) Subsidies to experimental retail shops under private management; for the larger centres the average subsidy will be at the rate of Rs.50 per month and for the smaller ones Rs.35. Discretion has been left to the head of the department to vary the amounts according to local conditions and requirements. The "Bee-hive" at Naini Tal, an interesting and promising experiment in marketing, will receive a subsidy from this allotment.

(iii) Co-operative marketing of *ghee* in the *ghee*-producing districts of Etawah, Agra, Muttra, Aligarh, and Etah and subsidies to two private *ghee* associations for the maintenance of control and testing laboratories and staff for certifying the purity, etc. of the *ghee* analysed by the associations. This scheme follows the "tried and tested" line of work in the Co-operative Department in the *ghee*-producing trans-Jumna tracts of Agra and Etawah Districts and is intended to stimulate work pioneered by the Ghee Producers' Association at Etawah.

(iv) The establishment of five co-operative stores for the marketing of the products of village industries, e.g. leather, leather goods, metal-ware, certain textiles not included within the scope of the Textile Scheme, and industrial products like *moonjh* mattings, ropery, *tat-pattis*, baskets, sandals, stone-ware, wooden and other toys, etc. These stores will follow the model of the Textile Store to be set up with the Government of India's textile grants.

6. *Working in Kumaun Division*—For Kumaun Division a sum of Rs.50,000 has been allotted. Naini Tal Districts has been given Rs.25,000, viz., Rs.10,000 for the supply of piped drinking water in the neighbourhood of Haldwani, Rs.10,000 for *diggis* (drinking water tanks) in villages in the *bhabar* tracts and Rs.3,000 for anti-malarial measures in the *tarai* and *bhabar* tracts. (Rs.2,000 has been kept in reserve.) The allotment to Almora District is Rs. 12,500 and will be utilized on development of communal forests through the Panchayat Forest Officer, improvement of water supply in the four sub-divisions of the district and fruit development. The sanctioned schemes for Garhwal District include the improvements of cattle-breeding, the development of vegetable gardens at various centres—mainly along the pilgrim route the erection of a model village, development of communal forests and the development of fruit. Agricultural improvements through seed supply, popularization of improved technique, etc. will also receive some attention.

7. *Publicity and propaganda*—A sum of Rs.36,000 has been allowed for instruction, publicity and propaganda work in the villages in order to ensure abiding results from Government's rural uplift work. The 3,240 villages which are being brought under the Main Scheme will receive, *gratis* newspapers, monthlies and reprints featuring rural uplift articles and news at least once a week; the estimated cost is Rs.30,000 for the two years. A hundred sets of double-sided records pertaining to rural uplift will also be prepared at a cost of Rs.6,000.

8. *Summary*—For the sake of convenience a tabular summary is given below.

30th October, 1935.

S. P. SHAH

TABULAR SUMMARY

(1) *Main Schemes* Rupees 9 lakhs, of which one lakh has been and another one lakh is expected to be provided from provincial revenues.

Cost for two years

Rs.

(a) 45 Inspectors at Rs.80 per mensem each plus Rs.20 per mensem fixed travelling allowance (45 × 100 × 24 months) ..	= 1,08,000
(b) 6 Organizers in each one of 45 districts at Rs.25 per mensem each plus Rs.10 per mensem each fixed travelling allowance (45 × 6 × Rs.35 × 24 months)	= 2,26,800
(c) Cost of training of (a) and (b)	15,000
(d) Grant of at least Rs.5,000 (average) to each District Officer in 45 districts	4,50,000
	<hr/>
	8,00,800
(e) Reserve (approximately)	1,00,000
	<hr/>
Total say	9,00,000
	<hr/>

The whole of the sanctioned grants from the United Provinces Provincial revenues will be utilized towards the cost of the staff.

Rs.

(2) *Departmental Schemes* 8,00,000

A—AGRICULTURE

(i) Subsidies for well-boring and guarantees against complete or partial failure	1,38,000
(ii) Embankments and reservoirs	79,000
(iii) Fruit development in about 800 villages	20,000
(iv) Supply of fresh seed to replace deteriorated seed	50,000
(v) Subsidies to 75 private seed stores	30,000
(vi) Grants for improved poultry farming and improvement of goats	11,000
	<hr/>
	3,28,000
	<hr/>

B—PUBLIC HEALTH

(i) Nine modified health units at Rs.11,000 each	1,98,000
(ii) Nine medical complements attached to the health units at Rs.2,540 each.. ..	45,720
(iii) Supply of about 3,000 village medicine chests	72,000
	<hr/>
	3,15,720
or say	3,16,000
	<hr/>

C—INDUSTRIES (INCLUDING CO-OPERATIVE) SCHEMES

	Rs.
(1) Marketing of the products of village industries :	
(a) Grant to the United Provinces Arts and Crafts Emporium, Lucknow, for intelligence, publicity and propaganda and for guarantee against loss	8,000
(b) Subsidies to private retail shops for marketing products of village industries	24,000
(c) Co-operative stores for marketing products of village industries other than certain textile lines	28,000
(d) Co-operative marketing of <i>ghes</i> and subsidies to two <i>ghes</i> associations for the establishment of control and testing laboratories	10,000
	70,000

D—PUBLICITY AND PROPAGANDA

(i) Supply of newspapers and periodicals featuring rural uplift articles and news, to villages in which the Main Scheme is operating	30,000																																								
(ii) Preparation of gramophone records pertaining to rural uplift..	6,000																																								
	36,000																																								
[3] <i>Kumaun Division Schemes</i>	50,000																																								
	<table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;"><i>Naini Tal</i></th> <th style="text-align: center;"><i>Garhwal</i></th> <th style="text-align: center;"><i>Almora</i></th> </tr> <tr> <th></th> <th style="text-align: center;">Rs.</th> <th style="text-align: center;">Rs.</th> <th style="text-align: center;">Rs.</th> </tr> </thead> <tbody> <tr> <td>(i) Public health including improvement of water supply</td> <td style="text-align: right;">23,000</td> <td style="text-align: right;">..</td> <td style="text-align: right;">6,000</td> </tr> <tr> <td>(ii) Fruit development</td> <td style="text-align: right;">..</td> <td style="text-align: right;">2,000</td> <td style="text-align: right;">..</td> </tr> <tr> <td>(iii) Conservation of civil forests</td> <td style="text-align: right;">..</td> <td style="text-align: right;">3,300</td> <td style="text-align: right;">5,200</td> </tr> <tr> <td>(iv) Improvement of cattle</td> <td style="text-align: right;">..</td> <td style="text-align: right;">2,500</td> <td style="text-align: right;">..</td> </tr> <tr> <td>(v) Agricultural improvements including vegetable growing</td> <td style="text-align: right;">..</td> <td style="text-align: right;">3,400</td> <td style="text-align: right;">..</td> </tr> <tr> <td>(vi) Miscellaneous</td> <td style="text-align: right;">..</td> <td style="text-align: right;">800</td> <td style="text-align: right;">..</td> </tr> <tr> <td>(vii) Reserve</td> <td style="text-align: right;">2,000</td> <td style="text-align: right;">500</td> <td style="text-align: right;">1,300</td> </tr> <tr> <td></td> <td style="text-align: right; border-top: 1px solid black;">25,000</td> <td style="text-align: right; border-top: 1px solid black;">12,500</td> <td style="text-align: right; border-top: 1px solid black;">12,500</td> </tr> </tbody> </table>		<i>Naini Tal</i>	<i>Garhwal</i>	<i>Almora</i>		Rs.	Rs.	Rs.	(i) Public health including improvement of water supply	23,000	..	6,000	(ii) Fruit development	2,000	..	(iii) Conservation of civil forests	3,300	5,200	(iv) Improvement of cattle	2,500	..	(v) Agricultural improvements including vegetable growing	3,400	..	(vi) Miscellaneous	800	..	(vii) Reserve	2,000	500	1,300		25,000	12,500	12,500
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APPENDIX II

Note on Village Reconstruction in Partabgarh (Oudh)

The main features of the Partabgarh method are a comprehensive programme of village uplift including better farming, education, sanitation, thrift, amicable arbitration, and social reforms, concentration and co-ordination of the efforts of different departments in a small area, unification of the training agency in one person to prevent confusion in the villager's mind arising from the visits of a multiplicity of different officials; and intensive and continuous propaganda through a resident and where possible local guide. The approach is co-operative.

A beginning was made in 1927 with three societies in different parts of the district which were intended to be centres of expansion. With the help of the District Board, adult schools were started under village school teachers, and improved seeds and improved methods of agriculture were introduced with the collaboration of the Agricultural Department. The guiding agency at first was the ordinary co-operative supervisor. The work soon expanded, the number of centres rose to six, and in 1929 six village guides of the cadre of supervisors were placed in separate charge of the centres. A rural improvement committee was set up with the Deputy Commissioner as patron and the Deputy Director of Agriculture as chairman and an inspector of co-operative societies as secretary. The committee includes representatives of the Court of Wards, the District Board, the District Board Education Committee, the Veterinary Department and the Department of Agriculture, Agricultural, Engineering, and Public Health.

The number of centres is now nine, embracing 171 villages. With the expansion of work, a new class of worker known as the assistant village guide has been recruited. He is a local man who is trained for four or five months and then put in charge of two or three societies. His duty is to get the panchayats to carry out the various items of the programme and in addition he runs an adult school. There are 39 such assistant guides. Their work is supervised by village guides who have a circle of about 20 societies; in some societies which have no assistant guides, the guides themselves are in direct charge. Three of the centres with 50 societies are under the charge of supervisors of credit societies—here the work is on a more restricted scale. Recently ten new assistant guides have been appointed on Rs.3 per mensem for propaganda alone—they do not run adult schools. Some adult schools are run by local men who are paid a small honorarium of Rs.30 per year. Also there is a lady supervisor for organizing better living and thrift societies among women.

Village guides are controlled by the Deputy Director of Agriculture, the immediate supervision being in the hands of inspectors of the Co-operative Department and of agricultural superintendents and inspectors.

A programme of work is drawn up, discussed at meetings and entrusted to *panches* for execution. The assistant village guide is there

on the spot to assist and train them. Group conferences of societies are held periodically at which difficulties and results are compared and discussed and future lines of action decided. Throughout, the aim is to make the members improvement-minded and to teach them to combine and to take the initiative themselves. When some progress has been achieved and some experience of local conditions and problems obtained, one-year and three-year programmes as laid down which the societies are expected to accomplish. A good idea of the line of work will be obtained from a sample three-year programme which is attached to this note.

The scheme costs about Rs.8,000 a year. Village guides absorb about Rs.2,500 paid by the United Provinces Co-operative Union, of which Rs.2,000 are contributed by Government. Assistant village guides, training expenses, honoraria to school teachers, and incidental expenses account for the rest—the Agricultural Department contributes about 2,000, about Rs.1,000 come from contributions from the societies, and the rest comes out of the budget of the Co-operative Department.

The success of the scheme is to be judged in the results. Unfortunately, the period of development of these activities coincided with a spell of bad harvests and low agricultural prices and the tangible results as measured in increased wealth are obscured by these factors. Also distress tended to demoralization, and peasants struggling for means to pay their rent and vainly waiting for good rain were apt to be rather impervious to the teaching of the virtues of parapetted wells and soakage pits. Allowance must be made for these circumstances in judging the results. The following is a summary of what has been done.

1. *Agriculture*—The purchase and distribution of improved seed was organized. There was no cultivation of improved cane; now four-fifths of the total area under cane is of the improved varieties. Two-fifths of the wheat area is under Pusa wheat. Meston ploughs, three-roller cane mills, Persian wheels were unknown; now the number is 218, 134 and 12 respectively. More Persian wheels cannot be introduced owing to the low level of sub-soil water in most of the villages. About 250 wells were sunk by members (in a number of cases jointly) and about 200 wells bored. Two tanks and four *bunds* have been jointly repaired. New seeds, e.g., improved barley, Kabuli gram, maize, early arhar, groundnuts and improved potato have been introduced. Intensive cultivation is hampered by the absence of irrigation facilities. Manure pits have been improved and their number is now about 5,000. There are 1,600 urine preservation beds. Green manuring has been practised in some societies. There are 25 superior breeding bulls and their progeny is about 900—the new breed is admittedly bigger and better. A cane-crushing and sugar-making experiment was attempted at Niwari and an engine was installed but the cost was prohibitive and the mill has been closed.

Four co-operative seed stores are run by the societies themselves, and about 2,600 maunds of improved seed was distributed by them last year. One store has a godown of its own and another godown is being constructed.

2. *Sanitation*—In 133 villages all manure heaps have been removed outside the *abadi*. One hundred and fifty indigenous *dais* have been taught sanitary methods. Clean *dhotis* and *dais*, boxes have been provided by some societies. There are 34 village-aid dispensaries run by members and an *ayurvedic* dispensary is also maintained at one centre. Twelve thousand patients were treated last year. Two hundred wells have been parapetted. Three thousand members and their children were vaccinated or inoculated. Soakage pits have been constructed and there is a perceptible improvement in cleanliness.

3. *Adult education and scouting*—There are 51 adult schools, 2 female adult schools, 3 girls' schools and 20 reading clubs with an enrolment of about 1,500. About 600 of them have obtained proficiency of the preparatory standard in the 3 R's and 200 of the primary standard. General knowledge—account keeping, first aid, knowledge of elementary rent law and land records, information about railways, post offices and the like—is also attempted to be given, but the success attained has been small—the causes have been both the poor educational calibre of the guide-teacher and the apathy of the taught. The schools attempt organization of community life through physical culture clubs, games, group singing, dramas and scouting. The number of scouts is 350 and they have done useful work in improving village sanitation and in rendering service during fairs. A dozen small libraries have been started and are used by reading clubs; after three years the adult school is converted into a reading club.

4. *Curtailment of ceremonial expenditure and thrift*—About 84 societies attempted curtailment of ceremonial expenditure. Limits are laid down and those transgressing them are liable to fine. Two persons were fined. Fines are usually impolitic and persuasion must remain the main remedy. Economy is reported to have been practised in 430 ceremonies and resulted in a saving of about Rs.11,000. In all about Rs.30,000 are estimated to have been saved in the last few years. These figures are not reliable and most of the reported economies are probably due to economic depression but there certainly has been some awakening in this respect. One reason for slow progress is that the heterogeneous village *panchayat* has not sufficient sanction behind it to enforce curtailment of ceremonial expenditure or to remove the bigger social evils in the face of the *biradari*. Six hundred and seventy-one members practised thrift and saved Rs.7,042.

5. *Other improvements*—Seven hundred disputes were amicably settled through *panchayats*. Fuel plantation has been made in 50 *bighas*. Vegetable cultivation for home consumption has been introduced in over half the villages. Some societies made joint purchase of cloth and in some means of communication have been improved through joint effort.

A reflection of better farming and better living is to be found in the improvement brought about in the working of the credit societies. The average membership of the Partabgarh societies is 28 while the provincial average is only 21. The percentage of collections to demand is 52, whereas the provincial figure is 24. Again, the percentage of overdues to the total outstandings is only 40 as against 68 the provincial average.

The number of credit societies in the district has increased from 147 in 1926 to 220 in 1934. Besides this 10 thrift societies among men and 11 societies among women for thrift, better-living and education have also been established.

These are tangible results but results equally valuable though less visible are to be seen in a quickening of the desire for improvement and in the growing self-reliance of the societies. In the older societies less and less work has to be done by the guides, and given time and perseverance, success can be looked forward to.

VISHNU SAHAY,
Registrar, Co-operative Societies,
United Provinces..

Three-year programme of work

Agricultural

1. Improved manure pits—(a) one pit	..	All families.
(b) two pits	..	75 per cent. of the members.
2. Urine preservation beds	..	75 ditto.
3. Green manuring	..	50 ditto.
4. Improved seeds—(a) wheat	..	90 ditto.
(b) sugarcane	..	90 ditto.
5. Ploughing with Meston plough	..	75 ditto.
6. Wells—(a) Boring in wells needing it	..	All.
(b) Cleaning of do.	..	All.
7. Rouging wheat fields	..	75 per cent. of the members.
8. Vegetable cultivation	..	75 ditto.
9. Improved breeding bull	..	One to be arranged.
10. Demonstration of better farming	..	One member at least to undertake it on one bigha.
11. Hot weather cultivation	..	10 members.
12. Introduction of 3 roller cane mills or such other machinery as improved furnaces for <i>Rab</i> or <i>gur</i> .	..	According to needs.
13. Improvement of irrigation facilities, e.g., new wells, repairs of tanks, Persian wheels, etc.	..	Preparation of a scheme and its partial compliance.
14. Consolidation of holdings	..	Preparation of a scheme.

Sanitation

1. Removal of pits outside <i>abadi</i>	..	All.
2. Soakage-pits, where necessary	..	All.
3. Platforms on wells used for drinking water	..	50 per cent. cases.
4. Knowledge of precautionary measures against contagious diseases.	..	90 per cent. members.
5. Knowledge of first aid	..	90 ditto.
6. Vaccination	..	All.
7. Ventilation	..	25 per cent. of old houses and in all new houses.
8. Training of <i>dais</i>	..	All.
9. Filling of pits inside <i>abadi</i>	..	A part.
10. Provision of medicine chest	..	One chest.
11. Cleanliness, houses, personal	..	90 per cent. of members.

Education

- | | |
|--|--|
| 1. Sending of all boys of school-going age to schools. | 80 per cent. of members. |
| 2. Sending of all girls of school-going age to schools | 50 ditto. |
| 3. Education of adults | To see if an adult school is necessary and to start one if possible. |
| 4. Education of adult females particularly cleanliness, thrift, etc. | 40 per cent. |

Economic

- | | |
|---|--------------------------|
| 1. Thrift by <i>chutki</i> system | 75 per cent. of members. |
| 2. Thrift in cash or grain | 75 ditto. |
| 3. Curtailment of ceremonial expenses | 75 ditto. |
| 4. Fuel plantation | Some work. |
| 5. Development of cottage industries | ditto. |

General

- | | |
|--|--------------------------------------|
| 1. Improvement of communications | Some work. |
| 2. Formation of better farming and better living societies. | To include 90 per cent. of families. |
| 3. Recreation club (singing, physical culture, library, etc.). | To establish it. |
| 4. Development of unity, self-help and co-operative spirit. | To an appreciable extent. |
| 5. Reform of social evils and undesirable customs.. | Ditto. |

APPENDIX III

Note on the Health Unit Scheme at Partabgarh

The Health Unit Scheme was inaugurated in the district of Partabgarh 2½ years ago with the aid of funds given by the Rockefeller Foundation. The total expenditure on the Health Unit comes to Rs.30,000 annually. In the first year the Foundation met one-half of the cost of the scheme, the other half was met by the Public Health Department in the form of the pay of staff deputed to the Unit and the Provincial Red Cross fund. In the second year the grant from the Rockefeller Foundation was decreased to one-third, two-thirds being met from Red Cross and Public Health Department. In the third year the grant has been reduced to roughly one-fourth of the total and the balance is being met by Public Health Department and Red Cross.

The scheme was initiated at the instance of the Rockefeller Foundation with a view to give the same protection from preventable diseases to the villagers as are enjoyed by the residents of urban areas and to create a sanitary conscience amongst the masses and to afford facilities in regard to maternity and child welfare work in all the villages under the jurisdiction of the Health Unit Scheme.

The scheme is at present operative in one municipality, two town areas and 53 villages having 40,000 population covering roughly an area of 40 square miles. The following staff is working in the area :

1 Medical Officer—An officer of the Provincial Public Health Service with qualification of M.B., B.S., D.P.H., who has received special training in this method of work in the U. S. A.

4 sanitary inspectors.

1 labour gang of 6 coolies.

1 lady doctor.

3 health visitors.

8 midwives.

11. Indigenous *dais* and clerical establishment.

The office is accommodated in the Town Hall at Bela which has been kindly placed at the disposal of the health unit by the Municipal Board, Bela.

The whole area is divided into four circles and each circle is manned by the following staff :

One sanitary inspector, two midwives and one health visitor.

The sanitary inspector looks after the general sanitation, vaccination, registration of vital statistics and sanitary improvements of permanent nature and trains teachers and scholars in anti-epidemic work and gives demonstrations by magic lantern on health subjects and epidemic diseases. They are in direct charge of the surface cleanliness of the area in which they work and get manure heaps removed to fields and

have the villages swept by the labour gang as well as by the villagers from time to time. They carry out anti-epidemic measures under the direction of the Medical Officer and during the non-epidemic season the staff is engaged in getting manure pits dug, trench pattern and bored-hole latrines made, wells improved and made sanitary to prevent outside contamination. Attempts are being made also to provide soakage pits for the disposal of waste water and sullage of lanes and private houses. Demonstration cattle sheds have also been made in a few villages. Lighting and ventilation have been improved in quite a large number of houses by providing windows and ventilators.

Maternity—Midwives attend normal labour cases and conduct deliveries at the villagers' homes. All abnormal cases are advised to go to the Dufferin Hospital. Anti-natal and post-natal clinics are held by the health visitors twice a week and expectant mothers are given instructions on rearing of infants, health subjects, domestic hygiene, personal cleanliness and the precautions to be taken during the course of pregnancy and confinements. They have succeeded in popularizing the maternity work to the extent that 75 per cent. of confinements are conducted by qualified midwives. Lady doctor supervises the work of health visitors and midwives and holds clinics and inspects scholars in the lower primary schools. The clinics are held at the houses of midwives. Majority of the indigenous *dais* have been trained by the midwives and health visitors and almost 30 per cent. of them have been supplied with maternity boxes. Twenty-six First Aid dispensaries have been opened in the whole area to give medical relief. These are housed in schools in the houses of village guides.

Junior Red Cross groups have been formed in 20 schools and the boys have been trained in anti-epidemic work.

Vaccination—Barring those who are unfit for vaccination every child born during the year is vaccinated by sanitary inspectors, midwives and health visitors.

The Health Unit area also serves as a field training centre for the public health personnel of the province.

APPENDIX IV-A

Note on Cane Development and Marketing Scheme by J. H. Ritchie, Esq., M.A., B.Sc., I.A.S., Director of Agriculture, United Provinces, Lucknow

The Government of India have sanctioned a scheme for the improvement and marketing of sugarcane in the areas round about sugar factories in the province and the State tube-wells in the Hydro-Electric Grid area in the district of Meerut and Moradabad. The estimated annual cost for sugar factory areas is about 2.25 lakhs and in the State tube-well areas about 68 lakhs.

A copy of the scheme for sugar factory areas is enclosed. The development of State tube-well areas is being carried out on similar lines except that there are no sugar factories to pay a part of the scheme to Government. The cultivation of sugarcane is being developed and arrangements made for the sale of the crop to the local *khandsaris*.

The schemes started late in the year 1935-36, i.e., from November, 1935, and are continuing during 1936-37. The actual provision in the budgets for the two years is as follows :

	1935-36	1936-37
	Rs.	Rs.
1. Scheme for the improvement and marketing of sugarcane in factories	1,89,500	2,29,698
2. Scheme for the improvement of sugarcane in the tube-well areas	45,500	69,886

The receipts on account of factory contribution amount to Rs.63,000..

In the factory areas 21 zones of development and marketing are in operation. These are grouped in two ranges—Eastern and Western with headquarters at Gorakhpur and Bareilly respectively, each in charge of a Cane Control Officer of the United Provinces Agricultural Service or United Provinces Co-operative Service. Each of them is assisted by a Deputy of nearly the same rank together with the requisite ministerial and menial establishment.

The Western Range is under the administrative control of the Director of Agriculture, United Provinces, and the Eastern Range under that of the Registrar, Co-operative Societies.

The State Tube-well Development area is in charge of an officer of the United Provinces Agricultural Service (headquarters Meerut) with a non gazetted assistant and office staff.

Details of work done in the last year are shown in the notes enclosed.

CANE DEVELOPMENT AND MARKETING SCHEME IN FACTORY AREAS

I—Programme of Agricultural Development

The Scheme aims at the following developments :

1. The introduction of high yielding and effective sucrose containing canes of early, mid-season and late ripening varieties so as to provide the needs of the factories at the various periods of the working season. This will be secured by the establishment of seed farms or seed farmers whose cane will be reserved entirely for seed purposes. Such seed farms will put down selected varieties and be paid 9 pies per maund extra over the rate obtaining in the factory at sowing time, for every maund of cane seed supplied. The seed will be issued to the growers at 3 pies below local rates. There will be a seed centre at each village society or for every 200 acres of cane.
2. Improvement in the present standard of manuring :
 - (a) by green manure and compost extension, and
 - (b) by supplies on credit against the next crop of departmental fertilizer mixtures.
3. Improvement in yield by right spacing and more effective inter-cultural methods.
4. Securing irrigation facilities as far as possible.
5. Organization of Co-operative measures to reduce insect pests and the consequent damage to crops.

II—Supply of cane to the factories

6. The Development Organization will act as contractor for the supply of the cane of this area to the factory which will pay to the Development Organization a commission of three pies per maund of sugarcane supplied to it. The Development Organization will not deal with the cane of non-members who do not adopt better farming practices.
7. Where advances to growers are necessary, the factory will be requested by the Development Organization to make the same. The advances plus interest would be deducted by the factories, when making payment for the cane to the Development Organization.

B—ALTERNATIVE SCHEME

8. Under the alternative scheme the factories—
 - (a) contribute Rs.6,000 in place of Rs.3,000 which the factories under the full scheme contribute, so as to meet certain expenditure which under the full scheme is to be met from the commission of 3 pies per maund of cane supplied which the factories under the alternative scheme will not pay;
 - (b) arrange purchase of cane direct from growers or better farming societies but the Development Organization would provide

the data as to whence the factory could get canes of suitable ripeness within the limits controlled by them ;

(c) make the necessary advances for seed, manure or fertilizers in cash or kind, making their own arrangement for recovery from the price of cane supplied when paid; and

(d) permit, if required, a representative of the Development Organization or the Better Cane Growing Societies to be present at the weigh bridge in the interest of the cane growers within the development area.

C—GENERAL

9. The following staff and funds will be provided for development of the area :

(Per cane development area of approximately 2,000 acres)

Staff	Year				
	1st	2nd	3rd	4th	5th
	Rs.	Rs.	Rs.	Rs.	Rs.
One Assistant Cane Control Officer on Rs.80—5—150 ; per m on Rs.10 and travelling allowance Rs.20 per mensem.	1,320	1,380	1,440	1,500	1,560
Three fieldmen supervisors on Rs.30—1—35—1—40 ; porter on Rs.7 and travelling allowance at Rs.8 per mensem each.	1,620	1,656	1,692	1,728	1,764
Nine karndars on Rs.15 per mensem each.	1,620	1,620	1,620	1,620	1,620
<i>Subsidies</i>					
1. Seed suppliers per maund of seed supplied (over local rate for cane, 9 pies).	4,000	4,000	4,000	4,000	4,000
2. Cane growers per maund of seed purchased (below local rate) 3 pies, i.e., 64,000 maunds at 1 anna.	300	300	300	300	300
Miscellaneous.. ..	300	300	300	300	300
Total ..	8,860	8,956	9,052	9,148	9,244

Average cost—Rs.9,000 approximately.

Contribution—Rs.6,000 by Government and Rs.3,000 by factories.

10. The funds of the Development Organization made up of the commission at 3 pies per maund of cane supplied under the full scheme and the part of contribution of Rs.3,000 under the alternative scheme will be utilized on the following objects :

(a) Special staff to be engaged during the marketing season—Rs.1,800 to Rs.2,000.

(b) Improvement of transport and other facilities Rs.2,000 to Rs.4,000.

(c) The creation of an increasing reserve to finance cake and fertilizer purchased for advances to cultivators.

Note on the work done under the Scheme for Improvement and Marketing of Sugarcane in the factory areas.

The following factories joined the scheme :

Name of the mill	Location	The scheme under which they joined	District
<i>Western range</i>			
1. Hindustan Sugar Mills ..	Golagckaran-nath.	II	Kheri.
2. Lakshmi Sugar and Oil Mills ..	Hardoi ..	I	Hardoi.
3. The Jai Lakshmi Sugar Co., Ltd...	Doiwala ..	I	Dehra Dun.
4. Modi Sugar Mills, Ltd. ..	Begsabad..	I	Meerut.
5. Simbhauli Sugar Factory ..	Simbhauli ..	I	Do.
6. The Upper Ganges Sugar Mills, Seohara.	Sheohara ..	I	Bijnor.
7. Kesar Sugar Works, Ltd. ..	Baheri ..	I	Bareilly.
8. Rosa Sugar Factory ..	Rosa ..	I	Shahjahanpur.
9. The Oudh Sugar Mills, Ltd. ..	Hargaon ..	I	Sitapur.
10. Lakshmi Sugar Mills Co. ..	Maholi ..	I	Do.
11. The Ganga Sugar Corporation ..	Deoband ..	I	Saharanpur.
<i>Eastern range</i>			
1. The Diamond Sugar Mills, Ltd. ...	Pipraich ..	I	Gorakhpur.
2. Shri Sita Ram Sugar Co., Ltd. ..	Baitalpur ..	I	Ditto.
3. The Punjab Sugar Mills Co., Ltd. ...	Ghugli ..	I	Ditto.
4. Ishwari Mills, Ltd. ..	Lakshmiganj ..	I	Ditto.
5. Ramkola Sugar Mills, Ltd. ..	Ramkola ..	I	Ditto.
6. Maheshwari Khetan Sugar Mills, Ltd.	Do. ..	I	Ditto.
7. Basti Sugar Mills, Ltd. ..	Basti ..	I	Basti.
2. Madho Kanhaiya Mahesh Gauri Sugar Mills.	Munderwan..	I	Do.
9. Nawabganj Sugar Mills Co., Ltd. ...	Nawabganj..	I	Gonda.
10. U. P. Co-operative Sugar Factory, Ltd.	Biswan ..	II	Sitapur.

Regular work in 9 out of the 11 zones in the Western Range was started in November, 1935, while the Hargaon and Deoband zones were added towards the end of January, 1936. The area of these zones is generally limited to a radius of 5 to 6 miles. Each zone has been divided into three supervisors' circle and nine kamdars' beats. 200 to 300 acres, divided almost equally in each supervisor's circle, have been secured in each zone for growing cane for seed next year. In the Hargaon zone the area secured up to this time is only 80 acres, as this zone was started late; the mill people are satisfied with this beginning. In the Western Range 783 cultivators were enlisted and 1,407 acres were sown with improved varieties of cane in 7 zones. The information about the remaining 4 zones is not yet available.

In the Western Range sugarcane seed and manure worth Rs.37,668 was issued in 8 zones on *taqavi* and cash as follows :

Cane seed			Manure		
On taqavi	Cash	Total	On taqavi	Cash	Total
Rs.	Rs.	Rs.	Bs.	Rs.	Rs.
21,769	3,717	25,486	10,939	1,243	12,182

A sum of Rs.1,000 per zone was spent in bringing seed from outside and not added to its cost. Three sugar mills in this range also made advances to growers for purchase of seed amounting to Rs.7,371. The quantity of improved seed supplied is 90,834 maunds as detailed below :

Maunds	Co 312	Co 313	Co 350	Co 331	Others	Total
	47,837	12,114	1,232	17,437	12,214	90,834

The supply was principally limited to Co's 312, 313, 331, and 350, the departmentally recommended varieties, except in Doiwala, Debra Dun, where EK 28 and 290 were distributed.

Four akola hoes and a McCormic cultivator are being supplied to each zone to aid and demonstrate the inter-cultural processes. Germination is reported satisfactory and arrangements for green manuring for the next crop are being made.

In the Eastern Range 93,104 maunds of cane seed of improved varieties was issued to the growers as detailed below :

Maunds	213	285	300	312	313	331	350	356	393	Total
	72,865	1,922	50	11,515	2,705	3,181	8	358	500	93,104

The bulk of the seed was supplied from the Government farms and some from reliable private farms certified by the Deputy Director.

17,980 maunds of artificial manure consisting of castor cake and ammonium sulphate was also supplied in this range mostly on *taqavi*. In addition to this, *neem* cake was also given out whenever necessary. The effect of artificial fertilizers has been very beneficial to the germination of cane. The mills have been requested to give out free supplies of potash and phosphate manures to the growers in order to build up better sucrose and purity of juice. In the Eastern Range a sum of Rs.26,264 was advanced as *taqavi* for the purchase of seed and manure.

A survey of zonal villages in the Eastern Range is being made with a view to improve the irrigation sources. Ordinary measures have been suggested to eradicate the pests of white ants and borers and diseased specimens have been sent to the Entomologist to Government, United Provinces, Cawnpore, for detailed study and for recommending proper steps for eradications.

Note on the work done under the Scheme for the Improvement of Sugarcane in the tube-well areas

The Scheme aims at educating the small holder in simple practices of better farming, resulting in substantial financial advantages in the

form of increased outturn and in the reduction of cultivation expenses and in the eradication of crop diseases. The working is similar to that of factory zones.

The Scheme has been taken up in three tube-well zones of 68 wells in the Meerut District and two zones of 37 wells in the Moradabad District. The number of villages under command is 205, and the total area 5,047 acres. The actual work was started in November, 1935.

Remodelling of holdings with the aim of recasting the individual fields so as to facilitate operations and at the same time to link up other small holdings to form even blocks, neatly demarcated, properly levelled and easily manageable was started on the fields of 3,334 cultivators.

135,041 maunds of sugarcane seed was distributed on *taqavi*, amounting to Rs.61,058-14. The varieties distributed are—

Co 331, Co 213, Co 312, Co 244, Co 313, Co 290 and Co 317

The quantity of manure supplied on *taqavi* in the five zones was 12,310 maunds costing Rs.37,752.

In the controlled area *Line Sowing* of cane and mechanical inter-culture is getting popular. The officer-in-charge of the Scheme is working in co-operation with the Irrigation, Revenue, and the Rural Development Officers.

APPENDIX IV-B

Note on Cane Development and Marketing Scheme by Vishun Sahay, Esq., I.C.S., Registrar, Co-operative Societies, United Provinces, Lucknow

The Scheme was sanctioned late and work began only in November last. I can give you details of the work so far done in the Eastern Range which is under my control. Ten factories viz., Biswan, Nawabganj, Basti, Munderwa, Pipraich, Baitalpur, Ghugli, Lakshnigunj, Ramkola No. I and Ramkola No. 11 have joined the Scheme under alternative I, i.e. they have agreed to contribute Rs.3,000 Government contributing Rs.6,000 under the full scheme of cane development and marketing. Villages where the work would be taken up have been selected and propaganda for the formation of better farming and marketing societies has been taken in hand. In addition, training classes for the staff have been held both in the field and in theory. The area round each factory covers 2,000 to 2,500 acres of sugarcane. Each area is under the control of the officer called Assistant Cane Control Officer equivalent to the rank of an Inspector of Co-operative Societies. In the ordinary development area there are three fieldmen and nine kamdars under the Assistant Cane Control Officer. Intensive propaganda for improved seed so as to form the supply for next year has been made and 90,000 maunds of seed are being put down this year. The seed is of various qualities—213, 312, 313, etc., so that the seasonal requirements of the factories may be met. The business is being financed out of *taqavi* or loans taken from co-operative banks. Manure at the rate of four wagons per area is being sold to members at nearly half price. The manure is one part ammonia and eight parts of castor cake.

APPENDIX V-A

The Ganges Canal Hydro-Electric Grid Scheme

1. *Historical*—The Upper Ganges Canal, which commands 4½ million acres between Hardwar and Aligarh, passes over 13 falls of which eight are economically suitable for electrification. Of these, four falls, at Bahadurabad, Bhola, Palra and Sumera respectively, were originally developed for power purposes for three local schemes carried out in 1929-30. The Bahadurabad falls were to supply energy for electrifying the principal towns in the Saharanpur, Bijnor and Moradabad Districts as well as for pumping 200 cusecs from the Ramganga river for irrigation on the high ground between Seohara and Moradabad. The Bhola falls were to energise Meerut, Ghaziabad and Hapur. The Palra and Sumera falls were to supply power to Khurja and also for pumping 100 cusecs from the Kali Nadi into the Ganges Canal. After work had been begun it was decided to link these three systems into a connected net-work or "grid" spread over the seven western districts from Saharanpur-Shahdara in the west to Chandausi and Kasganj in the east and Agra in the South. The inter-connection of the local networks enabled four main objectives to be attained, (a) all the 88 towns in the seven* western districts, having a population of 5,000 and over could be electrified for domestic and industrial purposes, (b) the intervening tracts with their small towns, villages and widespread rural loads could be supplied with power for industrial and agricultural purposes. (c) power could be made available over a wide area for pumping water for irrigation from rivers and tube-wells, both State and privately owned and (d) the connected power systems could help each other at times either of maximum load or of individual failure.

2. *The 1931 Project*—The total cost of the 1931 project which was completed in 1934, comprising four power stations yielding 9,000 kilowatts, including 1,000 kilowatts of oil engine stand-by plant, together with 860 miles of transmission lines and 167 transformer stations was Rs.1,38,56,070 as sanctioned by the Secretary of State. The gross estimated revenue was Rs.16.56 lakhs after allowing for subsequent adjustments in regard to the domestic guaranteed revenue.

3. *Interim Projects*—During the years 1931 to 1933 demands for cheap grid power developed in adjoining towns resulting in a steady expansion of capital outlay on various extensions. Instances of these are the Meerut Cantonment extension in 1931-32 at a cost of 1.81 lakhs, the Agra to Tundla line in 1932-33 costing 1.74 lakhs and the Kasganj installation in 1933-34 at a cost of 2.06 lakhs. These and other minor extensions were financially justified by their direct return on the additional capital involved. But it was in the rural areas that the chief demand for expansion arose as a result of the cheap power made available for private tube-wells and other agricultural activities. Up to date

* NOTE.—Since extended to ten.

no less than 208 new branch lines to zamindars' farms have been constructed with a total mileage of 280 at a cost of 5.75 lakhs for transmitting 3,068 horse power to the various zamindari plants.

4. *The Tube-well Project*—Further, as a result of the department's experimental tube-well installations laid down in 1931 to 1933 which showed that a wide extension of irrigation by means of State owned tube-wells was possible, it was decided in 1934 to develop the vast irrigation project which has recently been sanctioned by the Legislative Council. This enterprise provides for the construction of some 1,500 wells to command nearly two million acres in the western districts within the next two years, of which total, 812 will be in operation for the next sugarcane season.

5. *The 1934 Enquiry Committee*—While the tube-well scheme was being prepared, the Government decided to submit the hydro-electric project with its then existing commitments as well as all pending demands for future power to a competent committee in order to secure an examination of its commercial and technical aspects from all points of view. The first Ganges Grid Enquiry Committee was accordingly appointed in January, 1934, including experienced electrical engineers from Madras and Bombay, a financial expert from the Punjab and two influential members of the local Legislative Council.

6. The 1934 project as placed before the Committee provided for the gradual completion of the scheme in "stages" to be advanced as the electrical demand should develop. The "stage" principle enabled the capital to be developed parallel with the load thus avoiding the incurrence of unremunerative outlay. Stage I which is now complete provided 9,900 kilowatts at a total cost of 194 lakhs offering a gross annual return of Rs.19.75 lakhs or Rs.1.25 lakhs net after deducting interest, working expenses and depreciation.

An ultimate expenditure of Rs.4,32,82,359 by 1948-49 and a net return of Rs.37,32,697 or 8.6 per cent. was forecasted.

7. The Committee's report of February, 1934, which was confined to the first and second stages was widely circulated to members of the Council and the press. The conclusions arrived at in the report may be briefly summarized as follows :

(1) That the scheme is fundamentally sound from an economic and technical point of view and the estimates of construction costs are reasonable on the basis of present day rates and prices.

(2) The construction of Salawa generating station is recommended within the next five years provided that the load estimates are realized.

(3) After further examination, economies in the operating establishment may prove possible in the near future.

(4) The power tariffs as a whole are reasonable, compared with those in force elsewhere in India, and sufficiently attractive to compete effectively with other forms of power and to reduce the cost of production to the industrialist. Any reduction of these

tariffs is not advisable until the load has developed to the generating capacity of stage I.

(5) With favourable economic conditions, the load and revenue forecast for the next five years should be realized. An important factor in the development of load will be the progress of the State tube-well irrigation scheme which is sound and should be encouraged.

8. The subsequent decisions of 1935 to accelerate the completion of the tube-well project necessitated a fresh examination of the grid financial forecast as outlined in Appendix A of the Committee's report. A revised estimate for developing the remaining power stations on the Ganges Canal together with a combined steam stand-by and peak load station at Chandausi at a cost of Rs.337 lakhs was therefore prepared. The cost of the transmission lines and transformer stations to feed the rural net-works for energising the remaining State tube-wells has also been included. Careful investigation has shown that the construction of a "peak-load" steam power station at Chandausi for energising the 700 tube-wells in the Moradabad and Budaun areas is likely to be cheaper than the alternative policy of constructing two or possibly three additional power stations on the canal some 150 miles distant, and transmitting the power to the Chandausi area by means of duplicate high capacity lines. In other words, the incidence of cost of thermal power generation at Chandausi is less per unit than that of the interest, depreciation and maintenance charges on the higher capital cost involved in bringing hydro power from a much greater distance.

9. *The 1935 Enquiry Committee*—As the above Committee had examined only the first two stages of the 1934 proposals, the Public Accounts Committee suggested a further examination of the 1935 project when it was brought to their notice. The Government accordingly appointed a second Enquiry Committee in November, 1935, to examine and report on the Chief Engineer's 1935, estimate of the capital cost of the ultimate scheme as then proposed. Also to examine the forecast of load development and revenue together with the proposals for engineer establishment. The Committee was to re-examine the general scope and extensions of the scheme and to report on its adequacy to supply the electrical and irrigation requirements of the area affected in the light of data available from the project already in operation. The recommendations of this Committee which comprised electrical experts from Madras and Mysore, a financial expert from the Government of India, a representative each of the Legislative Council and the Upper India Chamber of Commerce may be summarized as follows :

(1) The revised scheme is technically and economically sound and the construction of the works should be proceeded with in accordance with the programme outlined in the Chief Engineer's report.

(2) The proposed generating capacity and transmission lines are adequate for the demand forecasted.

(3) As a measure of safety a contingent provision of 10 per cent. should be added to the works estimates of the Mohammadpur power

station, the installation of the third turbogenerating set at Chandausi and the works estimate of the transmission lines to be constructed in 1937 and thereafter.

(4) The working expenses are adequately estimated.

(5) The load and revenue estimates should be realized.

(6) A careful study of industrial load development should be undertaken by the department.

(7) A revision of departmental and licensees' tariffs should be carefully considered.

(8) All industrial consumers requiring a high tension supply of energy should be supplied direct by the department.

(9) The areas of licensees should be confined as far as practicable within municipal limits and urban areas.

The last four proposals are now under examination.

10. The total estimate after revision as suggested by the Committee amount to Rs.342.88 lakhs including all previous commitments and overhead charges. It covers the cost of seven canal power stations including the original four as well as those at Salawa and Chitaura which are now under construction. The remaining station provided for will be built at the Nirgajni falls in Muzaffarnagar District instead of at Mohammadpur as originally proposed. Including the steam auxiliary station at Chandausi, an aggregate installed generating capacity of 27,900 kilowatts will thus be provided of which 20,633 kilowatts will be available for utilization after making allowance for machinery under repairs and losses on the transmission system.

The outlay also provides for new high tension feeders from Nirgajni to Chitaura, from Sumera to Chandausi, from Chandausi to Budaun and from Belari to Moradabad in addition to some 1,000 miles of 11,000 volt branch lines necessary to connect the remaining tube-wells now under construction to the grid net-work. Provision has also been made at a cost of 3.3 lakhs for constructing a further 230 miles of branch lines to zamindars' farms.

11. *The revised estimate*—As a result of the development of State tube-well irrigation at a more rapid rate than was anticipated, it has been found necessary to accelerate the construction programme with a view to completing the whole scheme within the financial year 1937-38. It is accordingly proposed to borrow Rs.64.19 lakhs in 1936-37, which have already been included in the Capital budget, and Rs.61.31 lakhs in the year 1937-38.

12. *The allocation of power*—Of the power available, it is estimated that 2,900 kilowatts will be required for domestic purposes in the 88 towns served by the grid, 10,500 kilowatts for minor urban industries, 3,400 kilowatts for agricultural purposes including zamindari tube-wells, 10,970 kilowatts for the 1,500 State tube-wells now under construction, and 2,650 kilowatts for river and canal pumping schemes.

In allocating the power available for these various loads, the "diversity" which has been found to obtain in the case of certain loads

which operate only for part of the day, has been taken into account. For instance, whilst canal and established State tube-well pumping installations which operate all day in the irrigation season have obviously no "diversity", experience has shown that a diversity factor of 3.1 can safely be assumed for domestic, minor industrial, agricultural and railway loads. In other words, 1,000 kilowatts of power at the generating stations can provide for loads of these types aggregating 3,100 kilowatts on the distribution system. This phenomenon, known as "diversity", is due to the fact that individual motors and lights are not as a rule worked simultaneously.

Minor industries—In regard to the industrial power facilities afforded by the grid, an aggregate of 9,399 horse power in 965 small motors is already connected to the grid, of this total 3,592 horse power is utilized for 401 flour mills, 228 horse power for 67 brass and metal lathes and 5,579 horse power for oil crushing plants, rice hulling mills, etc. The number of such small motors is steadily increasing and the recent introduction of cheap seasonal and two-part industrial tariffs is likely to stimulate minor electrified industries.

13. *Power for irrigation*—The scope offered by the scheme for increasing the irrigation facilities of the province is of sufficient importance to warrant a brief description. Three hundred and ninety cusecs are already being pumped from the Ramganga and Kali rivers for canal irrigation and 250 cusecs are to be supplied from tube-wells into the Ganges Canal system in Meerut and Bulandshahr Districts in order to release river water for much needed canal extensions in the arid districts of Muttra and Agra where the construction of tube-wells as a means of local irrigation is not feasible for geological reasons. Eighty cusecs are already being thus pumped and an important project which was recently sanctioned by the Legislative Council for remodelling the Mat Branch to enable it to carry the increased discharge to Muttra is now under construction. Should these so-called "conversion" schemes now under trial prove remunerative they can be extended to the limit of the power still available on the Ganges Canal. The 1,500 State tube-wells now being installed in the Meerut, Bulandshahr, Bijnor, Moradabad and Budaun areas will, as stated above, absorb 10,970 kilowatts from the grid. These tube-wells will yield 2,250 cusecs in the aggregate for protecting some two million acres of land at present uncommanded by canals in which area 186,000 acres of sugarcane, 375,000 acres of wheat and 90,000 acres of other *kharif* crops will be irrigated annually within three years' time.

In addition some 180 zamindari wells which are being energised by the grid will yield a further 270 cusecs.

Thus, the grid scheme furnishes the means of supplying a total of 3,160 cusecs for additional irrigation in the western districts or more than half the cold weather flow of the Ganges river.

Apart from this, power has also been made available at a rate of one anna per unit for agricultural purposes, and 9 pies per unit for irrigation pumping, at no less than 1,970 transformer points throughout the rural area covered by the grid. The importance of these amenities for cheapening the cost of production is obvious.

14. *Depreciation*—Turning now to the working expenses it should be explained that in the project estimate sanctioned by the Secretary of State in 1931, depreciation was computed by what is known as the "sinking fund" method under which a smaller annual debit is made on the ground that the instalments funded at compound interest rates will contribute the full value of the plant within the period of its life. This practice is, however, open to certain objections. Due to the recent fall in interest rates, the method of computation has lately been revised and the simple interest or "straight line" method of computation, has been substituted in the revised project under which the annual contribution towards depreciation equals the value of the plant divided, by its life in years.

The result of this enhanced depreciation contribution is of course to reduce the apparent net profit on the scheme in the initial stages but to secure a larger and more continuous reserve for the replacement of obsolete machinery, thereby securing a higher factor of financial safety. For instance, in the Grid Committee's report on the 1934 scheme with a capital of 192 lakhs in 1935-36, the depreciation allowed by the Committee was 2.3 lakhs as against 4.1 lakhs now being put aside for the current year.

As regards the life adopted for the various types of plant on the grid, the Grid Enquiry Committee of 1934 recorded as follows :

"The lives assumed for various items of plant and equipment are reasonable. In the case of transmission lines the poles of which are made of Tata rails, the provision is very liberal. Our conclusion is that the provision for depreciation as a whole is satisfactory with reference to the prices of plant and equipment now obtaining. Its adequacy should, however, be examined at least every three years in the light of the estimated cost of replacement of the plant at rates then in force."

15. *Establishment*—Under "establishment" the annual charges against revenue as stated in column 11 of the Schedule have been based on that share of the cost of the actual staff to be engaged, which is debitable to revenue—the remainder of the cost being debited to capital. The allocation of hydel establishment charges between capital and revenue in any year is thus proportionate to the amount of capital, and revenue plus maintenance charges respectively handled by the staff during that year. Thus, in years of high capital outlay the cost of establishment debitable to revenue is lower than in later years when the annual capital charge decreases.

16. *Repairs*—Provision has been made in column 12 of the Schedule for annual and special repairs on the basis of actual experience gained over a period of years. Replacements and major renewals of plant will be financed from the depreciation fund.

17. *Operating Ratio*—In paragraph 41, Chapter III of the Grid Enquiry Committee's Report, 1934, it was remarked that the "operating ratio" (or proportion of total working expenses to gross revenue) exceeded 50 per cent. in 1934-35, and the advisability of reducing this ratio as soon as possible was pointed out. A reference to the Schedule will show,

that the operating ratio for 1935-36 is 48·5 falling to 42·3 in 1939-40. In considering these figures it must be remembered that in a project such as the Ganges Grid with eight separate generating stations and 1,970 sub-stations spread over a wide area, the establishment costs must always be higher than those of more concentrated schemes.

18. *Cost per unit*—It is anticipated that 312 lakhs of units will be sold in the current year rising to 771 lakhs when the grid is fully developed in 1943-44. The average cost per unit inclusive of all charges is expected to be 11·8 pies in the current year, 10·4 in 1936-37 falling to 8·51 in the completed scheme.

19. *Financial aspect*—Turning now to the financial aspect of the enterprise, a glance at the attached schedule will show that with a capital outlay of Rs.168·33 lakhs incurred up to the end of 1934-35, the gross revenue for the current year is estimated at Rs.18·98 lakhs as compared with the estimated yield of 16·56 lakhs of the 1931 project after making adjustments on account of subsequent charges in the licensees' guaranteed revenue. The following figures show the recent progress in electrification in both urban and rural areas. During the year 1933-34, 21,276,882 units were generated on the grid out of which 16,470,968 units were utilized. In 1934-35 these figures rose to 30,023,856 and 24,025,034 respectively. In 1934-35, 1,178,076 units were consumed for agricultural purposes rising to 1,340,913 units in the period April to December, 1935. For irrigation pumping from State tube-wells 1,596,978 units were consumed in 1934-35 against 4,499,890 in the nine months April to December, 1935 inclusive. The gross anticipated ultimate revenue as shown in column 10 of the schedule attached will be seen to rise from 19·14 lakhs in the current year to Rs.45·04 lakhs in 1943-44. Of this it is estimated that 4·49 lakhs will be derived from irrigation pumping in 1935-36 rising to 19·18 lakhs from this source in 1941-42. Hence rather more than 40 per cent. of the total revenue will eventually accrue from State-owned pumps for which there is a secured load. The working expenses are expected to rise from 9·31 lakhs in the current year to 20·67 lakhs in 1940-41, *vide* column 15 of the schedule. After deducting interest charges, depreciation and working expenses, it is estimated that there will be a net surplus of 2·34 lakhs in 1936-37 rising steadily to 8·43 lakhs in 1940-41. It must be remembered that the grid revenue from tube-wells will be subject to the rainfall variations of different years. As in the case of any irrigation scheme these seasonal variations average out over a series of years and the revenue forecast may be accepted with confidence.

20. It will thus be seen that whilst enabling some two million acres of land at present unprotected by irrigation, to be commanded and nearly three-quarters of a million additional acres to be irrigated every year, the project may be expected at an early date to contribute a modest sum to the reduction of the provincial revenue deficit. Further it will enable minor industries to be developed in the towns and villages to an increasing degree, thus enhancing the prosperity of the countryside.

(120)

The enterprise has, however, a wider importance in that it opens the way for an electrical advance on a larger scale into tracts hitherto beyond the reach of the Ganges Canal falls as a source of power. The combination of steam generation with a hydro-electric system will enable the benefits of cheap electricity to be extended eastwards to millions of agriculturists existing at present in arid tracts with little hope of economic relief.

ROORKEE :
February 3, 1936.

W. L. STAMPE,
*Chief Engineer (Development),
Irrigation Branch.*

**GANGES CANAL HYDRO-ELECTRIC GRID
ULTIMATE DEVELOPMENT**

SCHEDULE I—Abstract of financial results

Revised January, 1936

Lakhs of Rs.

Year	Capital outlay to the end of the previous year			Capital outlay during the current year	Accumulated arrears of simple interest to end of the previous year	Total of columns 4 and 6	Revenue			Working expenses					Net revenue = column 10—column 15	Simple interest for the year	Net gain or loss = column 16—column 17	Percentage of net revenue or deficit = column 16—column 17
	Direct charges	Indirect charges	Total				Gross revenue for the year	Simple interest on Depreciation Fund	Total of columns 8 and 9	Establishment and operating staff including leave and pension charges	Maintenance and repairs charges	Depreciation charges	Indirect charges	Total				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1934-35 ..	152.03	0.56	152.59	15.74	12.94*	169.17	15.34	..	15.34	4.17	1.94	4.00†	0.01	10.21	5.13	8.77	—3.64	3.0
1935-36 ..	167.63	0.70	168.33	49.82	16.81	185.14	18.98‡	0.16	19.14	3.12	2.08	4.10	0.01	9.31	9.83	10.08	—0.25	5.3
1936-37 ..	217.00	1.15	218.15	63.42	14.47	232.62	23.83	1.33	24.16	2.42	2.93	4.11	0.01	9.47	14.69	12.35	2.34	6.3
1937-38 ..	279.85	1.72	281.57	61.31	11.34	292.88	29.04	0.49	29.53	3.43	4.00§	4.12	0.01	11.56	17.97	14.84	3.13	6.1
1938-39 ..	340.62	2.26	342.88	..	7.65	350.53	34.62	0.66	35.28	6.57	4.45	4.53	0.02	15.52	19.76	16.07	3.69	5.6
1939-40 ..	340.62	2.26	342.88	..	1.20	344.08	38.76	0.84	39.60	6.78	4.45	5.83	0.02	17.08	22.52	16.07	6.45	6.5
1940-41 ..	340.62	2.26	342.88	..	..	342.88	42.84	1.07	43.71	6.78	4.45	7.96	0.02	19.21	24.50	16.07	8.43	7.1
1941-42 ..	340.62	2.26	342.88	..	..	342.88	42.90	1.39	44.29	6.78	4.45	9.42	0.02	20.67	23.62	16.07	7.55	6.9
1942-43 ..	340.62	2.26	342.88	..	..	342.88	42.90	1.77	44.67	6.78	4.45	9.42	0.02	20.67	24.00	16.07	7.93	7.0
1943-44 ..	340.62	2.26	342.88	..	..	342.88	42.90	2.14	45.04	6.78	4.45	9.42	0.02	20.67	24.37	16.07	8.30	7.1

* *Vide pro forma* accounts.

† First depreciation charge after 3rd year of running.

‡ Increased debits due to adoption of "straight line" method of computation in place of "sinking fund" method hitherto sanctioned.

§ Guarantees for Jaitley's licence are omitted from this year onwards.

¶ Rupees 85,000 for coal for Chandausi Stand-by Station—probable average cost is included from this year onwards.

APPENDIX-V-B

A note on Rural uplift—Irrigation

1. There has been a good deal of vague talk recently in the papers and elsewhere about so-called rural uplift. Apart from loose generalities, I have seen no concrete proposals put forward to improve materially the condition of the villager. It is easy to suggest such steps as improved sanitation, improved manuring, filling in pits (often by digging others), establishing birth control clinics, lectures on improved village life and other such activities. But in my opinion the only *real* way to improve and "uplift" the village is first of all to put some *more money* into the villagers' pockets either by introducing some new industry or by improving *in a material way* the existing means and process of production. 95 per cent. of villagers live on the land and their condition can only be improved by either increasing the yield of the land or by reducing the cost of production and/or of transporting the produce to market. Vague forms of "uplift" such as those suggested above are in other words meaningless unless they are based on the material improvement of the villager in the matter of agriculture.

2. This in my opinion is where the Irrigation Department and Hydel come into the picture, in joint company with the Agricultural Department.

(a) In connection with the new cheap type of State tube-wells selling water and manure on volumetric principles, irrigation has been cheapened and extended as a means of (i) improving yield of existing crops, (ii) enabling more crops to be grown in the village and (iii) enabling crops of greater value to be grown such as long staple cotton and improved canes. Thus the electrified tube-well does in effect improve the material outlook of the villager.

(b) Electricity has become available at the village and tube-well transformer point as a means of processing the crop *locally*—within the village—so that the enhanced profits not only of growing extra crops, but also of turning them into the manufactured article can also accrue to the villager. This definitely puts more money into his pocket and gives him a new interest in production. The introduction of village sugar crushers and centrifugals, cotton gins and oil pressing *kolhus* definitely makes this possible. The cheap rate of 1 anna per unit which we charge for agricultural processes must encourage these means of processing grain, being 33 per cent. cheaper than the industrial rates charged in the towns which are themselves admittedly cheap.

3. Thus we can fairly contend that the hydel-cum-tube-well scheme confers a material benefit on the village and is the best form that the so-called "uplift" can take. It is real and tangible and forms a substantial basis on which to found other forms of secondary uplift.

It has been arranged that the additional staff necessary to operate this wide-spread system of electric irrigation will also be utilized as demonstrators for improving local agricultural methods by more scientific irrigation and manuring, better consolidation of holdings and better treatment of the soil. The activities of both the Agriculture and Irrigation staffs are being jointly directed to this end. Tube-wells are being divided into groups, each supervised agriculturally by a skilled officer and technically by a trained canal official. A system of liquid fertilization is now being tried by which the cultivator can purchase his water after impregnation with a suitable fertilizer in solution to the degree necessary for the particular local soil. This system is capable of vast extension if found practically feasible. The value of the State tube-well in providing a source of pure drinking water free from local pollution at thousands of villages in the Grid area should not be overlooked.

It is our objective that the State tube-well should become the local point for real village uplift. That it should form a centre for mutual effort towards not only the betterment of the crop, but the happiness of the cultivator. Drinking and bathing facilities for men and cattle are being provided at 1,500 wells in the electrified area. Loud speakers are being installed where the cultivator can sit under trees and listen to the news of the day and information about prices and rates. Disruptive voices will, we believe, be shortly stilled by the hum of electric motors at 1,500 points where, by true co-operation, the villager can be placed a little further from the abyss of hunger and discontent.

A combined steam electric power network and irrigation pumping scheme is now being matured on these lines for the consideration of Government and will be placed before the Legislative Council, if approved, in due course.

Such a project, if successful, would, apart from its intrinsic local importance, demonstrate the feasibility of similarly electrifying other districts where a supply of low lying river water exists and where suitable geological conditions can be obtained for State wells in areas remote from the rivers. The importance of these developments on the future welfare of the province cannot, I submit, be over-estimated. The intervention of cheap power through the development of the resources of modern engineering, opens out a new vista of hope not only for the minor urban industrialist but also for millions of cultivators who are at present living perilously close to starvation due to lack of facilities for growing adequate crops.

4. As regards the question of increased production, it has long been realized that unless we take steps to encourage the better fertilization of the local soils, there is grave danger of exhaustion of the soil by the cultivators repeatedly taking out rich crops which deplete the soil resources. This danger tends to be increased by cheap irrigation as temptation to grow the more valuable crops more cheaply is greater. Hence the Irrigation Branch and Agricultural Department in conjunction are endeavouring to counteract this by organizing the cheap sale of manures both natural and chemical. The tube-well operator keeps a

stock of manure at cost price the sale of which is encouraged by propaganda and also by demonstration. It is suggested that lower water rates should be offered to cultivators using a minimum quantity of fertilizer per acre. This is being investigated.

The consolidation of holdings is being encouraged so that a cultivator can supervise his field operations with less effort and expense. Consolidation also involves the purchase of less water at the well as the aggregate loss by percolation in transit to the fields is less.

Better systems of tillage are being taught at the demonstration centres. Land is being levelled so that fields take less water. The system of trenching for sugarcane planting is being encouraged.

A system of liquid fertilization is also being tried out at two wells and will be reported on at length after the current season.

My general idea is that each tube-well apart from being a village irrigation and industrial centre should also be a social and hygienic centre taking the place of the village "chopal".

(a) We have already installed a high candle power light at each tube-well transformer and this burns free of charge as an advertisement. 100 watt = 75 C. P. lamps have been installed at every tube-well.

(b) We have started the planting of trees at the corners of the existing 50'×50' plots. Incidentally these plots are not big enough and we must go in for 100'×100' at once to give more room for the activities mentioned below.

A *pilkhan* tree should be planted clear off the transmission line but otherwise as centrally in the plot as possible and under this a *chabutra*, say 20 feet diameter but giving space for the tree to expand should be built. An alternative is to locate the operator's hut, the manure godown and a covered end verandah "chopal" in one building, with an extended platform projecting under the *pilkhan* tree. Designs are wanted for these types.

(c) Drinking water facilities should be provided by a $\frac{3}{4}$ " pipe from the rising main fitted with a tap and a brick pavement below. This could be fixed against the side of the well or if preferred at a more central hydrant where more people can get at it. Taking water from the gauging tank or *gul* should be discouraged as it is liable to infection during epidemic.

We should also require an overhead tank covered with a tiled or malthead roof, to hold one day's supply for the average village, say 300 people at 5 gallons = say 1,500 gallons supply. This tank and pillars to be paid for out of uplift grants. The tank would be filled in 2 or 3 minutes running of the well pump once daily when the well is not running for irrigation.

(d) A bathing tank for people should be installed on or beside the *gul* just below the gauging tank. Designs are wanted for this, but I suggest a pond lined with flat bricks in lime, cement pointed, with 1 : 1 sloping sides, 3 ft. deep at one end for children sloping to 5 ft. at the other, and about 20 ft. long. It should be possible to draw the water off this for

cleaning, hence it should be sited at as high a level as possible, if necessary above the *gul* level. Designs for this are invited from all concerned. It would be better to keep the bathing tank off the *gul* if possible as otherwise the *gul* water which is liable to be drunk lower down, will become infected in times of disease. This should be studied.

(e) Then there is the question of cattle watering and bathing. For watering we have provided a number of troughs at different wells the cost of which has hitherto been subscribed by various officers. We should not do any more of this by private charity but should encourage "uplift" by providing a cheap State trough at every well, also at points where tube-well *guls* intersect important roads. A cheaper type of trough should be designed. It ought to be possible to make one for Rs.50 instead of Rs.100.

As regards cattle bathing, we should proceed in two ways :

(1) Near the well an ordinary *kutch*a wallow can be dug and filled periodically from the *gul* by the operator, Cattle would ordinarily come and wallow in this pit.

(2) Alternatively we can fill up small village tanks from the *gul* at cheap rates say half rate to be charged on the gallons used. This could be done at times of little irrigation demand when there is naturally energy and water to spare. Between February 28, when *rabi* demand ceases and April 15, when sugarcane first watering begins there is always a period of slack demand. Operators should prepare a list of all village tanks within the tube-well command and an officer should be deputed to compute the number of hours running required to give a bathing supply within all these tanks. The hours running necessary to fill them should be posted at each tube-well. Hence an account could be kept of the amount of water and units used for such purposes. This will check sales and prevent corruption on the part of the operators in their irrigation accounts.

(f) Gramophones fitted with amplifiers are being bought for installing in the *chopal* or on the roof of the well house. The records will deal with such questions as rates of water and quantities necessary for each crop, suitable manures for different soils and quantities necessary, methods of purchase, improved tillage, levelling plots, types of cane seed locally suitable, etc. To ring the changes song and story and news records can be put on alternately. Ideas are invited.

W. L. STAMPE,
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United Provinces.

CHAPTER VI

Organized State-aid for the development of the Handloom Weaving Industry (Cotton) by R. T. Shivdasani, Esq., I.C.S., Director of Industries, United Provinces

IN 1934 the Government of India set apart 5 lakhs of rupees per year for 5 years for the development of Cotton Handloom Weaving Industry. The United Provinces Government received Rs.1,04,000 for the 17 months ending March, 1936. The grant for the current financial year is Rs.86,400. With the help of this grant, the Industries Department have undertaken a comprehensive scheme for giving organized State-aid to the weavers. This scheme consists of :

- (a) survey of the Cotton Handloom Weaving Industry,
- (b) organized State-aid for the development of the Handloom Weaving Industry, and
- (c) sole buying agency scheme.

1. *Survey*—15 surveyors were appointed for about 8 months in 1935 to collect statistics all over the province regarding the number and types of looms, number of weavers (part-time and whole-time) and the consumption of yarn, etc. Their reports also deal with the different systems in operation for the supply of yarn to the weavers and for the marketing of their products. They have also collected samples of different types of handloom cloth. The cost of survey amounted to Rs.30,756-14-6 out of which Rs.17,719 was met from the Government of India Grant.

2. *Organized State-aid*—This scheme aims at an all round assistance to the weavers more or less on the lines on which work was already being done by the department :

(i) *Collection of Samples*—The workmanship of the weavers and the printers in the province is already fairly efficient, and their primary difficulty is lack of proper marketing facilities. As a first step, therefore, samples have been collected of different types of fabrics made by the weavers. A number of these have been approved and graded. Some of the samples have been sent to the Central Weaving Institute, Benares, for modifications to suit the market. Some original and improved designs have also been prepared at the Institute. Selected samples have been collected in sample cards giving specifications and prices.

(ii) *Commercial travellers*—These samples have been given to 8 rural and 4 urban commercial travellers, who have been canvassing for orders both in towns and in village markets. Apart from securing business, these commercial travellers will assist in indicating the requirements of consumers of different markets ; and the weavers will be instructed to produce goods accordingly.

3. *Designs*—The popularity of the handloom product is based not only on their cheapness and durability, but because one can get a large variety of products on the handlooms, whereas the mills have necessarily to produce large quantities of a limited number of designs. For this reason it is necessary to keep on evolving new designs and adapting old ones to modern requirements. Separate designers have, therefore, been appointed for weaving and for printing work. Provision has also been made for meeting the losses initially incurred by weavers in undertaking the execution of these new designs both in the process of manufacture and on account of the failure of some of the designs to find a sale in the market.

4. *Research and Experiments*—The appliances and processes generally used by the weavers, dyers and printers are mostly still old-fashioned and uneconomical. Provision has, therefore, been made for (a) special staff consisting of a research assistant, (b) 2 master weavers and other staff to do research work at the Central Weaving Institute, Benares, and at the Dyeing and Printing School, Cawnpore.

5. *Finishing and Calendering*—One of the chief difficulties in getting a good price for the products of the handloom weavers is the lack of finish in appearance, as finishing machinery and appliances are expensive and beyond the means of weavers. Provision has been made to give grants to persons who are setting up calendering and bleaching plants in 3 or 4 different centres in United Provinces.

6. *Stores and Supervision of Manufacture*—In order to instruct the weavers in the use of improved methods and appliances and to assist them to prepare goods of new designs, it is proposed to utilize the agency of demonstration parties attached to Model Weaving Schools. These demonstration parties might shortly be substituted by tuitional classes according to the proposals of the Industries Reorganization Committee's Report. In addition to these demonstration parties, stores have been set up at six centres—Sandila, Bara Banki, Tanda, Mau, Etawah and Amroha. These stores will be in charge of skilled supervisors, who will demonstrate the use of improved looms and appliances to the weavers and supervise the execution of orders according to specifications. The stores will arrange for cheap finance from co-operative banks for helping weavers who form themselves into co-operative societies. The stores will also arrange for the supply of raw materials and sale of cloth through the Central Marketing Organization. The stores will thus serve as a link between the weavers and the market.

7. *Provincial Marketing Organization*—A provincial central marketing organization has been started to organize the marketing of handloom products. For the present, the Central Marketing Organization has been started as a section of the United Provinces Arts and Crafts Emporium at Lucknow for both wholesale and retail business. This section is a self-contained organization in charge of an Assistant Manager under the general supervision of the Business Manager of the Emporium. It was opened by Lady Haig on 27th November, 1935. In barely 4 months upto 31st March, 1936, it has done business in

handloom products amounting to Rs.34,377-8-6. This section also controls the work of the commercial travellers and the stores, thereby co-ordinating production with marketing. Apart from securing business in United Provinces, the Marketing Organization has participated in various exhibitions outside United Provinces in order to extend the markets for the United Provinces Handloom Products.

8. *Sole Buying Agency Scheme*—The weavers are usually too poor to be able to hold on to their stocks and on account of their need for immediate cash it has been difficult to induce them to deposit their manufactures with a sales organization. Sole buying agents are, therefore, being appointed for purchasing a particular line of goods as soon as they are made. Such agents will be given a suitable subsidy on a sliding scale depending on the value of the goods purchased. Such agents will be under an obligation to purchase all the goods produced, provided they are to standard and not to make purchases of similar articles from others. To begin with, the sole buying agents are being appointed for buying the products made by co-operative societies of cottage weavers which number about 30.

9. *Conclusion*—Briefly, the scheme consists of a survey ; collection of samples ; evolving of new and improved designs ; researches and experiments for improving the appliances and processes for weaving, dyeing and printing ; stores for instructing weavers in improved methods of work ; setting up small calendering plants for improving the finish of hand-made products and provision of marketing facilities through commercial travellers, central marketing organization and sole buying agents.

The item-wise expenditure involved in the above scheme will be seen from the following statement :

	Requirements during 1934-36.
	Rs.
1. Survey .. .. .	.. 17,719
2. (i) Collection of samples .. .. .	.. 3,000
(ii) Commercial Travellers .. .. .	.. 7,590
3. Designs .. .. .	.. 7,280
4. Researches and experiments .. .. .	.. 4,500
5. Finishing .. .. .	.. 40,000
6. Stores and supervision of manufacture .. .. .	.. 16,588
7. Provincial marketing organization .. .. .	.. 7,247
8. Sole buying agency .. .. .	.. 200
Total	.. <u>1,04,000</u>

APPENDIX VII

Programme of road construction and reconstruction in the United Provinces to be financed from the Road Development Fund.

IN a statement submitted to the Council in March 1935, the outlines of the road reconstruction programme, and the more important considerations which influenced its preparation, were explained. Briefly, it may now be re-stated that the ordinary water-bound road cannot bear the strain of motor traffic which, year by year, is increasing in volume and intensity. The change in the general mode of passenger travel from horse to motor is almost complete but the bullock-cart as a means of transportation of agricultural produce and other material both in urban and rural areas is still a large factor in determining road policy in many localities. The depth of metalled crust on some roads has been reduced to such thinness that, unless it is thickened, they will cease to be metalled roads. In some places traffic conditions are now such that they require stronger and more durable surfaces to sustain the loads all the year round. Among the most urgent needs of the roads in the province are : (i) the thickening of the crust of certain roads, and (ii) the reconstruction and modernization of certain others. Construction of new roads, however, desirable, increases our responsibility for providing additional funds for maintenance which must be met either from provincial revenues or with the approval of the Government of India, charged to the Road Account. The province can ill afford additional maintenance charges from its own revenues, and it is not desirable, except in special cases, to reduce our receipts from the Road Development Fund by diverting part of that income to meeting the maintenance cost of new construction. But every endeavour has however been made to include in the programme, as far as possible, the construction of new roads and the provincialization and reconstruction of important local roads. The Government of India have accepted the proposal, strongly urged in June last in the Council, that the additional cost of maintenance resulting from the construction of new roads or from the provincialization of certain local roads should be debited to our income in the Road Development Fund, at least for a term of five years.

The total cost of the projects included in the programme to which the Government of India have accorded their approval amounts to Rs.90.69 lakhs. The construction of the Moradabad-Bijnor road has not, as yet, been agreed to by them, but the local Government have made a strong representation to the Government of India for reconsideration of the case of this road. Their reply is still awaited.

The local Government have approved detailed estimates for Rs.81.25 lakhs in all. Schemes estimated to cost Rs.14.88 (including in this the approximate cost of constructing the Moradabad-Bijnor road) are under preparation. The total cost of carrying out the proposed

programme will be approximately Rs.96.13 lakhs, but, as the Government of India have generously contributed a sum of Rs.9.54 lakhs from their own reserve towards the cost of constructing certain roads, the net cost to be charged to the local Government's share in the Road Account will be Rs.86.59 lakhs, assuming that the construction of the Moradabad-Bijnor road (which is estimated to cost Rs.7.2 lakhs, including the feeder road from Nehtor to Haldaur railway station) will be agreed to by the Government of India. Funds to the extent of Rs.16.0 lakhs have been allotted during the current year, and it is proposed to allot Rs.17.28 lakhs during the year 1936-37. The balance available in the Road Account at the beginning of 1937-38 will be Rs.1.28 lakhs. To continue the programme to completion after 1936-37, an additional sum of Rs.56.60 lakhs will be required, and the method whereby the remainder of the programme is to be financed will have to be considered in due course.

The main outline of the programme is given in the following statements :

Name of road	Mileage	Estimated cost	Districts affected
		Rs.	
<i>I—Reconstruction or reconditioning of provincial roads</i>			
Grand Trunk	116	7.89	Benares, Allahabad, Cawnpore, Farrukhabad, Mainpuri, Etah, Aligarh, Bulandshahr and Meerut.
Delhi-Mussoorie	81	7.45	Meerut, Muzaffarnagar, Saharanpur and Dehra Dun.
Meerut-Bareilly	44	1.53	Meerut, Moradabad and Bareilly.
Saharanpur-Ambala	7	.76	Saharanpur.
Dehra-Dhaki and Hardwar-Badrinath	9	.73	Dehra Dun.
Muzaffarnagar-Bijnor	5	.61	Muzaffarnagar.
Meerut-Bulandshahr	23	.82	Meerut and Bulandshahr.
Bombay-Delhi	16	1.48	Muttra and Agra.
Agra Cawnpore	26	1.91	Agra and Mainpuri.
Agra-Aligarh	31	2.42	Agra and Aligarh,
Agra-Fatehpur-Sikri	2	.25	Agra.
Firozabad Railway feeder	.5	.08	Do.
Taj Road	1	.11	Do.
Fatehabad Road diversion	2	.23	Do.
Agra-Etawah-Auraiya	68	2.89	Mainpuri and Etawah.
Bareilly-Muttra	8	1.44	Etah, Aligarh, Muttra, Budaun and Bareilly.
Lucknow-Jhansi	56	7.45	Lucknow, Unao, Cawnpore and Jalaun.
Cawnpore-Hamirpur-Saugor	12	1.21	Cawnpore.
Bareilly-Etawah	15	1.18	Farrukhabad, Etawah and Shahjahanpur.
Etawah-Gwalior	3	.21	Etawah.
Khanderao Gate, Jhansi	1	.91	Jhansi.
Jhansi-Shivpuri	1	.19	Do.
Fatehpur Saugor	2	.29	Fatehpur and Banda.
Fatehpur Cawnpore	1	.13	Farrukhabad.
Station roads, Cawnpore Division	7	.48	

Name of road	Mileage	Estimated cost	Districts affected
		Rs.	
Bareilly-Ranikhet	37	1.64	Naini Tal Bareilly.
Lucknow-Gorakhpur	72	5.06	Lucknow, Bira Banki, Fyzabad, Gonda, Basti and Gorakhpur.
Lucknow-Bareilly	20	4.36	Lucknow, Sitapur and Shahjahanpur.
Lucknow-Bonares	31	1.59	Lucknow, Partabgarh, and Jaunpur.
Sitapur-Bahraich	21	1.61	Sitapur.
Station Road, Lucknow	3	.15	
Allahabad-Fyzabad	7	1.10	Fyzabad and Sultanpur.
Allahabad-Gorakhpur	43	2.27	Azamgarh and Gorakh- pur.
Fyzabad-Bahraich	33	2.12	Gonda and Bahraich.
Bahraich Railway feeder .. ..	..	.20	Bahraich.
Station Roads, Gorakhpur	3	.14	Gorakhpur.
Benares-Sarnath	4	.34	Benares.
Gorakhpur-Ghazipur	2	.18	Azamgarh.
Station roads, Benares Division	2	.12	
Allahabad Link	2	1.05	
Total	847.5	63.98	
<i>II—Reconstruction of local roads provincialized</i>			
Muttra-Gokul-Baldeo	13	1.49	Muttra.
Muttra-Brindaban	6	.48	Do.
Nandgaon-Barsana	5	.15	Do.
Sikandraabad-Dankaur	4	.52	Bulandshahr.
Gonda-Balrampur	12	.94	Gonda.
Benares Ghazipur	41	.96	Benares and Ghazipur.
Mirzapur-Jaunpur	24	1.47	Jaunpur and Mirzapur.
Auraiya-Phaphund	13	.82	Etawah.
Allahabad-Rewah	27	3.75	Allahabad.
Total	145	10.55	
<i>III—New roads</i>			
Roorkee-Hardwar	9	1.83	Saharanpur.
Kaman-Nandgaon	4	.35	Muttra.
Auraiya-Bhognipur .. ..	..	2.23	} Cawnpore and Fatehpur
Bhognipur-Kora-Jehanabad	80	3.40	
Kora-Jehanabad to Bindki .. ..	..	2.78	} Moradabad and Bijnor.
Moradabad-Bijnor	42	7.20	
Total	135	17.79	
<i>IV—Bridges</i>			
Bridge over Sai .. ..	..	1.50	Jaunpur.
Akbari bridge, Jaunpur	27	.30	Do.
Level crossing, Rosa, Approaches to— .. ..	..	.37	Shahjahanpur.
Total .. ..	..	2.17	
<i>V—Purchase of rollers</i>			
.. ..	..	1.64	

Proposals
to be
approved by
Government
of India.

Name of road	Mileage	Estimated cost	Districts affected
<i>VI—Works for which Government of India have promised contribution</i>		Rs.	
	Amount of contribution		
1. Sikandrabad-Dankaur road ..	} Half	40	Approximate.
2. Railway feeder roads, Firozabad and Bahraich.			
3. Construction of road from— (i) Auraiya-Kora-Jehanabad ..	} Half	4.25	
(ii) Kora-Jehanabad to Bindki..			
4. Auraiya-Phaphund	Half	0.41	
5. Allahabad-Rewah	Full	3.75	
6. Nandgaon-Kaman	Do.	.35	
7. Bridge over Sai, Jaunpur ..	Do.	.38	
Total .. ..	..	9.54	

To summarise, the programme is—

	Rs.
(i) to reconstruct and recondition 848 miles of provincial roads at a cost of	63.98 lakhs.
(ii) to provincialise and reconstruct 145 miles of local roads at a cost of	10.55 ..
(iii) to construct 135 miles of new roads at a cost of ..	17.79 ..
(iv) to construct new bridges and to repair an old bridge	2.17 ..
(v) to purchase road rollers for the execution of work ..	1.64 ..
Total	<u>96.13 ..</u>

The total length of roads proposed to be constructed and improved is 1,128 miles and the total expenditure proposed to be incurred is Rs.96.13 lakhs.

Works carried out during 1935-36

The work during the current year had to be limited mainly to the collection of material. The actual work of reconstruction is in hand in Meerut District on the Ghaziabad-Bulandshahr road, on the Lucknow-Bareilly road in Sitapur and Shahjahanpur Districts, and on the Lucknow Jhansi road in Lucknow District, on the Meerut-Bareilly road in Bareilly District, on the station roads in Gorakhpur and Bahraich and on the Grand Trunk road in Benares and Cawnpore Districts.

APPENDIX VIII

Note on the results of afforestation of the Jumna and Chambal ravines by Mr. Debi Lal Sah, B.A., M.Sc., Afforestation Division, Cawnpore

1. *History of afforestation*—In order to understand the afforestation work in the Jumna and Chambal ravines and to judge its results, it is necessary to know the history and aims of this afforestation. It was generally known that there are extensive waste and ravine lands along the Jumna and Chambal rivers. The question of utilizing these waste lands was the subject of a report as early as 1879 but no definite action was taken in the matter for nearly 30 years. In 1890 in his report on Indian Agriculture Dr. Voelker laid down the necessity of creating fuel and fodder reserves. The subject was revived in the United Provinces Government resolution no. 348, dated 20th August, 1922, when a Forest Officer was deputed to make a survey of the most promising areas. After his report, a committee of officials and non-officials was appointed in 1913 to examine the various points raised in that report and to submit recommendations to Government. This committee recommended that it is most desirable that any measures considered practicable be undertaken to increase the productiveness of the ravine tract for grazing purposes and for the production of fuel but it was against the application of the Land Acquisition Act on any extensive scale when introducing the management of ravines in the Etawah district. In 1914, *vide* G. O. no. 175-L of 30th September, 1914, the Principal of Agricultural College, Cawnpore and a Forest Officer were appointed to report on the possibilities of an extended campaign of ravine reclamation and prevention of erosion as approved for the Etawah district and the scope offered in this direction for useful famine works.

2. *Aims of afforestation*—Originally it was only intended to improve the ravine lands for grazing purposes and for the production of fuel but various objects of management as given below were laid down by Government Orders or resolutions that were issued at intervals from 1912 to 1920 :

- (i) To stop soil erosion in ravines, i.e., the scouring out of the beds of ravines and the washing down of their banks.
- (ii) To stop further extension of ravines inland.
- (iii) To prevent good soil being washed off the uplands and carried away down to the rivers.
- (iv) To retain the rainfall in the soil and thus raise the water level.
- (v) To make fodder reserves by growing grass (hay) for the local villagers and for export to other localities in famine years.
- (vi) To provide good pasturage.
- (vii) To provide firewood for the local villagers.

- (viii) To grow firewood for export and sale at a profit.
- (ix) To grow valuable timber for sale at a profit.
- (x) To provide tan bark for the Cawnpore tanneries.
- (xi) To break down the ravines with the object of making them suitable for agriculture or for the production of fodder.
- (xii) For financial profit.
- (xiii) To encourage zamindars to protect and manage their own ravines.
- (xiv) As famine relief works.

Besides the above there were others too—such as creation of breeding ground for cattle, improvement of soil, etc.

3. *Natural vegetation in ravine land*—The natural vegetation of the ravine land has been destroyed by uncontrolled cultivation wherever the soil is fit for this, and by uncontrolled grazing, reckless destruction and by fires elsewhere. Large areas are now almost treeless but natural vegetation has undoubtedly been forest and is still forest except in *kankar* and *usar* soils. The vegetation is mostly of a xerophytic type and consists of small trees, thorny bushes and grass—the following being the most common and characteristic :

Trees	Large shrubs or small trees	Small bushes
<i>Prosopis spicigera</i> (<i>Cheonkar</i>).	<i>Balanites aegyptiaca</i> (<i>hingot</i>).	<i>Capparis aphylla</i> (<i>karil</i>).
<i>Acacia leucophloea</i> (<i>reoni</i>).	<i>Dichrostachya cinerea</i> (<i>khairi</i>).	<i>Capparis horrida</i> (<i>hins</i>).
<i>Azadirachta indica</i> (<i>neem</i>).	<i>Zizuphus jujuba</i> (<i>ber</i>).	<i>Salvadora oleoides</i> (<i>pilu</i>).
<i>Acacia catechu</i> (<i>khair</i>).	..	<i>Adhatoda vasica</i> (<i>arusa</i>).
		<i>Zizuphus spp.</i> (<i>ber</i>)
		<i>Carissa spinarum</i> (<i>karaunda</i>).

Acacia arabica is also found fringing the rivers, nalas and on moister localities, but seldom occurs in the arid ravine zone.

More important than trees and shrubs are the grasses. The most common grasses in the ravine land are *Aristida hystrix* and *Aristida depressa* both of which are practically worthless and are known as '*safed lampa*'. The more valuable grasses do exist even in the most heavily grazed localities under the shelter of some thorny bushes or in patches of uneven ground inaccessible to cattle.

4. *The afforestation work*—The work of afforestation of the Jumna and Chambal ravines was started in 1912 and continued for nearly 15 years during which period 11,992 acres of ravine land were planted with timber and fuel species. But towards the end of 1927 the work of

planting was given up on financial grounds and also due to the fact that the timber species in the newly planted ravines, though they started very well, did not come up to the original expectations. When afforestation was in full swing, the working of the soil was done thoroughly and systematically. Big *bundhs* were made on the bottom of some prominent ravines to store up water to keep the surrounding soil moist. Small earth dams were also made at the heads of the small ravines to stop a sudden run off of surface water and to stop further erosion there. Of all the indigenous trees of the area *babul* seemed the most attractive by reason of the demand for its bark for tanning and for fuel but as many as 42 other species were also tried. Both planting and direct sowings were attempted by the ridge and ditch method.

5. *Results of afforestation*—The afforestation policy started with so many different objects of management that complete success was hardly to be expected. Some of the objects overlap one another or are consequential of one or the other but the three primary objects were :

- (1) to grow firewood and valuable timber for sale at a profit,
- (2) to improve the pasturage and tree growth on the ravines and thus to establish fuel and fodder reserves, and
- (3) to prevent the further erosion of ravines and to check the extension inland of the ravines.

(1) *Timber*—The object of growing valuable timber was really considered as one of the most important because it was on this that the chances of making the afforestation scheme pay were counted. The attempts so far made to grow valuable timber have been made with many species of trees and have been failures as the trees do not grow to a big size on account of the adverse climatic conditions and the *kankar* that is found in the subsoil in many parts of the ravine land. Though most of the species of indigenous trees are gregarious, yet their only chance of developing in such an unfavourable habitat is, according to Mr. Marriott, to stand alone or in pairs or trios—free from excessive root competition. Whatever the reason it is almost certain that the ravines will not produce a crop sufficiently dense to pay for its formation.

Fuel—It is now also definitely known that artificial plantation in the ravines for the production of fuel alone is financially unprofitable. In fact, it was never expected that the afforestation scheme could be made to pay out of the sale of firewood.

(2) *Improvement of fuel and fodder*—

Fuel—Although the indigenous forest is not worth much, it would be a mistake to overlook it altogether, for it is only these indigenous trees that are likely to do any good in these ravine areas. As far as village requirements of fuel are concerned, it can be safely assumed that the indigenous trees will more than suffice. The protection of these species from heavy grazing and reckless destruction has not only improved their growth but has also largely contributed to their propagation by natural regeneration. In fact there is hardly an acre where simple protection has not brought about the appearance of some of these trees.

Fodder—Where closure is applied to any ravine area or when the grazing is controlled, the more valuable grasses oust the *safed lampa* and spread rapidly as a rule. After a few years of closure all the ground except patches of exposed kankar has been well covered with fodder grasses—

Andropogon feveolatus	..	..	<i>Murjhaina.</i>
Andropogon pertusus	..	..	<i>Chhoti jergi.</i>
Apluda aristata	..	..	<i>Bhanjura.</i>
Brachiaria ramosa	..	..	<i>Kirwai.</i>
Chloris barbata	..	..	..
Chloris rosburghiana	..	..	..
Chloris virgata	..	..	..
Cymbopogon parkeri	..	..	<i>Katauna.</i>
Dichanthium annulatum	..	..	<i>Bara jerga.</i>
Elausine aegyptiaca	..	..	<i>Marka.</i>
Eleusine flagellifera	..	..	<i>Ghur dub.</i>
Eriochloa ramosa	..	..	..
Heteropogon contortus	..	..	<i>Kala lapa (lumpa).</i>
Ischaemum rugesum	..	..	..

When, however, one of these closed areas is reopened to unrestricted grazing the reversion to the original worthless *safed lampa* and the almost complete disappearance of the useful fodder grasses is very rapid.

(3) *Prevention of erosion and expansion of ravines—*

Experience has shown that controlled grazing or closure to grazing has produced excellent fodder reserves and has alone been enough to attain the object of stopping soil erosion in ravines and their extension. It is the grasses that really matter—not trees—as a preventive of surface run off of rain water and therefore of soil erosion. Observation has shown that wherever there is a thick crop of grasses, irrespective of the presence of shrubs or trees, no fresh erosion is visible in such areas while fresh erosion and slips are quite common in the unprotected areas where the ground is bare of grasses.

6. *Conclusions*—(1) Ravine management and prevention of extension of erosion in ravines are simply questions of control of grazing and improvement and preservation of grasses. Closure to grazing or controlled grazing enormously increases the quantity and quality of fodder grasses and indigenous trees or shrubs, and encourages their natural regeneration and effectively prevents soil erosion and the extension of ravines.

(2) It is usually mere waste of money to attempt to introduce valuable timber or fuel species as due to various adverse factors the trees do not grow to a timber size or to a sufficiently dense crop, and as by simple protection (either departmentally or by co-operative societies or village *panchayats*) and almost without any expenses it is possible to improve the indigenous fuel species and encourage their natural regeneration.

(3) Whenever a protected area is opened to continuous or unrestricted grazing, the reversion of the indigenous trees to their original state and the reversion to the original worthless *safed lampa* and the almost complete disappearance of the useful fodder grasses is very rapid.

(4) Regulation of grazing and cultivation at and around the heads of the ravines is absolutely necessary to prevent the extension of ravines. The heads of ravines are often outside the boundary of land taken up for afforestation and some time in the middle of the cultivated land. It was the difficulty of dealing on a large scale with such places that caused Government practically to give up the idea of ravine reclamation as early as 1920 (*vide* G. O. no. 1503/XIV—142 of 9th September, 1920).

(5) The construction of large masonry *bundhs* to store up water for keeping the soil moist does not justify the expenses involved. However, small earth dams made at the heads of ravines to stop surface run off of rain water are useful in preventing soil erosion and in silting up of the shallow newly formed ravines.

APPENDIX IX

Note on Rural Education by R. H. Saloway, Esq., I.C.S.

Very powerful tuition and propaganda can be done by modern mechanical and optical science, in the form of travelling cinemas, magic-lanterns, and gramophone records. This is a subject which I have personally tried out to some extent and with most encouraging results. Ultimately I think the cinema will supersede the magic-lantern to a great extent and there is practically no form of propaganda which does not lend itself to vivid representation by the cinema. For myself I have always used the 16 mm. (or sub-standard) apparatus, both as being much cheaper and as being better designed for remote *dihat* work. It will accommodate an audience of up to about 500 which is ample for most occasions and creates and holds the interest of an audience as nothing else can. Films have already been made and are at once available on about a dozen different subjects of which sugarcane, killing field-rats, child-welfare, dangers of disease from the house-fly, horse-breeding, dyeing, printing and weaving and the hydel grid are a few.

Further films are under preparation including one on rinderpest.

These films and suitable apparatus to go with them have been supplied to a number of publicity vans in the United Provinces and are in regular work. A new development which promises much is the publicity bullock cart. This too is provided with a tiny self-contained cinema outfit and can go anywhere into the *dihat*. It has the new Dunlop pneumatic equipment so that the cart itself is a valuable exhibit.

With these an important and most useful item of equipment is the gramophone-with special "uplift" songs and dialogues. These can be either complete in themselves or arranged to be played before or after certain films to provide additional instruction.

Wireless reception apparatus is, at present, of doubtful value as a means of propaganda, though it has great possibilities. At present it suffers from the fault that it has to receive only what is available and that may not be suitable to the time and place.

Only when good programmes of interest and value are "on the air" regularly will the instrument be useful. It collects a crowd but that is about all at present. When fitted with a loud-speaker it can be arranged, however, to play gramophone records with great volume of sound and can also be arranged to amplify the lecturer's voice in the same way. These two points are very useful.

Few people seem to understand the basic idea of village propaganda. Some people think it is merely to provide the villager with a free *tamasha*. This is wrong. Others think it consists in standing on a platform and delivering speeches of incredible length. This also is wrong. The idea is to improve the villager's knowledge of improvements and to set him on the road towards effecting his own improvements. His interest must be maintained, and to that extent only the thing is a *tamasha*.

If he is interested he will remember the information, if he is bored he will forget it.

The whole idea is tutorial and with tuition must be combined the keenest interest. I suggest that at least one of these publicity or propaganda units should be formed for each district and that it should spend its whole time touring steadily and slowly round the district, being present specially at fairs and markets, but at all times working steadily. It would spend two or three days at a village, then move on five or six miles, stay another couple of days, move on again, and so on.

It should consist of a pneumatic-tyred bullock cart or perhaps two carts, containing a self-contained cinema unit (16 mm. size), magic-lantern, gramophone and large selection of records, also perhaps a wireless set with loud-speaker attachment which could be used either for the gramophone or for the lecturer.

Cinema films of various activities will prove less bulky than models, but a few models can be carried as necessary. There is no limit to the useful production of cinema films and there is no department that would not gladly take the chance to show its activities to the public in this way. Probably every department would be willing to contribute something to the cost. Here are a few suggested subjects—Forestry, planting and tending young forests,—production of fodder grasses in forest land,—uses, felling, and seasoning of timber. Bye-products, resin, lac, etc. Catechu making and extraction (a film on this will shortly be ready). Veterinary—Breeding, care of bulls, management, advantages of good crosses,—Rinderpest prevention and symptoms (this will soon be ready too). Foot and mouth disease, preventing measure, segregation. Correct fodder, examples of correct diets and bad results of incorrect diet. Good stable management—Cleanliness. Simple ailments and injuries and their cure. Dairy farming—milk yields of various varieties, treatment of milch cattle, cleanliness, simple sterilization,—marketing the produce. Making butter, cream and ghee. Agriculture—Sugarcane (this has already been done and the film is in wide circulation). Special fodder crops and how they should be cultivated. Ensilage.

Farmyard manure, its recovery and application. Detailed films on various crops, barley, wheat, oats, kharif crops, cotton, etc. showing improved varieties and special treatment. Improved varieties of agricultural implements and machinery. Retention of rain-water supplies. Checking of soil erosion. Irrigation—discouraging waste of water, showing best water-lifts for different conditions, explaining the work of the canals. Quantities required for different crops and bad effect of excessive irrigation in order to conserve water supplies.

Co-operative Societies,—showing differences of individual and collective work and advantages of the latter as applied to various village activities.

Sanitation—Elementary cleanliness—dangers of filth, flies and dirt (a film on this is in circulation), how to dispose of refuse to the advantage of the fields.

Better general health—causes and prevention of certain common and dangerous diseases, plague, cholera kala-azar, smallpox, etc. Advantages of inoculation.

(N.B.—The Public Health Department have certain films of this type already, but only in full size 34 mm. in most cases.)

Village Industries—Bee-keeping, poultry-farming, fruit-growing and preservation, pottery, motor-mechanics' work, basket-work, brass-ware, market-gardening. Kindness to animals. Peaceful compromise of disputes instead of expensive litigation.

Economy-saving expense on social ceremonies, evils of debt, mutual trust in co-operation and so forth without limit.

Each cinema outfit should normally carry a full stock of films and should show them according to the needs of the area concerned. As the outfit is always moving, a new audience is obtained every day and steady change of films and lantern slides is not required. Production of new pictures should continue steadily and all outfits should be kept fully up-to-date in their supplies.

A circulating film library will not be of use, as it is the outfit that circulates and the films can therefore remain without much change.

Similarly series of lantern slides should be prepared for various subjects; with carefully written lectures so that the lecturer may clearly and attractively explain his points. Gramophone records should be specially made to dovetail in with the pictures.

The outfit would have to be in charge of a competent mechanic, at about Rs.40 or Rs.45 per month, who would be fully responsible for the apparatus. The pneumatic-tyred carts would themselves be an exhibit and they should be drawn by special specimen bullocks, which will be another exhibit. The lecturer would probably be an assistant surgeon who had had some training in lecturing and who could understand his various subjects, as well as looking after a travelling dispensary attached to the outfit. When possible the services of specialists should be engaged for lecturing.

The Red Cross and the Public Health Department have certain films, but I think they suffer from one grave defect. It is that their films lack variety. They are all on subjects of health, which gets uninteresting after a time even to a villager. The proposed outfit just described would have wide variety of exhibits, and would have something for every taste. It would be educative, interesting and would have its full propaganda value. The Public Health Department outfits also are comparatively large and heavy and on motor vans and cannot fully penetrate the *dihut*, though they are of a great value along roads.

The outfits would carry stocks of selected leaflets and also exact information as to where fuller information could be obtained on any point and it would be the duty of the man in charge at once to put any enquirer into touch with the right officer who could help him.

All films and pictures must be made in India, as such products have far greater appeal to the villager than even the best foreign films.

In my opinion the logical department to undertake this work is that of Publicity. In my opinion the subject has nothing to do with Reforms, in so far as they are political, and the word " Reforms " should be dropped.

There is more than enough work for a full-time officer and the importance of the work is such that, in my opinion, a fairly experienced I.C.S. man should be appointed to the job and required to do some six months in the year touring to see how the job was getting on.

Some funds will be needed, but if bullock-carts are mainly employed instead of motor-vans, the cost would be heavily cut.

It would probably be better to re-construct the present Publicity and Reforms Department as one of Rural Reconstruction, following closely on the lines of the Punjab.

APPENDIX X

**Questionnaire by the Committee of the Board of Economic Inquiry,
United Provinces, on Economic Planning**

MEMBERS

1. KHAN BAHADUR MAULVI MUHAMMAD OBAID-UR-RAHMAN KHAN,
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2. DR. RADHA KAMAL MUKERJEE, M.A., PH.D., Professor, Lucknow
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3. MR. M. L. GUPTA, M.A., B.COM., A.S.A.A., B.A. (LONDON),
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Muzaffarnagar.

DR. R. B. GUPTA, M.A., PH.D., *Statistician (Secretary)*.

THIS questionnaire is issued by the Committee of the Board of Economic Inquiry to draw up a plan of economic development for the United Provinces with a view to elicit information, opinions and suggestions. The questions are not exhaustive, nor it is expected that all the questions should be answered.

Persons or Associations who may be willing to help the committee by separate notes or memoranda on any subject referred to in the questionnaire and with which they are intimately connected, are invited to do so.

All papers should reach Dr. R. B. Gupta, Secretary of the Committee, Nawabganj, Cawnpore, before the 15th of April, 1935.

Oral evidence may be called for on the basis of and as required by the replies and statements received.

The committee desire to collect information from all parts of the United Provinces. Persons not already supplied can obtain copies of the Questionnaire from the Secretary.

OBAID-UR-RAHMAN KHAN,

Chairman,

*Committee, Board of Economic Inquiry,
United Provinces, on Economic Planning.*

I—ORGANIZATION

1. In what respect do you think the development work in Government department may be pushed forward and co-ordinated by a planned programme covering a period of three, five or more years?

2. How far are Government departments at present working independently along single lines or co-operating with one another in rural improvements?

3. What links and contacts between the villagers and the Government field staff do you think necessary for effective development?

4. What do you think should be the *area* of an economic attack co-ordinating together official and non-official forces, a village, a *pargana* or a *tahsil*? How would you select the area for development work in a district?

5. If it be a *pargana* in which every kind of development work might be pursued simultaneously under a plan, do you think that intermediate non-official *pargana*, *tahsil* and District Planning Boards should be organized acting in concert with one another under the Central Board of Economic Inquiry (and Planning)? How would you build these up?

6. How far do you think that the present Board of Economic Inquiry (and Planning) may serve as the central organization for urging and co-ordinating development work?

7. Do you approve of the appointment of a Commissioner of Rural Development as appointed recently in the Punjab and Bengal? What should be his qualifications and status and his relations to the Board of Economic Inquiry and to District Officers?

8. What Government departments or sections should be represented by the local field staff in each development centre?

9. What touring and inspecting staff, besides the local field staff concentrated in the development centres, do you think necessary?

10. In how many centres do you think that the developmental programme should be started to obtain an appreciable effect on the *morale* of the Province?

11. For how many years do you think the programme must be pursued in a particular centre, and then might be shifted to another area in the same *tahsil* or district?

12. How do you think should expenditure on the development programme be met? Do you approve of additional taxation for this purpose or do you consider that expenditure of such kind should be legitimately met out of loans?

13. How far, in your opinion, expenditure on development work is likely to be directly or indirectly remunerative?

14. Do you have any experience of the developmental work in Partabgarh? How would you improve on this programme for development?

II—AGRICULTURAL IMPROVEMENT

1. To what extent do smallness and scatteredness of holdings impede agricultural improvement?

2. What legislative or other measures would you suggest to bring about consolidation of holdings?

3. What improvements would you suggest in the present system and machinery of distribution of (a) improved seeds, (b) fertilizers, and (c) modern agricultural implements among the cultivators? In what manner can peasants be assisted by the adoption of the hire-purchase system?

4. What is your experience or opinion as regards agricultural demonstrations arranged in the peasants' holdings under existing conditions as a method of introducing agricultural improvements?

5. To what causes would you attribute the recent decline of (a) the net cultivated area and (b) the double-cropped area in certain parts of the Province?

6. To what extent has the introduction of improved varieties of sugarcane recently tended, in the absence of fertilizers, towards greater soil exhaustion and lower standards of farming?

7. How far is the Cultivator obtaining the benefits of the fixation of minimum cane prices?

8. What are the causes and effects of the decline of cotton cultivation in some districts of the Province?

9. Have the expansion of rice, maize and sugarcane and the decrease of barley areas in the eastern districts been an unmixed good to the agriculturists?

10. What special measures of agricultural protection against increase of aridity do you consider necessary for the Agra-Muttra region? Is the problem there one of mere water supply or also of farming methods and practices?

11. How do you think fruit culture and market gardening can be developed systematically as a solution of the problem of under-sized holdings, especially in the eastern districts?

III—CATTLE IMPROVEMENT

1. In what areas of the province have the breed of cattle deteriorated most? What special measures of improvement of fodder supply and distribution of good breeding bulls do you consider necessary?

2. How do you think could cattle-breeding societies be effectively organized and encouraged?

3. In areas which suffer from fodder famines, what special measures are necessary for the improvement of fodder supply? Have any fodder surveys been undertaken with reference to cattle nutrition in years of drought?

4. To what extent have heavy yielding fodder crops been introduced in rotation with cereals and with what effects?

5. What have been the results of collective and uncontrolled grazing in the riverine areas on (a) the live-stock, (b) the fodder supply and (c) the land? How would you prevent over-grazing?

6. In what manner could the village *panchayats* or cattle-breeding societies be effectively employed for pasture management?

7. What improvements can you suggest in preventing or controlling cattle epidemics and diseases?

IV—CO-OPERATION

1. In the face of the reverses of the co-operative movement in the province what steps would you take to bring about the right co-operative spirit in the villages? How would you create genuine interest of the cultivators in the movement?

2. Do you think that the shift of emphasis from co-operative credit to rural reconstruction has achieved or is likely to achieve better results?

3. What steps would you suggest for improving the supervision and for inculcating the principles of co-operation among the members?

4. In what new fields would you advocate an extension of the sphere of co-operation?

5. What is your experience relating to (a) the co-operative sale of agricultural produce and (b) co-operative artisans' societies?

6. Do you think that co-operation will solve the problem of agricultural indebtedness or that there should be some other method or machinery supplementary to it to reduce the burden of debts?

7. What do you think of Debt Reconciliation Societies as a machinery of adjustment of claims between debtors and creditors?

8. In what areas and on what lines would you establish land mortgage banks?

9. How would you create greater interest among the urban and middle classes in co-operation as an agency of economic uplift?

V—INDUSTRIAL DEVELOPMENT

1. What new subsidiary industries allied or supplemental to agriculture may be started usefully in the villages and what should be the function of the Industries Department in promoting these?

2. What in your opinion would be the most effective methods of advising village and cottage industries as regards: (a) improvement or reconstruction of processes, (b) introduction of new mechanical tools, (c) markets and (d) improvement of patterns and designs?

3. What further facilities do you think the cottage industrialists should be given in the grid area so that they may make greater use of hydel power?

4. What forms of Government assistance do you consider necessary for advertising and marketing the products of cottage industries?

5. How do you propose to reorganize the Arts and Crafts Emporium as the headquarters of a system of sale depots in industrial centres?

6. What large scale industries, besides textiles and sugar in your opinion can be successfully started in the province and what forms of State assistance would they require?

7. In what branches of industry do you think medium-sized establishments can thrive in the province? What special problems of (a) the supply of raw materials, (b) specialized labour, (c) industrial credit, and (d) marketing are they facing and what solutions do you propose?

8. How can we achieve a better distribution of industries in the province to bring factories nearer the areas of large population?

9. What are the present movements of labour in the areas with which you are familiar, rural-urban, inter-district or inter-provincial? What steps should be taken to assist or regulate the distribution of migrant labour?

10. Can you suggest any improvements in the present Stores Purchase Policy of the Government to help indigenous industries?

VI—IMPROVEMENT OF ROADS AND TRANSPORT

1. What steps should be taken to improve communications from one village to another and between villages, marts, metalled roads and railways?

2. What methods do you suggest for the development of motor transport and its regulation?

3. Do you think that light railways or tramways can be introduced to bring about rural industrialization and better agricultural marketing? What areas in your opinion are particularly suitable for such development?

4. Do you consider it advisable that road improvement in the countryside should be part of a planned regional programme of road construction? If so, into what regions would you divide the province for a scheme of road development?

VII—URBAN DEVELOPMENT

1. Do you think that the improvement trusts or municipalities in the United Provinces are taking adequate steps for opening out congested localities and for improving the sanitary conditions of the poorer quarters? If not, what steps would you suggest in this connexion?

2. Do you think that there is adequate provision in the towns with which you are familiar for playgrounds, gardens and parks for the recreation of men, women and children? If not, what steps would you suggest to provide these?

3. Are the improvement trusts and municipalities dealing adequately with the housing problem? In what manner can improvement trusts or municipalities, employers and employees co-operate for the improvement of housing conditions in our towns?

4. Do you consider that it is necessary to introduce rules and regulations relating to building and zoning of industries in certain district board areas? If so, how would you amend the District Board Act?

5. In what towns do you consider that the future development involves dealing with population, housing and transport problems in much larger units than are now represented by the existing municipalities? Do you approve of improvement trusts being constituted to cope with these problems?

6. Do you consider that the existing municipal by-laws relating to buildings, roads, and discrimination of residential and industrial areas are adequate and are properly enforced? What steps would you suggest for their enforcement?

7. What additional sources of revenue, are, in your opinion, available for municipalities in order that they may look forward to a future of development on modern lines without assistance from Government?

8. What kinds of welfare work do you consider necessary among the labourers in industrial centres? How far are the employers or non-official agencies of social welfare attempting these at present?

VIII—RURAL HOUSING AND SANITATION

1. Do you find congestion in village sites and huts in the areas with which you are familiar? What remedies do you propose?

2. What part in your opinion should Government play in improving the housing conditions in villages?

3. How would you improve medical facilities in the villages? Do you think that travelling dispensaries should form an important part in a campaign of rural medical aid?

4. In what respects should the work of the Public Health Department for rural sanitary improvement be expanded and strengthened by non-official agencies?

5. How could maternity and child welfare work be introduced with success in the villages?

6. In what areas do you think are the sources of drinking water inadequate or unwholesome? What special measures do you think necessary in such areas?

IX—IRRIGATION DEVELOPMENT

1. In the south-western dry tract of the United Provinces, what steps should the Irrigation Department adopt to improve the agricultural water supply?

2. Have any systematic surveys of water levels and "water-bearing strata been undertaken in Muttra, Agra and Etawah? Would the construction of state tube-wells be feasible in some areas in these districts?

3. Is a system of state open wells economically feasible in some areas in the south-western dry zone?

4. In the case of release of canal water from the Upper Doab through the construction of state tube-wells for the south-western dry tract, to what extent and at what levels could wells be run along with canals throughout the year or at defined intervals, or whether as alternatives or concurrently?

5. How far is it true that the average cultivator takes much more canal water than he needs? How would you prevent wastage? Could the present system be modified so that the quantity of water supply might be better adjusted to crops and field conditions?

6. Do you discern water-logging and salt encrustation in any area in the Sarda Canal zone? What steps would you suggest to deal with the problem?

7. Is any fall in the sub-soil water level discernable in the intensively irrigated areas in the well zone? Do you think that well surveys are desirable in the Central and Eastern districts of the Province?

X—RURAL AFFORESTATION

1. What steps might the Forest Department take to prevent a further increase of arid conditions in the south-western dry tract? What kinds of defensive vegetation may be propagated to check the encroachment of sands?

2. How could Government encourage the planting of village groves and forests by the *zamindars*?

3. What special and co-ordinated measures of reclamation and defence are necessary in the ravine stricken areas on the flanks of the Jumna?

4. In what other areas do you think soil erosion has been a serious evil? How could Government and non-official agencies co-operate in constructing field and ravine embankments to prevent excessive drainage?

XI—REMOVAL OF ILLITERACY

1. What are the difficulties now being experienced in (a) municipal and (b) district board areas for introducing compulsory education among boys and girls?

2. What is the extent of absenteeism in your area? How far is absenteeism nullifying the effects of compulsion?

3. To what extent do you consider a system of peripatetic teachers, adjusted to local conditions and circumstances, feasible for removing illiteracy?

4. How can broadcasting help adult education?

APPENDIX XI

**List of witnesses examined by the Committee on Economic Planning,
United Provinces**

LUCKNOW

1. P. M. Kharegat, Esq., I.C.S., Secretary to Government, Industries Department, United Provinces.

2. J. L. Sathe, Esq., I.C.S., Secretary to Government, Finance Department, United Provinces.

3. Sir William Stampe, K.T., O.I.E., I.S.E., Chief Engineer, Public Works Department, Irrigation Branch, United Provinces.

4. Rai Bahadur Chhuttan Lal, I.S.E., Chief Engineer, Public Works Department, Roads and Buildings, United Provinces.

5. E. O. Shebbeare Esq., I.F.S., Chief Conservator of Forests, United Provinces.

6. Col. H. C. Buckley, I.M.S., Inspector General of Civil Hospitals, United Provinces.

7. Vishnu Sahay, Esq., I.C.S., Registrar, Co-operative Societies, United Provinces.

8. Dr. K. L. Chaudhri, O.B.E., M.B., B.S., Director of Public Health, United Provinces.

9. J. H. Ritchie, Esq., I.A.S., Director of Agriculture, United Provinces.

10. R. T. Shivdasani, Esq., I.C.S., Director of Industries, United Provinces.

11. C. S. Venktachar, Esq., I.C.S., Rural Development Officer, United Provinces.

CAWNPORE

12. J. G. Ryan, Esq., Secretary, Upper India Chamber of Commerce, Cawnpore.

13. Representative, United Provinces Chamber of Commerce, Cawnpore.

14. Dr. H. D. Sen, Assistant Research Chemist, H. B. Technological Institute, Cawnpore.

15. Mr. Krishna Kumar Sharma, M.A., B.COM., Professor, S. D. College Nawabganj, Cawnpore.

16. Seth Alladin Bahai, Leather Merchant, Agra.
17. Zahur-ul-Husain, Esq., Deputy Collector, Agra.
18. Triloki Nath, Esq., Sub-divisional Officer, Kiraoli and Kheragarh Tehsil, Agra.
19. Professor H. L. Puxley, M.A., Agra College, Agra.

PARTABGARH

20. S. C. Roy, Esq., Deputy Director of Agriculture, Partabgarh.
21. Rai Sahib B. Nanak Chand Kapoor, Advocate, Partabgarh.
22. Madho Prasad, Esq., Co-operative Inspector, Lucknow.
23. Munshi Mohammad Sharafat Ullah Khan, B.A., Deputy Collector, Partabgarh.
24. Mr. H. C. Chaturvedi, Deputy Collector, Partabgarh.
25. Wilayat Husain Cossar, Esq., M.I.M. and C.E., M.I.M.S. (San.) F.I.E., Second Agricultural Engineer to Government, United Provinces, in charge, Eastern Circle, Partabgarh.
26. Dr. Kesho Prasad, M.B., B.S., D.P.H., Medical Officer in charge, Health Unit, Partabgarh.
27. Dr. Jagdamba Prasad Verma, M.B., B.S., D.P.H., District Medical Officer of Health, Partabgarh.
28. Mr. Said Uddin, Advocate, Partabgarh.
29. Capt. Kashi Nath, Special Manager, Court of Wards, Ayodhya, Fyzabad.

BENARES

30. Dr. N. N. Godbole, Professor, Industrial Chemistry, Benares Hindu University, Benares.
31. Dongar Singh, Esq., Ceramic Expert, Benares Hindu University, Benares.
32. Rai Sahib B. Joti Prasad, B.A., Deputy Collector, Allahabad.
33. Rahman Bax Kadri, Esq., Deputy Collector, Allahabad.
34. Rai Sahib Govind Chand, Secretary, Rural Reconstruction Association, Benares.
35. V. Viswanathan, Esq., I.C.S., Joint Magistrate, Benares.
36. T. J. C. Acton, Esq., J.P., I.C.S., Magistrate and Collector, Benares.

GORAKHPUR

37. R. C. Hobert, Esq., I.C.S., Commissioner, Gorakhpur Division, Gorakhpur.
38. C. F. Wood, Esq., I.C.S., Collector, Gorakhpur.
39. J. M. Lobo Prabhu, Esq., I.C.S., Joint Magistrate, in charge of Deoria-Kasia, Sub-divisions, Gorakhpur.

40. Dr. S. B. Singh, M.Sc., Ph.D., Deputy Director of Agriculture, North Eastern Circle, Gorakhpur.
41. Ayodhya Das, Esq., Gorakhpur.
42. Prof. Sanyal, St. Andrew's College, Gorakhpur.
43. Suraj Nath Misra, Esq., Tehsildar, Doria.
44. Desh Raj Narang, Esq., Basti Sugar Mills, Basti.
45. Mr. Mohammad Ishaq, Advocate, Basti.
46. Mr. Razzak Ali, Gorakhpur.
47. Mr. B. P. Jain, District Supervisor, Cost of Cultivation Enquiry Scheme, United Provinces, Gorakhpur.
48. Rai Sahab Mahabir Prasad, Gorakhpur.