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7. 1907

**REPORT
OF**

**The Third Indian
Industrial Conference**

HELD AT SURAT

ON

the 30th December 1907.

*Published By the General Secretary,
Indian Industrial Conference, Amraoti.*

Quotations :

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REPORT

OF THE

First Indian Industrial Conference

HELD AT BENARES

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OF THE

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On the 29th and 30th December 1906

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had of—

GENERAL SECRETARY,

Industrial Conference,

MRAOTI (BERNAR).

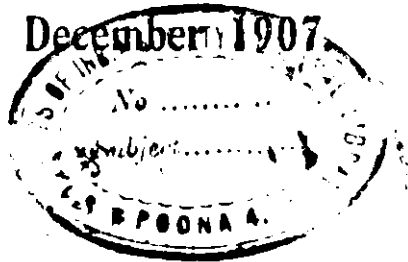
AcN. 66
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PRINTED BY THOMPSON & CO., AT THE "MINERVA" PRESS,
83, POPHAM'S BROADWAY.

1908.

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*Letter from His Excellency Sir George Clarke,
Governor of Bombay, to the President of the
Third Indian Industrial Conference.*

28th December 1907.

DEAR SIR,

Every one who has the interests of the people of India at heart must wish to promote the development of industries as the necessary complement of agriculture on which the country is now too dependent.

In Western lands, industries have been built up mainly by the initiative of individual citizens. It is always difficult for a Government to introduce new forms of industrial activity, which are apt to prove delicate plants requiring expensive culture. The soundest industries are those which spring up from the natural aptitudes and requirements of the people. Governments can help such industries in several ways, as soon as they have begun to assume an organised form.

I am, therefore, hopeful that your important Conference may be able to throw light on the industrial possibilities of India, and to foster the spirit of self-help which is essential to the healthy development of human energy.

May I ask you to accept my most cordial wishes for the success of your deliberations, and to,

*Believe me,
Yours very faithfully,
G. S. CLARKE.*

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INTRODUCTION.

'Thought which has been merely productive of further thought is not sufficient. It is in the practical application of thought—its conversion into practical energy—on which the future of the country depends. Will her people rise to the occasion and draw upon the vast fund of potential wealth and energy which nature has so lavishly provided her with? She *can* do so and it is the ardent hope of all well-wishers of India that she *will* do so.—**H. H. Macleod, Esq.**, (Paper on 'The Coal Mining Industry of India,' pp. 230-1 of Report.)

'No progress is possible in the absence of material prosperity. No moral development, no intellectual achievements have taken place in countries where the material condition of the people is at a low level and where consequently life is a bundle of pessimism, inertia and apathy. We must not rest until temples dedicated to Saraswati and Viswakarma, *i.e.*, colleges and polytechnics, outnumber all the temples, mosques and churches which minister to the supposed spiritual needs of the people. Our religious charities must be directed towards supplying us with brain-power. On brain-power depends the regeneration of India, her prosperity and integrity and also her salvation.'—**Professor T. K. Gajjar** (Address of Chairman of the Committee, p. 20 of Report.)

The Third Indian Industrial Conference was to have been held at Nagpur along with the Twenty-Third Indian National Congress, but owing to untoward events the *venue* was changed to Surat in the month of November 1907. The citizens of Surat had thus barely six weeks in which to make the requisite arrangements for holding a successful session of the Conference. Let it be said to their lasting credit that with a public spirit almost unparalleled in this country they rose equal to the occasion and left nothing undone to make the session a success. The Conference was held in the beautiful *mandap* of the Congress on the 30th of December 1907.

Professor T. K. Gajjar opened the proceedings in his capacity of Chairman of the Committee with an address entirely worthy of his high reputation in the world of science and industry. As was to be expected, the organiser of the Kala-Bhuvan of Baroda and the Techno-Chemical Laboratory

of Bombay laid just emphasis on the paramount need of education for industrial development. In tracing the history of the Conference movement Professor Gajjar incidentally remarked on the deficiencies of the Industrial Exhibitions which till last year were an accompaniment of the Congress since 1901.

‘It must be said that they were not pervaded with the spirit and insight which advanced industrial nations have manifested in the exhibitions held by them. Instead of making arrangements to show the processes of manufacture our raw products pass through in foreign countries, or suggesting lines of development for our existing industries, we collected samples of articles manufactured in India to give an opportunity to the agents of foreign manufacturers to take minute notes of them and prepare their cheap machine-made imitations to replace our manufactures in our own market. These remarks will, I hope (said Professor Gajjar), be borne in mind when such exhibitions are organised in future.’ (P. 7.)

This, it ought to be stated, represents one view which might be urged of the Industrial Exhibitions which have of late been held in India. The other view is represented in the following passage of the President, Dewan Bahadur Ambalal’s address :—

‘The idea that the Exhibition is a mere show is not borne out by facts. Producers exhibiting their goods have obtained a degree of publicity for them which would have been otherwise hardly obtainable. Further, it makes the materials for a comprehensive directory of Indian goods easily accessible. While a considerable proportion of the visitors must be sight-seers, there is always an important but increasing minority who benefit by it even commercially. A few foreign rivals may perhaps derive advantage from it. But industrialism is now an international race, in which the fittest will win. At the same time we are always ready to adopt suggestions for making it widely beneficial.’ (P. 88.)

Speaking of the Conference itself Professor Gajjar referred to an unique advantage of it in the following terms :—

‘This platform of science and industry makes room for all classes of the people to meet together, laying aside personal ambition, political animosity, religious prejudices and state officialism, so that they could all combine in an unanimous effort to raise every class in society to a higher condition of personal excellence and usefulness, and extinguish class distinctions by diffusing equal education.’ (P. 7.)

Proceeding, the learned speaker drew a sharp distinction between the development of a country and that of its people in the following two passages :—

' For example, the Mysore Government is generating electric power in the Cauvery at a tremendous outlay of its people's money, and has leased it to a foreign Syndicate to exploit the mineral wealth of the State in return for a small royalty. The resources of the State are doubtless developed thereby, but its people have not been profited to the extent they ought to have been, and have not acquired any aptitude for scientific mining or for making use of the natural forces.' (P. 8.)

' The exploitation of America, Africa and Australia has resulted in the extinction or serfdom of the original inhabitants. The present Amir of Afghanistan fully realises this difference, and does not grant concessions to foreign capitalists to work the rich mineral deposits in his country, but engages foreign experts to train his subjects to develop the resources of the country themselves. This shows that the Amir cares more for the permanent interests of his subjects than for the temporary gain to his treasury from concessions to foreign syndicates on easy terms.' (P. 9.)

It will be in the recollection of the readers that the Honourable Sir (then Mr.) Vithaldas Damodher Thackersey expressed a similar opinion in his Presidential address at the previous Conference at Calcutta. We believe there will be a general disposition to agree with Professor Gajjar when he added that the charge for this neglect of duty does not wholly attach to the Government and that the people must share it.

Speaking of the movement for the boycott of foreign goods, Professor Gajjar said :—

' I do not wish to assert that boycott is altogether impracticable or it is altogether useless. What I do wish to point out is that boycott can never by itself solve an industrial problem. * * Scientific knowledge, technical skill, and industrial enterprise and organisation—these are the true remedies, the only positive forces we can rely on to develop our industries.'

Professor Gajjar urged strongly the development of the oil industry and of chemical industries. The chemistry of bye-products has opened up new and unexpected avenues of industries in the West. The possibilities of the mining industry did not escape his attention either, and his plea for the creation of an Institute of Mining has many supporters in the country. Indeed, in the year 1901, the Indian National Congress urged on the Government the establishment of a College of Mining.

The rest of Professor Gajjar's speech was devoted to advocacy of the need of scientific and technical education based on a wide spread of general education. 'Leave no stone unturned to increase the brain-power of our nation,' was the burthen of his song. 'Without universal education there is no salvation for us. We must undergo an intellectual revolution; our outlook on life and our present conception of mundane duties must be modified, if we want to remain as a nation and a nation full of youth and prosperity as in the days of yore. "Educate, educate, educate" must be the cry heard on all sides. 'The people should not wait for Government initiation, but do whatever they can independently.' Let us not wait for large funds, but begin with whatever sums we get from our people. * * Education is a religious duty, and let us gird up our loins to perform it to the best of our abilities.'

The Chairman of the Committee concluded his speech with the following inspiring exhortation :—

'Let us thoroughly and systematically carry out the conclusions we arrive at. We have the necessary means present in abundance in our land; we have capable men in our ranks; we have the guidance offered by the history and experience of England and other nations; why should we then hesitate to work out our industrial salvation? If we neglect the present opportunities, we shall have to pay a very heavy toll in future for mere existence. Let this dismal and depressing prospect spur us on to action, to stimulate and accelerate our industrial progress. If we will, we shall bring about our industrial regeneration. With knowledge, with self-confidence, with determined action and with united endeavour in the sacred cause of our Motherland, let us, ladies and gentlemen, resolve to work out our own regeneration. (*Loud cheers.*)' (P. 21.)

Dewan Bahadur Ambalal Sakeral Desai, of Ahmedabad was the President of the Conference. He is, as Professor Gajjar said in his speech 'a distinguished alumnus of the Bombay University, a staunch political leader of Gujarat and one of the captains of her flourishing mill industry. He has high intellectual attainments, varied experience of life, keen and penetrative grasp of our national problems.' The President delivered an able, thoughtful and practical address which shows the characteristics mentioned by Professor Gajjar, and it must be helpful to those who are eager

to embark on industrial enterprise. His statement of the fundamental facts of our economic situation can hardly be improved upon :

(1) Wide-spread and chronic poverty among a large proportion of the population ; (2) dense ignorance of the masses ; (3) an abundance of raw materials ; (4) absence of scientific and technical knowledge and practical skill ; (5) a low state of commercial enterprise ; (6) a large deficiency of capital. The question that we are called upon to consider is how to evolve a state of widespread industrialism out of the conditions just postulated.

' We must depend for our immediate progress on our resources as they now exist.' The want of capital is our chief desideratum. Dewan Bahadur Ambalal's solution of the difficulty would be the creation of a public opinion in favour of the diversion of a portion—say a fourth—of the rupee debt of the Government of India held by Indians, and of a half of the amount deposited in the Postal Savings Bank, which together would amount to about 20 crores of rupees, into channels of trade and industry. Then 'an amount of strength would be imparted to our industrial activity, of which we have at present no adequate conception.' The best means of compassing this end would be the establishment of banking institutions all over the land : 'there is no reason why every town of importance should not have a bank of its own.' But all that is feasible in the way of organising Indian capital might be done, and yet Indian productive industry will require more capital than is available in the country itself. Hence foreign capital should be freely borrowed, only care should be taken that too much price is not paid for it.

Dewan Bahadur Ambalal has great faith in the *Swadeshi* movement and naturally he devoted a good portion of his address to an exposition and a vindication of it.

'The aim of this movement is the establishment of new industries in India, by means of Indian capital if possible, so that the Indian people may be, as far as is practicable, self-contained and independent of the foreign imports that now flood the land.' (Pp. 26-7)

'The *Swadeshi* movement ultimately seeks to call into existence the directing capacity, the technical skill, and the requisite capital, so that our own labour and money may convert our raw materials into the commodities which we now import.' (P. 27.)

'There is nothing in [the methods of the promoters of the movement] that any honest man can seriously object to. The economic ideas of men differ in many points, and a difference on this one is allowable. But no candid man can stigmatise these patriotic efforts as dishonest. They are perfectly legitimate.' (P. 27.)

'But * * they are not only justifiable but urgently needed. * * * The *Swadeshi* propaganda is in its essence an endeavour to reinforce the cause of Indian industries by enlisting the Indian patriotic sentiment on its behalf. It is difficult to see how any objection can exist against such a move. Organised voluntary efforts are specially needed in all departments of national activity. The *Swadeshi* movement is the application of this principle to that of national industrial regeneration.' (Pd. 27-8.)

'These gratifying results (of the industrial activity of the last two years) are largely attributable to the *Swadeshi* propaganda, and to the *Swadeshi* spirit which it has aroused. In the face of these results it is not reasonable to cavil at the *Swadeshi* movement.' (P. 29.)

'Now it is permissible to enquire why a nation situated like ours, and deprived of all means of enforcing its will by collective action, may not seek to extend its industries by appealing to a higher sentiment than avarice, *viz.*, Patriotism. Even Royal personages have commended such an appeal and enforced it by their example.' (P. 30.)

The President next drew attention to the important subject of railway transport which 'has not received the attention it deserves.' 'The delays in the dispatch and handling of goods after arrival are often scandalous.' The railway rates are too high and need to be reduced in the interest of Indian manufactures. Readers of Sir Frederick Lely's book—*Suggestions for the Better Governing of India*, will remember how strongly he laid stress on the necessity of such reduction. In his paper on 'The Scope and Method of an Industrial Survey' (pp. 40—46 of Report), Mr. A. C. Chatterjee, I.C.S., the able officer who is in charge of industrial survey in the United Provinces, also refers to the subject in the following terms:—

'One of the most interesting and difficult questions that have cropped up in connection with my inquiries in the United Provinces is that relating to railway freights. Many of the existing industries complain that it is hopeless for them to find a market for their produce in the large towns on the seaboard because railway freight, even at the lowest rates over long distances in the country, is higher than sea freight from competing countries like Japan and Germany.' (P. 44.)

The desirability of having a common currency and uni-

form weights and measures in the country was the next subject discussed in the President's address. 'The necessity of developing the domestic commerce of our vast country makes the question of a common currency and common weights and measures one of national importance.' The agricultural industry, the cotton industry, iron, coal and manganese, the sugar industry, jute and silk, leather, paper and other industries, were next passed in review. On the question of the excise duty on cotton goods the President said:

'The public can now justly demand that the excise duties on cloth, which have trebled during the last ten years, and now amount to nearly 21 lakhs of rupees per annum, should be abolished. The increasing revenue from excise on cotton cloths involves a new danger to the industry, to which the attention of all publicists might be invited. At present the interests of Lancashire form the sole pretext for the impost. But if the revenue from it grows at its present rate, considerations of finance are likely to be utilised for its continuance. It will be said that the amount is too large to be at once remitted. This is an additional reason for taking concerted action now to get this obnoxious tax removed.' (P. 33.)

The question of creating home industries for our rural areas was next discussed in brief.

'For more than six months in the year almost the whole agricultural population of unirrigated tracts is absolutely without any employment. It might greatly improve their material condition if some handicrafts suitable to their needs could be successfully introduced into our rural areas. The hand-loom may answer the purpose in many cases. Knitting and lace-making also suggest themselves. The matter is very important, and suggestions or papers dealing with it ought to be invited.' (Pp. 35-6.)

Speaking on education the President dwelt on the absolute necessity of imparting a sound elementary education to the labourer if his condition was to be really elevated, on the need of technical education on a broad scale—care being taken that always there was a living connection between the technical school of a district or province and its actual or projected industries—, and on the need of a school or college providing a full commercial course.

In concluding his address Dewan Bahadur Ambalal made the observations quoted already about the useful purpose which exhibitions of indigenous products served in this country and he suggested that their organisation might be taken up by the

Conference. He further observed that the Conference might 'encourage the acquisition of specialised practical knowledge' by the offer of scholarships and prizes. And he addressed this exhortation to the assembled delegates, and through them to his countrymen at large: 'Let us never forget that Nations are made by themselves. In this as in all our activities, self-help and self-sacrifice ought to be our watchwords.'

According to Dewan Bahadur Ambalal 'the very able papers written by gentlemen possessing special expert knowledge which this Conference has been the means of evoking form by themselves a mine of valuable information.' Of such papers there was a goodly number in connection with the Surat Conference as at the two previous sessions. The promoters of the Conference must consider themselves fortunate in receiving the cooperation of so many qualified men—from among Europeans and officials not less than from among Indians and non-officials—year after year. By their contributions to the important and difficult problems on the successful solution of which depends to no small extent the future of Indian trade and industry, they have really placed the people of India under great obligation to them.

The first of the papers that will be found printed in the present Report is that of Mr. A. C. Chatterjee, I.C.S., on Industrial Survey, to which reference has already been made. What should be the aim of an industrial survey? According to Mr. Chatterjee—

'Its ultimate object ought to be to indicate the economic possibilities of the province. Briefly, we should study the resources of the province in soil and raw products, labour both skilled and unskilled, capital, communications and facilities for trade. We have then to ascertain the wants of the people in the shape of finished articles, or, in economic language, the demand that exists among consumers. The surveyor has then to endeavour to find out whether the demand is or can be locally met, and also to suggest what would be the best method of utilising the surplus raw products of the province.'

Going into some detail Mr. Chatterjee pointed out that in studying the industrial condition of a tract it was imperative to take stock first of all of the raw products both actual and potential. Such products may be either mineral or agricultural. The next point to bear in mind is the labour supply,

Nor can the question of capital be neglected in an industrial survey of any part of the country. 'Each industry will have to be considered in detail, and a careful study will have to be made whether production on a large scale is necessary or mere hand-power will suffice.' Mr. Chatterjee thinks that a very large extension of the cooperative movement is necessary among the industrial population of this country, and his opinion is that there are greater possibilities in industrial cooperation than even in agricultural cooperation. At present there is no one to tell the craftsmen what is the style of goods which is now in demand and what articles the craftsmen should produce to suit the altered conditions of the trade. 'In an industrial survey an attempt should be made to determine if any such agencies can be established for the different industries. I need hardly say' Mr. Chatterjee added, 'that in a matter like this a very great deal can be effected by a non-official organisation like the present Conference and smaller societies affiliated to it.' Facilities of communication cannot be excluded either from the purview of an industrial survey. Then there is the question of consumption. Almost every knowing man takes the same view as Mr. Chatterjee when he said in this connection.

'I think in the present stage of our industrial development it may be taken as an axiom that our first endeavour should be to manufacture for the home market. * * A glance at the trade returns of India will convince any one that there is a considerable leeway to make up in the home market before thinking of foreign markets.'

We should therefore, as Mr. Chatterjee remarked, carefully analyse the traffic returns of the province and observe what articles at present imported from outside can be manufactured with raw materials obtainable locally.

Mr. John Wallace, editor of that informing and useful publication, the *Indian Textile Journal*, discusses the subject of 'Technical Education for the Workman.' (Pp. 46—58.) The following passage lays bare the glaring defects in the Indian workman which can only be remedied by suitable education :—

'In one large house, facing the Elphinstone College, all the joinery is finished with the jack plane, many of the joints in shutter frames would admit a half anna coin, the jute mills rattle loose, and the

locally made hinges are all deficient in wearing surface. Many of the hinges are not in line. The work of the plumbers and electric fitters is exceedingly rough although their material appears good, the painters seem quite incapable of mixing the same shade continually, and the national lack of standard of excellence is just as obtrusive now as before. An Indian cannot paint a window frame without painting the glass, and if obliged to clean the glass, he will use sand paper or emery cloth, which ruins the surface. He will varnish a dog-cart with his fingers dipped in varnish, or paint doors with a piece of rag, instead of using a brush, leaving clots of paint in the corners. If he paints or colour-washes a wall, he leaves the floor all foul with droppings, and he rarely does any repair work without damaging, in some way, the building in which he works. The Indian mason continues to build walls with stones of a pyramidal shape, the base forming the exterior surface, a most vicious practice, and the cabinet maker has so little confidence in his own jointing that he ties the legs of tables together to keep them from coming loose. Slovenliness and imperfect knowledge of his craft are the characteristic of his work, and his outfit of tools is that of a man who will buy or make nothing that he can possibly do without, and who has no regard for time as an element of cost. (Pp. 46-7.)

Mr. Wallace's opinion is that the Indian artificer has no standards of good workmanship and that he will give the smallest possible return for his pay.

'All well-wishers of India desire to see a better use made of the raw products that are exported at present in such quantities. Materials to produce paints, varnishes, leather, canvas, cordage, textiles, drugs, oils and metals, many of which return in a manufactured state, might all be dealt with here if workmen were more reliable. It is they who determine the final quality and finish of any manufacture, and if they are stupid, careless, irregular, migratory and improvident, no talent of master or manager can avert the deterioration of the product. We must, therefore, give such attention to the education of the workman as shall improve his working capacity.' (P. 48.)

Mr. Wallace considers at some length the quality of the training that should be imparted to the workman, and without necessarily concurring in all the opinions he expresses one will have no difficulty in seeing that the Indian workman will greatly increase in efficiency if he receives such instruction.

Mr. Ishwar Das Varshini of Aligarh writes a long and an informing paper on the need of a 'Technological College for India.' (Pp. 317-34.) The readers may remember that

Dewan Bahadur K. Krishnaswami Rao of Madras urged the same need in a paper contributed to the Benares Conference. Mr. Varshini rightly points out that no number of scholarships tenable for education in foreign countries can take the place of a national technical institution. 'We must start technological institutions in our own country, where the students may receive the best training that may be possible under the circumstances and at the same time be familiarised with the quality of the raw materials, labour supply, etc., of the country. After acquiring such knowledge they may profitably go to some foreign country for completing their education.' The information contained in Mr. Varshini's paper on technical education in Germany and the proposals he makes on the branches of industry in which education should be imparted in an Indian technological college will undoubtedly repay perusal.

Messrs. K. Subramani Aiyar (pp. 58—71) and C. Gopal Menon (pp. 71-81) write on commercial education. Mr. Subramani Aiyar is a man of great experience and an acknowledged authority on the subject. He points out rightly that commercial education will not deserve the attention claimed for it, if commercial institutions are merely intended to divert young men from one kind of quill driving to another kind of quill driving. 'The real and chief object of commercial education is to enable our youths to become merchants, traders and bankers.' Mr. Subramani Aiyar eagerly pleads for the institution of University degrees in commerce and the affiliation of commercial colleges to the University. In the following he briefly indicates the scope and extent of University courses in commerce :—

'A sound knowledge of English and of at least one Asiatic and one modern European language will form an essential feature of the University course in Commerce. Among other subjects will be commercial mathematics and accountancy, mercantile law and practice, the history, science and practice of banking, currency, foreign exchanges, economics, economic geography, the history of commerce, industry and manufactures, the theory and practice of statistics, railway problems, transport, public finance, industrial development, and the organization of industries. The scope and extent of education that a young man would have received at College by the time he takes the bachelor's degree in commerce would be neither more nor less than the training received by the Bachelor of Arts,' etc. (Pp. 67-8.)

Other problems in connection with commercial education that demand attention are improvement in the organisation of the commercial schools and colleges now in existence in different parts of India, the formation of vernacular commercial schools for the benefit of those that discontinue their studies on passing through the vernacular or primary department, and the establishment at the head-quarters of each province of a central commercial institution which would have distinct departments for imparting higher, secondary and vernacular commercial education and in which provision would be made for training secondary and vernacular commercial teachers for smaller schools in the mofussil. Mr. Gopal Menon also insists on the necessity of instituting commercial degrees in connection with Indian Universities.

The very able manager of the Empress Mills, Nagpur, contributes a short but eminently 'suggestive paper on the Labour problem (pp. 81—4). In Mr. Bezonji's opinion there is 'no room for doubt that there are immense potentialities for a plentiful supply of comparatively cheap labour in numerous congested areas. Only, it needs sustained and organised efforts to coax it to leave the paternal home where it half starves, and migrate to industrial centres affording more lucrative pursuits. The first essential to success in this direction must be a thorough combination and association among the employers themselves.' He says from personal experience that individual employers find it practically impossible to do the recruiting themselves each in his own way. He suggests that each industrial centre should have a society of its own, that it should have a practical and thorough organisation under which reliable recruiting agents might be appointed. But even for such a scheme to succeed, Mr. Bezonji is of opinion that our factory system specially, and other industrial works generally, are too exacting and unattractive. The cause and the cure of the 'labour' difficulties are stated thus by him :—

'The hours of work are too long, the conditions of life demoralising and destructive of domestic happiness, however little that may be, the imported labour, that is the new comers, accustomed to open air, little work, and stay-at-home habits, on being introduced into a new way of life, are instantly bewildered by the moving machinery, the noise all round, the stuffy atmosphere, and, what is most repellent, the confinement from

dawn to dusk and even up to late at night, more frightful than even jail life. No wonder the first impulse, even for the starving people, is to run away, regardless of consequences. Shorter hours of work, regular holidays, fairly good wages, well ventilated factories provided with sanitary accessories, pure drinking water, and healthy dwellings are necessary to keep the operatives in such a state of health and ease, that they may show interest, if not zeal, in their work, and may not wish to leave it. Pensions, provident funds, leave rules would make the workers highly contented.' (Pp. 83-4.)

With Mr. Bezonji's paper should be read Mr. Saklatvala's on 'The Present Condition of Labour in the Textile Industry, and the Restriction of Working Hours in Mills' (pp. 847-55). Examination of the actual condition of labour in our mills leads him to the conclusion that textile mills fail to attract intelligent and healthy labour, though other occupations and industries are not similarly afflicted, because of the 'unpleasant and unhealthy' conditions under which the textile industry in India in general is at present carried on. 'If the existing conditions as to light, ventilation, and other sanitary arrangements are altered and improved, and reasonable hours for work appointed, say 11 hours a day, there is no doubt the textile industry will attract labour, and the "labour problem" put an end to for a long time to come.' The feeling in the country, however, seems to be that the recommendations of the Factory Labour Commission go as far as the circumstances really require.

Next we have papers by Mr. M. R. Bodas of Bombay (pp. 84-8) and Mr. Maganbhai C. Patel of Ahmedabad (pp. 842-7) on 'Industrial Banks.' Mr. Bodas puts the case well in the passages given below :—

'In a country like India, where capital is usually stationary and trade comparatively sluggish, a financing agency like a public bank is an absolute necessity to accommodate enterprising traders and supply the needs of current business.' (P. 85.)

'The necessity has long since been recognised in larger centres of commerce, and cities like Bombay, Calcutta, Delhi and Lahore already boast of several organised and well-conducted Indian banks. But the smaller towns and rural districts equally want them. The needs of the agricultural classes who form the bulk of the population in villages may be partially satisfied by the new cooperative credit societies initiated by Government; but no such concerns can really be proper substitutes for a well organised bank with a large reserve capital.' (P. 85.) 'Special industrial banks are necessary to give financial help to ensure proper organisation of new industries.' (P. 86.)

It seems it came out in a recent trial in Germany that almost half the factories there are worked by machinery that is given on loan by the makers, who agreed to receive the price in instalments. Such help is much more required by many people in India 'who know valuable processes, which cannot be turned to account for want of means.' 'An industrial bank will help these men by timely help and thereby become the mother of so many different industries.' Mr. Maganbhai wants industrial banks to be started at district head-quarters with a capital of two or three lakhs of rupees and on more or less the same lines as cooperative credit societies. He also explains the special concessions that might properly be extended to them by Government.

The immense possibilities of the cooperative credit movement have always appealed to the promoters of the Indian Industrial Conference, and, as in the case of the Benares and Calcutta sessions, there were admirable papers on the subject contributed to the Surat Conference. One (p p. 88—98) was by Mr. W. R. Gourlay, at present Director of Agriculture in Bengal. He has made a special study of the cooperative credit societies of Germany and other continental countries, and to the enthusiastic efforts put forth by him as Registrar of Cooperative Credit Societies must be attributed to no small extent the progress in this direction achieved in the large province of Bengal. Mr. Gourlay points out that, the great necessity of Indian agriculture being cheap credit, the usefulness of the Agricultural Departments of Government will be enormously curtailed unless the good and careful agriculturist can obtain capital at a rate not exceeding 12½ per cent. At present, however, the agriculturist is being financed at a rate of interest varying from 25 to 50 per cent. To quote Mr. Gourlay—

'Everything is being done to build up an Agricultural Department in each Province in India which will compare favourably with similar departments in other great agricultural countries. The present scheme for development will not be fulfilled for five or ten years yet, and therefore now is the time when we must put forth every effort to cheapen credit, so that the labours of the Agricultural Department may do the maximum of good to the community. Hence the importance of the subject with which we are dealing. The cheapening of rural credit must be the foundation of all agricultural improvement.' (P p. 88-9.)

Perfectly so ; but it may be doubted whether small coope-

rative credit societies alone, however numerous they may be, will go to any extent in solving the allied problems of agricultural indebtedness and agricultural credit. They will have to be supplemented and aided by agricultural banks on a fairly large scale as pointed out in the fourth resolution of the Surat Conference. It were well if the Government of India and the several Provincial Governments concluded their prolonged consideration of the subject and made up their mind to start operations at an early date. To come back, however, to Mr. Gourlay and his paper. The exposition of the subject is very lucid and it has been dealt with with the confidence springing from knowledge and ability. Both he and Mr. Campbell, Registrar of Cooperative Credit Societies, Bombay, who gives a most interesting account of their growth in the Western Presidency (p p. 98—108), make an earnest appeal to those who have the opportunity to help a good cause to come forward to spread the idea among the people and start societies where none exists at present. 'We want help,' says Mr. Gourlay.

'We do not want money from Government to assist us, we want the willing cooperation of those who have the welfare of the people of this land at heart to help us in spreading a knowledge of the principles and to guide and counsel the members of new societies. Money will come but we want men who love the country and its people : men who are willing to give their time and their labour towards helping their struggling brethren : men who believe in this work and who are in entire sympathy with the people. There can be no grander work for a young man than this. It demands no great power and no great learning ; it demands only sympathy and patience. It is the grandest work that a man can take up for his country.' (P. 98.)

Mr. Campbell pleads for men as well as capital : men like the Honourable Sir Vithaldas Thackersey and Mr. Lalubhai Samaldas—names honourably associated with the work of the Industrial Conference—, among others, who have advanced from time to time the needed capital to individual societies at very easy rates.

Mr. Jogindranath Samaddar of Jessore, an earnest worker, contributes a third paper entitled 'Cooperative Credit in Agriculture' (pp. 335—42). He enforces the plea put forward by Rai Parvati Sankar Chaudhuri at the Calcutta Conference, in favour of cooperative grain banks, or *Dharmagolas* as they are called.

We pass on to Dr. Harold Mann's excellent paper on 'Agricultural Development in Bombay and the Work of the Department of Agriculture' (pp. 108—18). No one who knows Dr. Mann or his work need be told of the wholly admirable spirit in which he has set about his work as Principal of the Agricultural College, Poona. The paper under notice, as might be expected, breathes earnest sympathy with the people from beginning to end. We will not attempt here a summary of the contents of the paper: we will only call attention to the emphasis that Dr. Mann justly lays more than once, on the test by which alone the utility of the Agricultural Department has to be judged, *viz.*, the bringing of its work to the knowledge and to the door of the cultivating ryot. Dr. Mann says in concluding his paper:

'The idea that pervades the Department now, I believe, and which must pervade it, if it is to be of the use we want it to be, is that it succeeds just in so far as, and no more than the agriculture of the Presidency is improved. Of all things I do not want it to be thought of as a Government institution standing apart from the people. We want it to be useful, and, in my own mind, only by its usefulness can the expense, the energy, and the time required for maintaining the Department be justified.* * I insist on the essential aim of the Department of Agriculture in Bombay. We do not want for a day to be considered as a Government institution. We exist simply and solely to benefit the cultivator of the Presidency. I want to leave Bombay to-morrow if I cannot do something to help the province. I do want to insist on that with all the earnestness that I have.' (P. 118.)

Mr. Stanly Reed, the able editor of the *Times of India*, who in the next paper discussed 'The Desirability of commencing Agricultural Exhibitions in the Bombay Presidency, especially at Surat and Poona' (pp. 119—22), also dwells on this, what he calls 'the weakest spot in the agency set up to improve the standard of our oldest and most important industry';—that 'between the expert on the one hand and the cultivator on the other, there is practically no link.' Indeed, in his opinion, 'it would be scarcely an exaggeration to say that the experimental farm and the scientific expert mean no more to the great mass of the land-owning and cultivating classes of this Presidency than the laboratory and the alchemist did to the Middle Ages.' Mr. Reed's remedy is the formation of agricultural associations and the organisation of agricultural shows. As, however,

'it is desirable to hasten slowly,' Mr. Reed would, to commence with, simultaneously organise at Surat and Poona, 'associations whose principal business it shall be to focus diffused effort into annual exhibitions, made as attractive as possible, where the progress of agriculture can be brought home to the landowner and the ryot with a force and directness which all other means cannot equal.' Mr. Reed has no objection, in the early stages of the movement, to ask for Government assistance, 'but if the movement is to have life and durability, the burden and heat of the day must be borne by non-officials.'

Mr. Alfred Chatterton, who stands in no need of introduction to persons taking interest in matters industrial, explains with characteristic ability and at considerable length (pp. 122—49), the important subject of 'Lift Irrigation.' His object in presenting the paper 'is to draw attention to the advance which has recently been made in the Madras Presidency in the scientific study of subterranean water and well irrigation, and to place at the disposal of those interested in the improvement of the agriculture of India, the information which has been gathered in the Irrigation Department during the four years it has been at work.' How well this is done one has only to read the whole of Mr. Chatterton's paper to realise. To be convinced of the desirability of substituting mechanical appliances for the means of raising water adopted at present, the reader may peruse the following :—

'One of the causes of the poverty of the people of India is the little use they make of mechanical appliances, and efforts should be made to affect a change in this direction. The great rise in the price of food-stuffs, accompanied as it is by an equivalent or even greater rise in the wages of the labouring classes, has brought many of the wealthier agriculturists to a similar conclusion, and it is certain that in the next few years a great advance will be made by the substitution of oil and gas engines for bullock power in many of the processes for preparing agricultural produce for the market. It is necessary that this opinion should gain ground, and be more widely accepted,' etc. (P. 125.)

'Well cultivation is carried on to the utmost extent possible under the existing conditions, and if any great extension is to take place in the immediate future, it must be by supplying the ryots with additional power for lifting water. At the same time the cost of that power must be very much less than that they now pay for any work done in the way of lifting

water which is beyond the capacity of the cattle they keep for general agricultural purposes.' (P. 127.)

' I do not think it is any exaggeration to say that the oil-engine and pump will prove, and in fact are proving extremely potent agents in the development of the material resources of the country. Already in some of the rural tracts the ryots are familiar with them, recognise their merits, and regard them as desirable things to possess ; whilst those who have got them have been led to take a much deeper interest in agriculture than they did before, and being intelligent men with capital, their farms are becoming the centres for the diffusion of improved agricultural practices throughout the country.' (P. 138.)

It is encouraging to be told that there are now about 100 pumping plants at work in the Madras Presidency, that there is ample evidence that the new system of lift irrigation is very profitable, and that there is the best indication that it is appreciated in the fact that the rate of increase in the number of installations is greatest in those places where the number is already largest or where they have been longest at work. ' In ordinary years and under normal conditions, given a sufficient water-supply there should be no difficulty in turning it to very profitable account, but often with oil-engines and pumps the greatest profit will be made in years when the season is unfavourable, scarcity prevalent and prices high.' In many cases oil-engines and pumps may be used to supplement other sources of supply and convert agriculture of an uncertain type into one of great certainty. According to Mr. Chatterton it may possibly be desirable in the future to amend the Agricultural Land Improvement Loans Act so as to provide greater facilities for obtaining loans for the purchase of engines and pumps. The Government itself may purchase the engines and pumps and sell them to the ryots on easier terms than the ryots can do. Another suggestion is—

' Where the water-supply is very abundant and where the ryots have no capital and the land is sub-divided into small plots, it might be practicable to establish local water-supply companies who would raise water and sell it to the ryots either for a share in the produce of the land, or for a fixed rate per unit of volume or a fixed charge per acre irrigated. If anything of this kind is to be brought about, it will probably be necessary for Government to pioneer the way, and to provide sufficient legal protection to induce capital to flow in this direction. (P. 146.)

In many places ' it will probably be found most economical to have a single power-generating station and to distribute the power electrically, driving centrifugal pumps with electro-

motors.' Altogether a very informing and suggestive paper this of Mr. Chatterton's.

There are next three papers on the cultivation of cotton followed by four on the hand-loom weaving industry. Mr. Gammie treats the subject generally (pp. 150-5) and his conclusion is that at the present juncture we are only in a position to say tentatively, that exotic cottons can only be cultivated in favoured parts of India; tree cotton cultivation is not worth the risk; varieties can only be improved in their own localities by the adoption of methods of selection and crossing, and that varieties can only be maintained in a pure state in the fields if the cultivators and traders are willing to observe the needful precautions.

Mr. Clouston of the C.P. Agricultural Department writes on cotton cultivation in the Central Provinces. (Pp. 155-64.) The area under the crop in these Provinces has increased from 1,887,767 acres in 1866 to 5,821,041 acres in 1907. It now occupies a larger area than any other crop, rice being second in importance with an area of about $4\frac{1}{2}$ million acres. Mr. Clouston details the steps that are being taken for the improvement of cotton in the Central Provinces and Berar, and says in conclusion:

'As yet the work has but begun but steady progress on these lines should have far-reaching effects. It will enable the cultivator to procure supplies of pure and improved seed of the indigenous varieties and of such acclimatised long-stapled varieties as are likely to succeed in his tract. It will enable the local manufacturer to procure better lint of the present short-stapled Jodi and of a purer form of Bani; it will, we hope, also enable him to obtain locally a larger supply than he does at present of the long-stapled varieties instead of having to import them from America, as he is compelled to do under existing conditions. The work of improving this, our most important crops, is thus being conducted on sound *Swadeshi* lines.' (P. 164.)

Mr. W. V. Chandekar writes at great length on the 'Cultivation of Cotton in Berar' (pp. 164-87). Mr. Chandekar regrets that along with the efforts towards an increase in the area under the crop there have been absolutely no endeavours to improve its quality. 'This has resulted in the deterioration of the commodity produced and the fair name of the province has suffered.' Improvements are required in two directions—increase of outturn and improvement in quality. The old Bani and Jodi varieties should be revived. The

opening of seed depôts will be productive of much practical good. Several other measures the adoption of which will result in good are suggested by Mr. Chandekar.

Mr. Bezonji Dadiabhoy, if any one, is entitled to be heard with respect on 'The Weaving Industry' (pp. 187-90). Mr. Bezonji is confident that the hand-loom weaving industry is capable of great expansion. 'What is wanted is education and organisation.' Weaving schools, specially for the children of weavers, should be established where not only the art of weaving but reading and writing will be taught. The grown-up weavers too may learn something from exhibitions which might be held in these schools from time to time, and they may be offered prizes for new designs or excellent work.

'Cooperative Weavers' Societies might be formed, which might buy raw materials and sell finished articles on behalf of members or others who may wish to benefit by its rules. The society may obtain information as to where the best raw materials at reasonable rates could be had, what the materials are, what finished articles are most in demand, and where, and supply such information to the members. Of course, it may also advance the necessary funds. Each individual weaver must be left free to make what he pleases, and as much or as little as he pleases.' (Pp. 187-8.)

Mr. Bezonji considers that hand-weaving at home is capable of competing favourably with power-weaving in a factory. His opinion of the fly-shuttle is that while it has been rightly given the chief importance and is good where certain class of weaving has to be done, the old hand-loom is found to be the best where coloured weft with separate shuttles for borders is necessary. 'Then there are several descriptions of cloth of various designs which can only be made best on hand-looms and where production is of less importance and in this case, too, the ordinary loom is found to be the most suitable.' 'The simplest and lightest appliances should be the aim of every inventor' of improved looms. Besides, 'what is now wanted is an improvement in the method of winding, warping and sizing.' Mr. Bezonji's conclusion is hope-inspiring: 'Hand-weaving may be advantageously carried on on an extensive and paying scale and thus find employment for numberless people.'

Mr. Alfred Chatterton writes at length on 'The

Salem Weaving Factory', (pp. 190-208), Mr. D. C. Churchill on 'The Hand-loom in Ahmednagar' (pp. 208—17), and Mr. Chunilal B. Desai narrates his experiences of the hand-loom factory at Nadiad (paper on 'Hand-loom Weaving in India,' pp. 217—27). The Salem Weaving Factory started by the Government of Madras on the suggestion of Mr. Chatterton himself

'is an experiment to ascertain whether it is possible to improve the condition of the hand-weavers in Southern India—(1) by substituting for the native hand-loom improved hand-looms which will enable the weaver to produce a greater length of cloth in a given time without in any way sacrificing the essential characteristics of native hand-woven goods; (2) by introducing the factory system among the weavers, so that they may work under the management of men with commercial and manufacturing experience, and so that capital and organisation may be introduced into the industry to render the hand labour more productive; (3) by introducing, if possible, improved preparatory processes to diminish the cost of the preliminary warping and sizing which the yarn undergoes before it is placed in the loom (pp. 192-18).

'The future action of Government in regard to the weaving industry will largely depend upon the kind of solution which is arrived at' at the Salem factory. Mr. Chatterton thinks—rightly enough as many a worker in the field can tell—that 'if the hand-weaving industry is to be materially improved, a great deal has to be done not merely in connection with the technical details of the weaving processes, but also in connection with the training and education of the weaver himself.' A question of the greatest interest at present is whether the hand-weaver will survive the stress of competition or be driven as in other countries to seek a livelihood at other work. In Mr. Chatterton's opinion—

'The answer is doubtful. The fact that he has survived so long is in his favour and there is no doubt the transitional period can be prolonged, but it is still an open question as to whether he can be in a position which will enable him to command the same wages for the same number of hours of work as the power-loom weaver, or the blacksmith and carpenter, whose industrial existence is not threatened by the prospect that ingenious machinery will be devised to supplant them.' (p. 194.)

As Mr. Bezonji has said,—and as we have remarked it is the experience of others as well,—one great difficulty is to get the weavers to adopt new looms and new methods. Mr.

Chatterton thinks likewise. He says : ' One result of our work at Salem during the last 18 months is to furnish fairly reliable data for the opinion that the weaver himself is not likely within any reasonable time to change his methods of working and take to the fly-shuttle loom and it seems almost certain that in this part of India the factory system will have to be introduced if anything is to be done.' Mr. Bezonji, however, would not do so if he could help it. One solution of the difficulty appears to Mr. Chatterton to lie in the agency of Weavers' Guilds or other forms of cooperative enterprise. Of one thing he is sure : ' The only hope of progress in this part of the country (the Madras Presidency) is that outsiders will put their money into the trade and that through their intelligence and energy it will be placed upon a new footing.'

Mr. Churchill's fine paper is interesting as coming from one by whose name is known a new kind of factory hand-loom that has been found to be more satisfactory than almost any other of its kind. The development of the hand-loom at Ahmednagar is due to his efforts. Any improved hand-loom according to him must be capable of being run all day after day, *with ease*, by an ordinary man ; it should have a speed approximating to that of the power-loom ; it must be adaptable to all ordinary widths and fineness of Indian hand-made cloth.

Mr. Desai pleads for the re-introduction of the *Charkha* (hand-spinning wheel) in Indian homes.

We pass on to Mr. H. H. MacLeod's short, interesting paper on ' The Coal-Mining Industry of India ' (pp. 227-31). Mr. MacLeod rapidly traces the growth of this ' finest of all Swadeshi industries,' which ' has a magnificent future before it.' ' The dormant energy of " Coal " awaits the commands of India's millions and signs are not wanting that a great industrial awakening is in store for India. If the active energy of this useful commodity is fully reflected in the energy of her people, India will take her proper place among the nations of the earth.' Mr. MacLeod expresses the opinion that electricity, being a very flexible power, ' is destined to play a great part in the future of Indian mining, and it is with the aid of electricity that the labour problem is about to be seriously attacked.'

Mr. R. C. Whitenack, the able American gentleman who acts as Economic Adviser to the Government of H. H. the Maharajah Gaekwar of Baroda, contributes an important paper on that industry of immense potentiality, the cotton-seed oil industry (pp. 232—47). The value of the crude products alone is over two crores a year, and when the value of the finished products is considered, it is an industry with a potential yearly value of 16 crores. As yet this is untouched, and so much wealth is being sacrificed. Mr. Whitenack considers separately the technical and commercial sides of the subject. The former need not detain us here. The important question is if there is a market for the products. For the oil itself there is a vast dormant demand in India and a rapidly expanding demand in Europe. But how about the cake? Notwithstanding difficulties, Mr. Whitenack is convinced 'that there is a sufficient demand even now to support the industry on a small scale, and its development will depend to a large extent upon the development of scientific dairying and stock breeding and upon the energy of local oil-presses in cultivating foreign markets for the cake. Active canvassing and judicious advertisement will do much to develop the market at home, as a competitor of linseed, safflower, sesamum and other native seed-cakes.' It is probable, however, that Indian crushers will have to depend principally upon foreign markets for the disposal of the cake. An examination of some statistics shows 'that while the home market for cake and meal may be slow in developing,' there is no dearth of foreign demand. It remains only for the Indian manufacture to meet the competition in so far as possible with regard to quality.'

Mr. P. Roy Chaudhuri of Calcutta, an enthusiast in matters industrial, considers the subject of 'Oils and Oil-seeds' (pp. 247—68). He brings together a mass of useful statistics which are instructive as showing what a 'gigantic' industry may be built up out of the oil-seeds that are now exported (in 1906-7) to the extent of 19,539,873 cwts. in weight and Rs. 12,82,97,087 in value. At the same time so much as 1,468,724 gallons of oil, of the value of Rs. 26,33,724, is imported whereas probably not a gallon need be, and a considerable quantity can be exported, if the seeds of different

varieties are crushed in the country itself. There are, at present, over a hundred and fifty oil mills, large and small, in India, but there is room, as there is need, for many more.

‘ The export of oil-seeds, instead of only the oil expressed therefrom, impoverishes the country in three ways, namely,— first, by denying our labourers the employment that legitimately ought to belong to them, secondly, by constantly denuding the soil of its own product of valuable manurial constituents, and lastly, by depriving the cattle of a very rich and concentrated auxiliary food. We have to admit with regret, on the other hand, that the labourer is starving himself to death from want of work and wages, that manure represents one of the ryot’s main wants (the other being water) and that the solution of the problem of preservation of cattle from constant famine or scarcity is daily becoming more difficult.’ (P. 251.)

Mr. C. Gopal Menon of Madras has a paper on the Sugar Industry (pp. 366—72). No one who remembers that this home of sugar-cane and the sugar industry, imports nearly nine crores worth of foreign sugar in a year, need be told of the vast importance of the subject. While not denying the necessity of modernising methods and economising production, the Honourable Pandit Madan Mohan Malaviya, who moved a resolution on the subject at the Conference, spoke impressively (pp. 392—4) on the imperative need of keeping out foreign sugar by the expedient of heavy import duties. Mr. Gopal Menon attaches greater importance to methods and processes beginning with the cultivation of cane and ending with efficient methods of refining. And he urges the establishment of many small factories with a capital of 50 to 60 thousand rupees a-piece.

Mr. Kundunmal Manghirsingh of Hyderabad (Sind) describes ‘ the Arts and Industries of Sind ’ (pp. 355—65). He has to tell the same tale as those of other provinces.

‘ The province of Sind from which I come, is at the present moment very backward industrially. At one time we were far ahead of some other provinces and our province was famous for her indigenous products. But alas! owing to keen competition our industries are deteriorating. It is not only that our local manufactures are not exported outside the province but they are not patronised to any appreciable extent by the Sindhis themselves and the result is that some of them are dead and others are dying. Unless the new *Swadeshi* spirit spreads in Sind as it has done in several other parts of India, the fate of Sind industries is sealed. (P. 355.)

Mr. Kundunmal proceeds to explain the state of the important arts and industries of Sind, which are (1) glazed pottery known as Hala pottery; (2) lacquered work; (3) cloth printings; (4) silk and gold thread embroidery; (5) cloth manufactures—hand-loom; (6) carpet industry; (7) the sugar industry; (8) mats and reed work, and (9) the leather industry.

Similarly, Mr. V. Nagamiah, late Senior Dewan Peishcar of Travancore and author of the *Travancore State Manual*, who has an unsurpassed knowledge of that interesting South Indian State, gives us a deal of useful material on 'The Arts and Industries of Travancore' (pp. 269-89). It has been said of Travancore art-work, that its 'ivory carving is beyond doubt the best in all India.' Its 'jewellery is approached by none that I (Colonel H. P. Hawkes, President of the Madras Committee of the London Exhibition of 1886) have seen,' its 'steel work inlaid with gold is peculiarly interesting' and (judging from a photograph) its 'wood work must be very fine.' Among the several industries waiting for development is the extraction of plantain fibre.

'Plantain trees of different varieties are grown abundantly all over the State, and in fact almost every Malayali house has its own plantain trees behind it in the garden. The extraction of the fibre is only a simple process and as it does not affect the edible and valuable portion of the plantain tree there is a vast field open for a new and paying industry, our capitalists will do well to put in hand before foreign capital which steps in.' (Pp. 279-80.)

It is satisfactory to know that a 'Travancore Banking and Industrial Union' is being promoted by Mr. Nagamiah himself to take in hand not only this but other lucrative industries as well.

Rao Bahadur Madhavaram Harnarayan Vyas's paper on the 'Stone Industry in Cambay' (pp. 289-99) is deeply interesting. Cambay was an important trade centre in times gone by but its decline began with the rise of Surat as the latter itself has gone down as Bombay rose. In the present paper Mr. Madhavaram tells us what the Cambay Stones are, whence they come, through what processes they pass, into what articles they are manufactured, and where they go. 'The term Cambay Stone includes different varieties of stone manufactured into different articles of use and ornament, in Cambay, and not stones found in the Cambay soil, as the

term seems to suggest.' The articles prepared from the stones are of great variety.

' They are studs ; sleeve-links, flat, oblong, circular, semi-circular and oval ; various kinds of pieces for head-ornaments, ear-pendants, watch chains, and charms ; amulets of various designs ; bracelets, armlets, wristlets, seals, watch seals, necklaces, slabs large and small, for boxes ; rosaries of circular-cut or diamond-cut beads ; paper-weights, paper-cutters, steel-holders, ink-pots, knife-handles, cigarette-pipes, rulers, seals, flower-vases, cups and saucers, chess-men ; *Shiva-lingas*, with or without base ; and many others like cannon with carriage and trappings.' (P. 297.) -

The industry is most lucrative as ' it is calculated that raw stones of the value of Rs. 1,000 are capable of being manufactured into different articles of the total value of Rs. 1,00,000, *i.e.*, raw stone after being worked acquires one hundred times its original value, and this with the crude methods and primitive instruments now in use. The total value of raw stones, annually imported, is estimated at about three to five thousands and the total value of articles annually sold at about a lakh and a half to two lakhs.' Unfortunately, ' the spirit of cooperation is lacking, and the general ignorance prevailing among them (those engaged in the work) tells against the development of this industry, though it is full of promise.'

There remains to notice Mr. G. B. Phansalkar's paper on the ' Purchase of Government Stores ' (pp. 295—317). Mr. Phansalkar carries out his inquiry not only ' with a view to ascertain whether the Government is a friend or foe of the *Swadeshi* cause but also with a view to bring to the notice of the public at large the all-pervading customer in Government who, if inclined to buy *Swadeshi* goods, can buy much more than all of us put together or foster by direct encouragement the Indian arts and industries more than we all can do.' In this connection it cannot but be regretted that the labours of the Indian Stores Committee of 1906 have apparently proved infructuous, the Report of the Committee not even being published.

A word suffices to call attention to the subjects of great present importance to which the resolutions of the Conference (pp. 1—4) relate and to the several interesting speeches delivered thereon by men distinguished each in his way

(pp. 878—98). During the months that have followed the Conference action has been taken in respect of some of them, though but to a small extent ; but that story must be reserved for another place and occasion. It need only be said in conclusion that the Third Indian Industrial Conference transacted business of great public usefulness,



SUMMARY OF PROPOSALS.

A.—Work of the Conference.

1. The annual Industrial Exhibition may be taken up by the Conference with the help and cooperation of the Congress Reception Committee. (*Dewan Bahadur Ambalal Sakerlal Desai*, p. 88.)
2. The Conference may encourage the acquisition of specialised practical knowledge by the award of scholarships and prizes for proficiency in advertised subjects or for monographs on particular industries. (*Ibid*, p. 88.)
3. The Conference and smaller societies affiliated to it may establish agencies to keep the craftsmen informed of the style of goods which is now in demand and of the articles they should produce to suit the altered conditions of the trade. (*A. C. Chatterjee, Esq.*, p. 48.)
4. The Conference should organise competitions in hand-spinning and give prizes to successful candidates and award medals to inventors of an improved *Charkha*. (*Chunilal B. Desai Esq.*, p. 226.)

B.—Investigation.

5. Native Princes should institute economic surveys in their States with a view to help industrial advancement. (*Professor T. K. Gajjar*, p. 18.)

C.—Education.

6. Arrangements should be made for imparting instruction in mining and metallurgy either in the existing colleges, or in an Institute of Mining. (*Professor T. K. Gajjar*, p. 14.)
7. The great ruling princes of India may set apart a portion of their revenues to supply the great want of a Mining institute. (*Ibid*, p. 15.)

8. The people should take steps to provide increased facilities for the education of the people without waiting either for Government initiation or for large funds. (*Ibid*, pp. 18-9 and 21.)
9. Free education, and that of the right sort, must be placed within the reach of the agricultural population. (*Dewan Bahadur Ambalal Sakeral Desai*, p. 82.)
10. It is the duty of the State as well as of the rich to provide as extensively as possible, sound elementary education for the labouring classes. (*Ibid*, p. 36.)
11. Each province, in fact each district, ought to decide the lines of industry for which it will provide industrial and technical training for itself. Bengal for instance might select the industries of silk, jute, tea and indigo; the United Provinces, sugar, glass and woollen manufactures; Bombay, cotton and woollen, and so forth. The manufacture of leather ought to be taught in all the provincial schools. Similarly mechanical engineering electrical engineering, and industrial chemistry might be taught in all technical schools. There ought always to be a living connection between the technical school of a district or province and its actual or projected industries. (*Ibid*, pp. 36-7.)
12. A school or college providing a full commercial course is very much needed. Among the subjects that may be taught in such an institution may be included national and cosmopolitan political economy, private and public international law, commercial law, the commercial policy of the leading nations, one or two foreign languages, commercial and political geography, and statistics of trade and commerce, of agriculture, manufactures, and mining, and, lastly, currency. (*Ibid*, p. 37.)
13. Such attention must be given to the education of the workman as shall improve his working capacity. (*John Wallace, Esq.*, p. 48.)
14. The success of technical instruction in railway workshops suggests an extension of the system by which the foreman might receive a special course of instruction that

- would improve him as a foreman, or qualify him to be a teacher in a primary technical school. (*Ibid*, p. 53.)
15. A course for the primary training of children of the labouring classes outlined. (*Ibid*, pp. 54—6.)
 16. A new class of teachers is required, with special training, to meet the real needs of the working community, and no man should be allowed to undertake class work who cannot furnish proofs of his ability to teach. (*Ibid*, pp. 57—1.)
 17. Instead of making our children lawyers, tabsildars, deputy collectors or even collectors and commissioners we must make them engineers and captains of industry. (*Iswar Das Varshini, Esq.*, p. 320.)
 18. Not foreign technical scholarships but national technical institutions are urgently needed. (*Ibid*, p. 320.)
 19. The course that should be adopted at a national technological institute outlined. (*Ibid*, pp. 329-30.)
 20. The Indian Universities should institute degrees in Commerce and affiliate Commercial Colleges that agree to prepare candidates for University degrees in Commerce, (*K. Subramani Aiyar, Esq.*, pp. 61-2; *C. Gopal Menon, Esq.*, p. 81.)
 21. The organisation of the commercial schools and colleges now in existence in different parts of India should be improved as suggested. (*K. Subramni Aiyar, Esq.*, p. 88.)
 22. Vernacular commercial schools should be started for the benefit of those that discontinue their studies on passing through the vernacular or primary department. (*Ibid*, p. 69.)
 23. Arrangements ought to be made for the establishment of a central commercial institution at the head-quarters of each province. This institution ought to have distinct departments for imparting higher, secondary, and vernacular commercial education. Provision must also be made in this central institution for training secondary and vernacular commercial teachers and supplying such teachers to the smaller schools in the mofussil. (*Ibid*, p. 70.)

24. Weaving schools should be established, wherever possible, not only to teach the art of weaving, but also to read and write. They should be for the special benefit of the children of weavers, though any others willing to learn may be freely admitted. (*Khan Bahadur Bezouji Dadabhoy Mehta*, p. 187.)
25. Technical education should commence with manual training. There ought to be universal spread of manual training in the primary classes. (*R. C. Whilenuck, Esq.*, p. 876.)

D.—Capital and Cooperative Credit.

26. Indian publicists should earnestly endeavour to create a public opinion in favour of the diversion of indigenous capital from Government Securities and the Post Office Savings Bank into the channels of trade and industry. (*Devan Bahadur Ambalal Sakeral Desai*, pp. 24-5.)
27. Banking institutions should be established all over the land. Every town of importance should have a bank of its own. A net work of small banking establishments are wanted which will act as feeders to the bigger banks. (*Ibid*, p. 25.)
28. We should freely borrow money of foreigners for industrial purposes. (*Ibid*, p. 26.)
29. All companies formed outside India for mining should be compelled by Government to reserve a portion of their stock for Indian investors. (*Ibid*, p. 84.)
30. Industrial banks should be opened in different centres of business to give financial help to ensure the proper organisation of new industries. (*M. R. Bodas, Esq.*, pp. 85-6-7; *Muganbhai Chaturbhai Patel, Esq.*, p. 344.)
31. Government should pass legislation providing that, in respect of loans granted by industrial banks to artisans, their tools shall be exempt from attachment; that a fixed portion of the subscribed capital of the bank shall be exclusively applied to industrial concerns; and that the interest for such loans shall not exceed a specified rate. The scale of the registration fees for such banks

- should be very liberally revised. (*Maganlal Chaturbhai Patel, Esq.*, p. 846.)
32. A further expansion of cooperative credit associations ought to be encouraged for relieving agricultural indebtedness. (*Dewan Bahadur Ambatal Sakerial Desai*, p. 82 ; *W. V. Chandekar, Esq.*, p. 186.)
33. A very large extension of the cooperative movement is necessary among the industrial population, and there are greater possibilities in industrial cooperation than even in agricultural cooperation. (*A. C. Chatterjee, Esq.*, p. 43.)
34. Men should come forward to spread a knowledge of the principles of cooperative credit, to counsel and guide the people in carrying them out, and to organise societies. (*W. R. Gourlay, Esq.*, pp. 90 and 98 ; *C. S. Campbell, Esq.*, p. 107.)
35. Individual cooperative credit societies should be organised into unions, such as exist in Germany. (*W. R. Gourlay, Esq.*, p. 97.)
36. Every city might have its lending society and savings bank on cooperative principles. (*C. S. Campbell, Esq.*, p. 107.)
37. Either individual lenders or lending societies are wanted to supply capital to cooperative credit societies with interest low enough to fit in with the needs of the locality. (*Ibid.*, p. 108.)
38. Cooperative grain banks (*Dharma golas*) should be started in villages. (*Jogindranath Samaddar, Esq.*, p. 338.)

E.—Labour.

39. As individual employers find it practically impossible to do the recruiting themselves each in his own way, there must be a thorough combination and association among the employers for the purpose. (*Khan Bahadur Bezoni Dadabhoy Mchla*, p. 83.)
40. Each industrial centre should have a society of its own : it should have a practical and thorough organisation under which reliable recruiting agents might be appointed. (*Ibid.*, p. 83.)

41. Shorter hours of work, regular holidays, fairly good wages, well ventilated factories provided with sanitary accessories, pure drinking water, and healthy dwellings are necessary to keep the operatives in such a state of health and ease, that they may show interest, if not zeal, in their work and may not wish to leave it. Pensions, provident funds, leave rules, would make the workers highly contented. (*Ibid*, p. 84; *S. D. Saklatvala, Esq.*, pp. 850-2-8.)

F.—Taxation.

42. The excise duties on cloth should be abolished. (*Dewan Bahadur Ambalal Sakeral Desai*, p. 33.)
48. The present land policy of periodical settlements must be abolished, and a permanent land tax ought to be fixed. (*Ibid*, pp. 82-3.)

G.—Transport.

44. A sufficient supply of rolling stock on each line of railway ought to be insisted on. Smooth working arrangements for interchange of waggons between the various lines are also badly needed. The delays in the dispatch and handling of goods after arrival must give place to more business like methods. Freight charges on all internal manufactures should be reduced. "Indian manufactures need very cheap freights and rapid transport." (*Dewan Bahadur Ambalal Sakeral Desai*, pp. 80-1.)

H.—Agriculture.

45. As it will be a long time before the place of the agricultural industry becomes secondary as in England, it behoves the people to pay special attention to it. (*Dewan Bahadur Ambalal Sakeral Desai*, p. 32.)
46. The villager ought to be approached in his home and placed in possession of the knowledge which he lacks. For this village committees should be formed, and model farms ought to be established for every small group of villages. Trained Indian experts ought to be brought into direct contact with the peasant. And

- the intervention of the Revenue agency ought to be sedulously shunned. (*Ibid*, p. 32.)
47. The old system of having a good storage tank for every village deserves to be revived. (*Ibid*, p. 32.)
 48. The Bombay Millowners' Association should show a practical appreciation of the efforts of Government by offering prices to growers of long-stapled cotton in other parts of the country. (*Ibid*, p. 33.)
 49. Associations should be simultaneously organised, at Surat and Poona to commence with, whose principal business it shall be to focus diffused effort into annual exhibitions, made as attractive as possible, where the progress of agriculture can be brought home to the landowner and the ryot with a force and directness which all other means cannot equal. (*Stanly Reed, Esq.*, p. 122.)
 50. The Agricultural Land Improvement Loans Act may usefully be amended so as to provide greater facilities for obtaining loans for the purchase of engines and pumps for irrigation purposes. (*Alfred Challerton, Esq.*, p. 143.)
 51. Government may purchase the engines and pumps themselves, and sell them to ryots on easier terms than private firms can do. (*Ibid*, p. 144.)
 52. Where the water-supply is very abundant and where the ryots have no capital and the land is sub-divided into small plots, it might be practicable to establish local water-supply companies who would raise water and sell it to the ryots either for a share in the produce of the land, or for a fixed rate per unit of volume or a fixed charge per acre irrigated. If anything of this kind is to be brought about, it will probably be necessary for Government to pioneer the way, and to provide sufficient legal protection to induce capital to flow in this direction. (*Ibid*, p. 146.)
 53. A revival of the old Bani and Jadi varieties of cotton requires to be undertaken in Berar. (*W. V. Chand. kar Esq.*, p. (179.)

54. The opening of seed-depôts as in Oudh will be productive of much practical good. (*Ibid*, p. 181.)
55. Bulky manures such as cattle-dung as well as artificial manures such as saltpetre should be more largely used in cultivation. (*Ibid*, pp. 182-3.)
56. The English plough and its working should be exhibited among the ryots so that they may be able to test its effects. A plough may be supplied to each taluka and worked in the central villages for a week every year. (*Ibid*, p. 184.)

I.—Manufacturing Industries.

57. Exhibitions might be held in weaving schools from time to time for the benefit of grown-up weavers, even prizes being offered for new designs or excellent work. (*Khan Bahadur Bezonji Dadabhoy Mehta*, p. 187.)
58. Cooperative weavers' societies might be formed, which might buy raw materials and sell finished articles on behalf of members or others who may wish to benefit by its rules. The societies may also advance the necessary funds. (*Ibid*, pp. 187-8.)
59. The simplest and lightest implements should be the aim of every inventor of hand-looms. (*Ibid*, p. 189.)
60. An improvement in the method of winding, warping and sizing is wanted. (*Ibid*, p. 189.)
61. For various descriptions of cloth, it would not be possible to obtain always the right sort of sized warp from the mills. In such a case the cooperative society may have a small factory, which is a necessity in such a matter for winding, warping and sizing only of yarns of English or other makes, and supply ready-made warp beams to their members. (*Ibid*, p. 190.)
62. Small power-loom factories, equipped with thirty or forty Raphael looms, driven by a small oil engine costing not more than Rs. 4 or 5 a day to run, might be worked with great success in this country and would afford an admirable training ground for the development of indigenous manufacturing genius. (*Alfred Chatterton, Esq.*, p. 201.)

63. If the fly-shuttle hand-loom is to be largely used in making the finer classes of native goods, the direction in which improvement should be sought for is not so much in increasing the rate of picking which is already quite fast enough but in improving the details of the shedding and the working of the sley so that the operation of weaving subjects the comparatively delicate threads to the minimum amount of strain. (*Ibid*, p. 203.)
64. Any improved hand-loom must be capable of being run all day after day, *with ease*, by an ordinary man. To put it beyond the probability of being soon set aside in competition with the power-loom, it should have a speed approximating that of the latter. It must be adaptable to all ordinary widths and fineness of Indian hand-made cloth. (*D. C. Churchill, Esq.*, p. 214.)
65. The hand-loom has now been revived in an improved form, and the *Charkha* ought to be reinstated in the same manner if possible. A proper *Charkha* ought to be invented, in order to stop the importation of foreign machinery. (*Chunilal B. Desai, Esq.*, p. 225.)
66. A number of small sugar factories with a capital of Rs. 50,000 to Rs. 60,000 should be started. (*C. Gopal Menon, Esq.*, p. 371.)
67. The object of those who take an interest in the sugar industry should be to study the cultivation of sugar-cane, and to find out the standard varieties capable of producing a larger yield of sugar-cane per acre; experiments should be made in testing the relative values of manures, in the chemical selection of sugar-cane, in the treatment of cane-crops with germicides and such other directions as will conduce to the increased production of this article. (*Ibid*, p p. 371-2.)
68. To make the refinement of molasses a paying business, the manufacture of rum as a bye-product may be permitted by the State. (*Dewan Bahadur Ambalal Sakarlal Desai*, p. 34.)
69. In order to develop the cotton-seed oil industry the main thing at the outset is to provide scientific apparatus for both crushing and refining the oil, under.

expert superintendence. The most advantageous process to adopt in the beginning will be the English, that is to say, crushing the seed without delinting or decortivating. At the same time, delinting and decortivating machinery should be installed, inasmuch as the competition of American decortivated cakes in the foreign markets may demand the adoption of the American method of delinting and decortivating in India. (*R O. Whilenack, Esq., p. 247.*)

70. If we started oil mills a group of chemical industries will come into existence and utilise the bye-products. (*Professor T. K. Gajjar, p. 13.*)
71. The people of Kathiawar and Cutch should go in for chemical industries—the manufacture of soda and sulphuric acid—for which the valuable deposits of salt and iron pyrites hold forth bright prospects. (*Ibid, p. 15.*)
72. Every Province should have a leather factory of its own. (*Dewan Bahadur Ambalal Sakerlal Desai, p. 35.*)
73. Hand-loom weaving, knitting, lace-making and such other home industries should be introduced into rural areas so that the agricultural population may have some employment throughout the year. (*Ibid, pp. 35-6.*)

J.—Miscellaneous.

74. The feasibility of cheap production and distribution throughout India of electric energy owned and controlled by the public should be considered. (*Professor T. K. Gajjar, p. 16.*)
75. Instead of blindly following in the footsteps of Western manufacturers, let Indians adopt their latest methods of work and introduce the systems devised to nullify the evil and disastrous consequences of those prevalent now. (*Ibid, p. 16.*)
76. Economic and industrial museums, planned on the models of Europe and America, should be established in every important industrial and commercial centre in India. (*Ibid, p. 17.*)

77. Commercial bureaus must follow as a corollary to museums. (*Ibid*, p. 17.)
 78. The reports prepared at these institutions should not only be published in scientific and technical English, but also in the vernaculars and in a form devised to attract the attention of our people and to interest them in their contents, thereby inducing them to embark on the introduction or creation of new and profitable industries. (*Ibid*, p. 17.)
 79. New guilds of tradesmen and handicraftsmen should be organised to meet the requirements of the times. (*Ibid*, p. 17.)
 80. The currency of British India may be adopted in Gwalior, Hyderabad, and the Rajputana States as has been done in Baroda as a common currency for the whole country will be helpful in the development of internal trade. (*Deewan Bahadur Ambalal Sakarlal Desai*, p. 31.)
 81. The introduction of uniform weights and measures throughout the country in the place of the present confusing labyrinth of the same. (*Ibid*, p. 31.)
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APPENDIX I

MEMORIAL ON INDUSTRIAL SURVEY.

From

THE HON'BLE MR. VITHALDAS D. THACKERSEY,
President, Second Indian Industrial Conference,

and

BAO. BAHADUR B. N. MUDHOLKAR,
General Secretary, Indian Industrial Conference.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF COMMERCE AND INDUSTRY,
CALCUTTA

AMRAOTI, dated December, 1907.

SIR,

We are directed by the Second Indian Industrial Conference, which was held at Calcutta on the 29th and 31st of December 1906, to submit a memorial to Government praying for the carrying out of an Industrial Survey in the different Provinces of India, in view of the importance of such a survey for securing a suitable development of indigenous industries and in regard of the recommendation made by the Committee on Industrial Education to that effect. The Governments of the United Provinces and the Central Provinces have, since the passing of that resolution, deputed special officers to make such a survey within their respective territories. But since the other Local Governments have not yet been pleased to take similar action and since it appears that in some influential quarters there is still a doubt felt as to the utility of such a survey, we beg to submit the following observations to Government in the hope that the facts submitted by us may incline those Local Governments which have not yet taken action to reconsider their views and to adopt the course which has been recommended by high authority.

2. The idea of an industrial survey is not a new one. The suggestion was first made by Dr. Forbes Watson so far back as 1872. He was of opinion that "each kind of produce must be accurately described, the different varieties distinguished, the places and methods of production ascertained, the industrial and commercial value investigated, and the question of supply and utilization discussed. And when] all this has

been done, provision must be made for rendering such knowledge easily accessible and available for immediate reference not only by Government authorities, but by agriculturists, manufacturers, and men of business generally." The work, according to him, could not be undertaken by any private body but by the Government. "Such a knowledge of the country as is here demanded for India is in Europe the accumulated result of the efforts of many successive generations, the work of legions of pioneers of enterprise who pushing on from experiment to experiment and from failure to failure have revealed to the country by their final success the secret of its resources. The whole of the advanced portion of Europe is in consequence of the development of commerce covered by a net work of private agency, the express purpose of which is to indicate to the consumer the best sources of supply and to offer to the producer the means of realising his products. A similar organization exists, of course, in India also, but only in a rudimentary state and restricted to a few principal towns and to a few of the principal staples, although no doubt it would grow in time by its own efforts. To shorten, however, in India the period of preliminary trials and unavoidable failures, and to hasten the advancement of the country appears to be in the power of the Government which although unable to take the place of private enterprise may promote enquiries which will facilitate the task. Public, as distinguished from private action assumes, therefore, in India much larger proportions than it does here, and this has always been admitted to be the policy of the Government of India. Much has already been accomplished in respect of opening the country by means of information. The trigonometrical, topographical, revenue and geological surveys have been undertaken on a scale of perhaps unprecedented magnitude. It remains to complete the survey which shall take stock of all the various productions of the country, agricultural, forestal, pastoral, and mineral, of manufactures, of the localities of production, of the varieties, qualities and values of the produce, its supply and mode of distribution and consumption."

No action was taken on the suggestion of Dr. Forbes Watson and Sir Louis Mallet, who was at the time Permanent Under Secretary for India, was led to remark: "If there is any one thing which is wanting in any investigation of Indian problems, it is an approach to trustworthy and generally accepted facts. Now I am compelled to say that since I have been connected with the India Office I have found a strong repugnance to the adoption of any adequate measures for the collection of a comprehensive and well digested set of facts. The only occasion on which I had the misfortune of en-

couraging the vehement opposition of some members of the Council was in my advocacy of Dr. Forbes Watson's proposals for an Industrial Survey of India."

3. Sixteen years later the Government of India themselves moved in the matter. In a resolution on Industrial Education and Industrial Survey of India, dated the 18th of June 1888, they said: "But as it is desirable that the step best calculated to promote technical education should form the subject of continuous enquiry and discussion, the Governor-General in Council suggests that Local Governments and administrations should on a convenient, but early opportunity take action in two ways. Impressed with the existing want of information at hand as to the extent, character, and circumstances of important local industries in every province of India, His Excellency in Council would, in the first place, suggest that in each province an industrial survey should be completed." And on the 2nd November of the same year, they addressed all Local Governments "to enquire what action has been taken towards carrying out the suggestion for the completion of an industrial survey." A little later the Government of India addressing the Government of Bengal corrected a misapprehension in regard to the scope of the survey. "In your letter under acknowledgment" wrote the Home Secretary, Mr. A. P. (now the Right Hon. Sir Antony) Mac Donnell, under date the 18th July 1889, "the Government of Bengal appears to propose to limit the enquiry into the industries of Bengal to those industries in which European mechanics and overseers are now employed. The Governor-General in Council thinks it desirable to explain that the Government of India did not contemplate that the industrial survey should be limited in this manner. If the enquiry to be conducted in Bengal is thus restricted, effect will not be given to the intentions of the Government of India, which were to ascertain by local investigation whether any native industries are of sufficient importance and vitality and sufficiently centralised as to be likely to benefit by the establishment of schools of instruction in the theory and better practice of such industries."

4. But no complete industrial survey such as was contemplated by the Government of India was carried out in any province with the exception perhaps, of Lower Burma, as is shown below.

In Bengal an enquiry was in progress as to the reforms possible in the Sibpur College at the time the Government of India's Resolution was issued. The Lieutenant-Governor did not think that the scheme recommended by the Committee appointed to conduct that enquiry was complete,

and desired to make further investigation. "And as such an enquiry would partake of the character of the technical survey proposed by the Government of India," wrote the Secretary to the Government of Bengal, "I am to suggest that the two subjects be dealt with together, an officer being placed on special duty to ascertain what industries in this province offer prospect of remunerative employment to young men educated in the country, and whether students can be properly trained for such employment on the system proposed by the Committee." The Government of Bengal added, "It is not proposed to make any more minute survey, and for the object aimed at a deputation lasting about four months would probably suffice." That the enquiry conducted by Mr. Collin, the officer deputed for the purpose, was far from being comprehensive, becomes evident from the passages quoted below from his report :—

"(a) I have omitted the subject of agriculture and the manufacture of raw products. It would be presumptuous for me in the short period of my deputation to take up this subject. The manufacture of sugar affords a wide field for inquiries, but at this season of the year it would be useless to undertake them. This industry (the cultivation of the silkworm and the manufacture of raw silk), therefore, may be passed over. An industry such as the manufacture of indigo does not fall within the scope of my inquiries. The manufacture of shellac is such a simple process, and has been carried on by both Europeans and Natives for so long that I have omitted it.

"(b) Veterinary science is entirely neglected in Bengal, but a scheme for the establishment of a college has been laid before Government by the Director of the Department of Land Records, and it is not necessary to say anything on the subject. Butter, ghee, cheese-making are industries which also fall within the scope of that Department."

Unduly restricted thus as Mr. Collin's enquiry was, even the industries which were investigated were, we venture to think, superficially treated; and the information contained in the Report is not, in many cases sufficient or accurate enough for practical action being based upon it.

In Bombay nothing whatever was done. And when a few years later the Industrial Conference and the Industrial Association of Western India represented to the Local Government the need of an industrial survey, the reply was given that it was not necessary.

In reply to the Government of India the Government of Madras stated that no industrial survey had been undertaken in that Presidency but that Mr. E. B. Havell, Superintendent

of the School of Arts, Madras, had submitted reports on the condition of *Industrial Art* in fifteen districts of the Presidency, as the results of tours undertaken by him under their orders. "The general result of those reports is," the Government of Madras wrote, "to show that such a survey as this Government understand to be suggested in paragraph 25 of the Resolution of the Government of India above referred to would be infructuous. Should the Government of India, however, consider further action desirable, His Excellency the Governor in Council would be glad to be informed somewhat more precisely what is the nature of the industrial survey contemplated and by what agency it is proposed to be made as it would be impossible for this Government at present to undertake any measures involving additional expenditure." The Government of India wrote in reply "to say that the enquiry which is being made by Mr. Havell into the arts and industries of the Madras Presidency is such an enquiry as was contemplated by the Government of India with the exception that Mr. Havell looks on industries from a more strictly artistic point of view than the Government of India had contemplated and omits to notice the large manufacturing operations which in the Madras Presidency as in other provinces are doubtless carried on in connection with railways, mills or factories. It might be possible to enlarge the scope of Mr. Havell's enquiries in this direction. The Government of India understands that Mr. Havell will compile an account of the industries and arts of Madras after the completion of this inquiry, and that His Excellency the Governor in Council having supplemented Mr. Havell's inquiry in the direction now indicated, so far as may be necessary, will then be in a position to decide * * *." As a matter of fact, neither did Mr. Havell complete his enquiry nor did the Government of Madras supplement it in the direction indicated by the Government of India.

The Government of the United Provinces decided in the year 1890 that no industrial survey of those provinces was needed.

The reply of the Government of the Punjab to the Government of India was as follows:—"Notes on the *Arts Industries* of the Punjab prepared by Mr. Kipling and expanded from those given in the *Gazetteers* have been published in the *Indian Art Journal*, and the summary that accompanied that letter was drawn up for the Revenue and Agricultural Department. Monographs on the principal manufactures are also issued periodically from the Financial Commissioner's Office and published for information. With regard to the small degree to which existing industries are centralised, the simple nature of the handicrafts, and the small capital employed, it does not appear that anything

more than this is required at present in the Punjab, and the preparation of a more elaborate survey with statistics would demand, for adequate treatment, a special agency. Nor would such a survey in the Lieutenant-Governor's opinion bring us, in any material degree, nearer to the desired object in this province." It is clear that the Government of India did not regard Mr. Kipling's note on Art Industries as an adequate substitute for an industrial survey, as they wrote in their Resolution of 7th September 1894, that "an industrial survey was not carried out, as existing industries are little developed."

In Lower Burma we understand that an industrial survey was carried out.

In the Central Provinces the enquiry was entrusted to the Inspector-General of Education and the Commissioner of Settlements and Agriculture. Their joint Report, however, it must be frankly stated, was not of a character sufficiently helpful in the manner desired.

In conformity with the instructions of the Commissioner of Berar, "to institute an enquiry each for his own district, and to report upon the extent, character and circumstances of important local industries," the Deputy Commissioners of Amraoti, Akola, Wun, Basim and Buldana sent replies of a few lines each which can hardly be seriously regarded as partaking of the nature of an industrial survey.

The Chief Commissioner and the Director of Land Records and Agriculture of Assam concurred in holding an industrial survey of that province to be unnecessary as "we know already what arts and industries exist and the survey, if undertaken, would teach us little that is new."

The Chief Commissioner of Coorg similarly reported that "nothing would be gained by a further enquiry" after the "very careful investigation" which the industries of Coorg underwent at the hands of "the Local Committee which was appointed to collect exhibits from this province for the Colonial and Indian Exhibition in London in 1886, and over which I presided."

5. Matters rested here till 1902, when the Committee on Industrial Education, composed of Lieutenant-Colonel J. Clibborn, Mr. C. A. Radice, I. C. S., Mr. R. E. Enthoven, I. C. S., and the Rev. F. Westcott, again pointed out the necessity of an industrial survey in paragraph 58 of their Report which is as follows:—"In the absence of a complete survey of Industries, we have found it impossible to make detailed recommendations as to particular industries and the methods of instruction that may with advantage be applied to each. The making of such a survey must necessarily precede the

development of any scheme of Industrial Instruction. A Note on Indian Industries which will, it is hoped, be found useful to officers making a survey will be found at the end of this report. It shows in a striking manner the great importance of some industries which have hitherto received scant attention."

The Note referred to above was prepared by Mr. Radice, and some passages may usefully be quoted from it as showing the need for an industrial survey.

" I. The census taken in 1891 showed that in India more than 30 million persons depended for a living on occupations which may be classed as industrial. This figure indicates the magnitude of the enquiry which must necessarily precede any systematic attempt to improve the skill of the industrial workers."

" II. In accordance with the orders of the Government of India, the Local Governments have caused surveys to be made of various industries, principally those which are related to the textiles, earthen, China and glassware, copper and brass, the precious metals, ivory. The writers of the monographs, which were prepared in each province, dealt with the history of the industry, the castes engaged therein, the centres where it thrives most, the methods of work and implements adopted, the present state and future prospects of the industry, and the wages earned and profits made by the worker, but no attempt was made to compare the relative influence of each industry on the general wealth of the country. The choice of the textile industries is fully justified by the vast number of workers it supports, but the choice of the ivory industry, which supports less than two thousand persons, can only find justification in the fact that it develops the artistic talent. Other industries such as those which deal with fish, oil, iron, leather, butter, tobacco, sugar which afford a living to very large numbers of workes have not yet been examined.

" III. Turning from the census tables of 1891 to the trade statistics for 1901, the large export of raw material invites attention to those industries which would provide an occupation in working up such materials for foreign markets. The bare statement, for instance, that India exports $5\frac{1}{2}$ crores worth of untanned hides and tanning materials, suggests the importance of giving instruction in processes for tanning hides. Tanning is an industry which thrives on the misfortunes of the agriculturists and which calls for workers to deal with the hides of the dying cattle at a time when the agriculturist finds it most difficult to earn a living.

" Due enquiry would probably suggest many industrial openings in respect of other raw materials which are being

exported in vast quantities. The following may be mentioned—jute (10 crores of rupees) ; short staple cotton (10½ crores) ; forest lac for varnishes and printer's ink (1 crore) ; coarse wool (126 lakhs).

“IV. The tables for imports are also instructive, but a careful industrial survey may show that much can be done to foster manufactures which will compete successfully with the factories of Europe.”

Mr. Radice says of *Drugs* that “examination may indicate a way of greatly increasing exports, and of substituting export of extracts and preparations for that of the raw product.” Of *Umbrellas* he says : “Investigation may discover an Indian cane suitable for umbrella handles ; it may be possible to weave the cloth for cotton umbrellas in India. Even the making up of umbrellas from the imported parts would employ many hands.” And of iron : “The smelting of the iron ores of India is manifestly a matter of the greatest importance. The question calls for carefully organised investigation. No action, however, was taken on the recommendation of the Committee on Industrial Education.

6. The next occasion on which official attention was bestowed on the subject was, when the Hon'ble Mr. J. P. (now Sir John) Hewett, then Member for Commerce and Industry, spoke of the importance of an industrial survey, with the concurrence as he has since said, of the Government of India, in his speech in the Supreme Legislative Council on the 28th March 1906. He said:—“Much information bearing on this subject (of indigenous industries) has been collected in Census Reports and in Monographs which have been prepared on the different industries ; but the material is scattered, there is no co-ordination of results, the subject is in general treated from the artistic point of view rather than from a business standpoint, and the information is in many cases neither sufficiently detailed nor sufficiently exact to be of much practical use. We hope that other Local Governments* will now make a survey of the state of indigenous industries within the areas of their jurisdiction, with a view to ascertaining the exact state of the various industries and handicrafts, the amount of the earnings and the present condition of the artisans respectively employed in them, the precise manner in which the different industries have been affected

*Mr. Hewett spoke under the impression that the Government of Madras had carried out an industrial survey. This was not so, as what that Government did was to place Mr. Alfred Chatterton on special duty to work up particular industries (for instance, aluminium, handloom weaving, chrome lanning) and not to make an investigation into all industries. A complete industrial survey of the Madras Presidency has yet to be carried out.—V.D.T. & R.N.M.

by competition with imported articles, the practicability of creating new markets, or of developing markets which already exist, and the possibility of giving a new lease of life to these industries either by means of special instruction, or by the improvement of the appliances in use. It is not too much to hope that something tangible may be done to improve their efficiency and increase their scope by reorganising them on modern lines."

7. The Right Hon. the Secretary of State, too, made a sympathetic declaration on the subject towards the end of last year when his attention was called to it by a question in the House of Commons by Mr. H. Nuttall, M.P., President of the Manchester Chamber of Commerce. We quote the question and answer:—"Mr. Nuttall asked the Secretary of State for India whether his attention was drawn to the Report of the Indian Industrial Conference held at Benares last Christmas, and to the plea for an industrial survey on the lines pressed on the Government by Dr. Forbes Watson in 1872, and supported by Sir Louis Mallet; and whether, looking to the fact that the need for such a survey for the industrial development of India was recognised by the Government in 1888, by the Committee on Industrial Education, and by the Member for Commerce and Industry in the Viceregal Council last March, he would cause early steps to be taken so that accurate information as to industrial products and means of production might be made readily available to agriculturists, manufacturers, and men of business generally.

"Mr. Morley: I have seen the paper read before the Indian Industrial Conference, in which the need for an Industrial survey of India was urged. As the Hon. member is aware, the proposal has received the general approval of the Government of India, and the Local Governments have been urged to make a survey of the state of indigenous industries within their territories. I trust that this may result in the collection of much valuable information."

8. The above declarations, however, are, it would seem, not regarded by some Provincial Governments as authoritative and binding and they do not seem to consider that they are under an obligation to give effect to the directions laid down. Excepting the Government of the United Provinces and the Administration of the Central Provinces, the other Governments and Administrations have not yet taken steps to have industrial surveys made of their respective provinces. The Government of Bengal were interpellated on the matter in August of last year by the Hon. Syed (now Mr. Justice) Shurfuddin at a meeting of the Provincial Legislative Council, and they said in reply that they did not consider an industrial

survey necessary. They seem to have since changed their opinion, judging from the passage quoted below from the speech of the Hon'ble Mr. Gait at the meeting of the Council held on the 6th of April 1907:—"The first step would possibly be to place some one on special duty to make a general study of the industrial position and possibilities, to collect information regarding the various industries, and to endeavour to ascertain the causes of their rise or decline, and so pave the way for the establishment of the requisite technical schools." While it is gratifying that the Government of Bengal have changed their former opinion that no industrial survey was necessary, it is to be regretted that effect has not yet been given to what Mr. Gait acknowledged was the proper course to follow.

In Eastern Bengal and Assam similarly, nothing has been done. Speaking at a meeting of the Legislative Council of Eastern Bengal and Assam held on the 15th April, His Honour the Lieutenant-Governor, the Hon'ble Mr. (now Sir Lancelot) Hare said:—"In regard to industrial education I can assure the Hon'ble members that there is no subject in which I take greater interest, but let me also say there is none which to my mind bristles with greater difficulties. I should very much like to have in this Government a Department of Commerce and Industry, and I hope that I may yet see such a department established. We have, from time to time, reviewed our industries, and have considered a great variety of opinions as to measures we might take to improve and develop them, but I feel that if we are to deal adequately with this subject we require a whole-time officer at the head of a department possessing special qualifications and experience to obtain and maintain full information as to existing industries and to carefully watch and promote all new efforts and to assist all promising attempts to start new industries with information and advice. As industries show any prospect of development, and as skilled persons are required to carry on these industries, Government might open out suitable training schools. We cannot all be omniscient, and this is a very special branch of knowledge in which the expert is very much in demand. Without such a department as I suggest, I consider that we are likely to be very much in the position of the blind leading the blind. We are likely also, without a thorough and comprehensive review of our position and without a full grasp and understanding of our advantages and disadvantages, to waste our energies over a large field of effort, and so to accomplish less than if we confined ourselves to a few suitable selected industries." We would respectfully submit that the difficulties in the way of making an exhaustive and accurate industrial survey are not at all so

great as His Honour regards them, and we regret that no action has yet been taken in the matter although the importance of an industrial survey is recognised by the Government of Eastern Bengal and Assam.

The Government of Bombay were sought to be moved in the matter by means of an interpellation in the Legislative Council of that Presidency by the Hon'ble Sir Pheroze Shah Mehta. The reply then given was not of a very satisfactory nature. But we understand that since then the subject has been engaging their attention. No action, however, has yet been taken.

The only provinces in which action has been taken or has been decided to be taken are the United Provinces and the Central Provinces.

9. We have endeavoured to give in what has been submitted above, the history of this question as we believe it would serve to remove the misconceptions which prevail in certain quarters. We think it desirable to emphasise the fact that the idea originated with persons whose knowledge and authority is admitted by all and that the Government of India themselves have on more occasions than one declared their acceptance of the view advanced and policy recommended, because we notice with regret that there is still a disposition among some of those on whom depends the institution of an industrial survey to question its necessity, utility or practicability. The need for such a survey is all the greater now on account of the awakening to the absolute necessity of industrial development which is observable in every part of the country. Enthusiasm without knowledge cannot, however, avail much; and at present there is wide-spread ignorance of even the natural resources of the country. And even among the educated and otherwise well informed classes and persons interested in commerce and trade, there is not sufficient knowledge of its industrial capabilities immediate and potential. No real and solid progress is possible unless and until this ignorance is removed and this knowledge supplied. And this is what an industrial survey aims at. For such a survey to yield the maximum benefit it is capable of, it must be complete and thorough; it must extend all over the country, and it "must be so conducted as to regard nothing as beneath notice." It is obvious that the task is of considerable magnitude and beyond the means of any non-official agency that can be employed for the purpose.

In compliance with a resolution passed at the First Indian Industrial Conference held at Benares in December 1905, the General Secretary of the Conference tried to collect information which might supply the place of a rough industrial

survey. A set of questions were framed the answers to which would, it was hoped, give information sufficient to serve as a basis for an accurate and exhaustive enquiry. These questions were sent to over a thousand persons in different parts of the country but the response was most meagre and unsatisfactory—several persons confessing that they had neither the means nor the agency to collect the necessary facts and that the demands of their profession or business left them no time to make the necessary investigation personally. The difficulty is that in thousands of cases private enterprise, unaided by the State, could not get reliable information, no matter what it expended with the object of doing so. It may be left to private individuals to go into the details of industrial projects and to satisfy themselves that the elements of profit are present in them. But as things stand in India, it is the Government which should take upon themselves the task of collecting the data that will enable the manufacturers to direct their activities to those regions in which there is a *prima facie* case for experiment and trial. This sort of assistance was rendered in the case of the Sugar industry by the publication of several articles in the *Indian Trade Journal* last year. What we respectfully urge the Government to do is to institute detailed enquiries in the different provinces, districts and sub-districts on some such line as that adopted in the questions drawn up by the Conference Office. We beg to enclose herewith a few copies of these questions. We believe that working upon the lines indicated, all the facts necessary to be found out about the past history, the present condition and future possibilities of Indian industries can be sufficiently investigated and accumulated.

10. In making an industrial survey we would respectfully suggest that the procedure followed in the Kolhapur State may usefully be adopted in British Provinces. The industrial survey of the State was sanctioned by the Council of Administration which then ruled over the Kolhapur Territory. The scheme was as follows :—

- (1) "To collect information through the village and district agency, about the existing industries in the territory ;
- (2) To visit the principal industrial centres to check the information collected, and to make local enquiries on the spot about the state of the existing industries and the means of improving and developing them ;
- (3) To visit the localities of mineral resources pointed out by the Geological Survey and to see whether any new industries can be started ;

- (4) To visit the principal parts of the forests and to find out if any of the products can be developed and increased so as to turn them to industrial account and to start any forest industries ;
- (5) To visit those parts where no industries exist and to devise means, if possible, to employ some portion of the population there ; and
- (6) Lastly, to condense the information, to describe the state of the existing industries, to suggest means of improving and developing those that already exist, and the possibility of starting new ones. "

Forms and returns with explanatory notes so simple as to be easily intelligible to them, were printed and distributed broadcast to all the villages in the territory through the Mamlatdars and other officers, and the occasion was also utilised to collect information about the indebtedness of the agricultural and industrial classes, by drawing up a set of questions, and distributing them with the other returns. Subsequently, instructions were also issued for making-up the totals for all the villages in a Taluka in a suitable form. With a view to check the information thus supplied by the Kulkarnees, blank forms of the returns were also forwarded through the Deputy Educational Inspector to the schoolmasters. Some of these made independent inquiries and supplied useful information. An officer of the State was placed on special duty to visit the important centres of industrial and commercial activity for checking and supplementing the information collected as aforesaid. He visited large trade centres as well as large weekly markets on market days in order to estimate the consumption of local and foreign industrial products, and to see which of them could be locally manufactured on a larger scale. At important markets arrangements were made for enumerating the number of people that visited the market from outside and for making a rough valuation of the industrial products, cattle and sheep sold. He likewise visited important shops wherever they existed and saw what kind of industrial products were sold, and took care to ascertain the quantities of manufactures that were imported from the neighbouring manufacturing towns on the borders of the territory, and were capable of being locally manufactured. At every industrial centre, the officer visited every industrial house, saw the plant used, the articles turned out, and estimated the cost of the plant and the prices of the raw material required, and of the articles prepared. He marked out such of the workmen as struck him to be possessed of skill and able to do superior work, inquired what difficulties lay in their way and whether they could introduce improvements if assisted. He also tried to point out if a particular

locality possessed special advantages for a particular trade. The result was a report full of instructive information and suggestions.

11. In conclusion we beg to respectfully express the hope that the Government of India will be pleased to favourably consider the suggestions of the Indian Industrial Conference and to again urge upon the Local Governments and Administrations the necessity and importance of instituting and carrying out at an early date industrial surveys within their respective provinces in as thorough, full and accurate a manner as was done in the Kolhapur state.

We have the honour to be,

Sir,

Your most obedient Servants,

VITHALDAS DAMODHER THACKERSEY,

President, Second Indian Industrial Conference.

B. N. MUDHOLKAR,

General Secretary, Indian Industrial Conference.

APPENDIX II.

TECHNICAL EDUCATION IN THE CENTRAL PROVINCES AND BEBAR.

The following correspondence was published in the *Central Provinces Gazette* of the 9th November 1907 :—

Dated Matheran, the 21st May 1907.

FROM

Rao Bahadur R. N. MUDHOLKAR, B.A., LL. B.,
*President, Second Central Provinces and Berar Provincial
Industrial Conference.*

TO

THE SECRETARY TO THE HON'BLE THE CHIEF COMMISSIONER,
Central Provinces, Education and Medical Department.

In continuation of my letter dated the 28rd April last and with reference to the Central Provinces Secretariat letter, No. 468—VI.9, dated the 17th idem last, and Mr. Slocock's letter, No. C-884, dated the 3rd June 1906, I have the honour to submit herewith for being laid before the Hon'ble the Chief Commissioner the detailed suggestions which had to be made on the topics included in the first resolution of the Central Provinces and Berar Provincial Industrial Conference held at Jubbulpore on 15th April 1906. I have again to express my regret at the long delay which has taken place in sending these suggestions.

*Detailed suggestions for providing Technical Education in the
Central Provinces and Berar on the lines laid down in
Resolution I passed at the Second Central Provinces
and Berar Provincial Industrial Conference held
at Jubbulpore on the 15th of April 1906.*

Taking into consideration the means and capabilities of the combined territory of the Central Provinces and Berar and the financial resources available, what can be aimed at for the present are :—

- I. Provision of secondary and higher instruction in
(a) mechanical engineering ; (b) cotton and silk

manufacture ; (c) mining ; (d) hardware, (e) industrial chemistry, and (f) agriculture.

- II. Crafts schools for (a) carpentry—ordinary and artistic ; (b) smithy ; (c) pottery and chinaware ; (d) brass and bell metal manufacture, and (e) hand-loom weaving.
- III. An institution for experiment and instruction in regard to sericulture as recommended by the Committee on Industrial Education ; and provision for carrying out, though on a smaller scale than that proposed in the Report, their suggestions about testing the comparative efficacy and commercial value of improved methods and appliances in (a) textiles and (b) lac, tans and dyes.
- IV. Manual training in High Schools and Anglo-Vernacular Schools ; and drawing in all schools teaching above the fourth Vernacular Standard.

I. For higher instruction there is provision made in the existing schemes for agriculture in the Victoria Technical Institute at Nagpur and for mechanical engineering at the Victoria Technical Institute at Amraoti. Provision also deserves to be made for instruction in the preparation of textile fabrics, mining, industrial chemistry and preparation of hardware. A class for secondary instruction in mining might be joined to the Nagpur Institute and teaching of industrial chemistry, especially with reference to oils, paints and varnishes and to dyeing and tanning, should be arranged to be given there. In the Amraoti Institute instruction in spinning and weaving and in hardware can be arranged to be given.

The cost for providing the educational facilities advocated above in regard to manufacture of textile fabrics and mining will depend upon the scale on which the establishments are organised. Considering the resources of the province the provision should be of the same kind as that settled for instruction in mechanical engineering at the Amraoti Institute. The capital expenditure need not exceed Rs. 15,000 and the recurring expenditure Rs. 6,000 a year for the present. The amounts are calculated so low on the assumption that spinning and weaving classes will under the scheme be joined to the Amraoti Institute, where there will be ready provision afforded of suitable lecturing rooms, and the motive power provided for driving the mechanical workshop can be made to subserve the purposes of the spinning and weaving shed. A teacher like Mr. Fernandez in the Bombay Institute, who for years lectured to the two

lower classes, but who after Mr. Monie's death has been taking the third year class also, can, it is believed, be got at a salary ranging from Rs. 200 to 300 a month. With three jobbers on Rs. 50, 40 and 30 respectively, the staff will be found adequate for our present purposes.

Such an institution cannot be called a first class one, but that is all that we can aim at for years to come. It will be something like a second grade college on a small scale.

For industrial chemistry the facilities already existing and contemplated in the Victoria Institute at Nagpur should be fully utilised. An Assistant Professor, who should be a B.A. and B. Sc. or M.A. in Science and has further received some practical training, should be supplied. The salary will have to be from Rs. 200 to Rs. 350.

In regard to mining there should be two courses—the Upper course and the Lower course. The aim in the Upper course should be to prepare students for the Mining Engineering diploma of the Sibpur Engineering College. The curriculum should be arranged in consultation with the authorities of that College. The course should extend over a year and a half or two. The terms put in in the Central Provinces Provincial Institute should be recognised by that College provided the examination tests are fulfilled; and those who pass should have the privilege of appearing for the Diploma Examination after they put in in the Sibpur College the rest of the period of attendance and instruction prescribed for that examination.

The Lower course should aim at turning out foremen and chargemen. The instruction should be in vernacular.

The instruction in hardware can conveniently go with that in mechanical engineering.

The branches mentioned above have been selected for the reason that the existing conditions of this territory afford special facilities and, therefore make special demands for their development. The resolution of the Conference makes no reference to either hardware or industrial chemistry. These branches are now included because the expected establishment at no distant date of the Tata Iron and Steel Works would afford a far greater scope to the manufacture of hardware than what exists at present and the provision for a well-equipped Laboratory and a Professor of Chemistry at the Nagpur Victoria Technical Institute makes it easy to undertake instruction in industrial chemistry.

II. The Collegiate Institutions mentioned above in section I would supply facilities for turning out mill and factory managers and assistants, mechanical engineers, spinning, weaving and carding masters, industrial chemists,

directors of large agricultural farms, &c. To meet the case of the large number of men who earn livelihood by means of the different handicrafts it is equally necessary that provision should be made for improving these handicraft industries. The work here is twofold : (1) to teach the men who live by these industries the superior appliances and methods adopted in the advanced countries of the West, and (2) to raise their general intelligence and educational qualifications. For this purpose industrial schools based on the model of the craft schools of the West should be established in each district. The circumstances of the different districts vary and the establishment of schools will have to be decided with reference to such circumstances. The following suggestions are put forward tentatively.

NAGPUR DISTRICT.

Hand-loom Weaving.

The hand-loom weaving industry exists on a considerable scale in the Nagpur District. There should be two schools for hand-loom weaving organised—one at Nagpur and the other at Umrer—the two chief centres of this industry in the District. The most improved patterns of hand-looms with the fly-shuttle attachments should be provided, and practical instruction in them should be given in the vernacular by qualified persons with Indian experience. The instruction will have to be in regard to both weaving and the preparatory processes, *i.e.*, warping, sizing, winding, beaming, &c. Concurrently with the instruction in the industry itself there should be instruction in general elementary education and ordinary drawing.

Carpentry and Smithy.

There should be a school for carpentry—ordinary and artistic—and for smithy. Artistic carpentry would include cabinet-making and carving.

It should be convenient to have these schools located near each other and placed under the same board of management. If possible, the funds should be obtained partly from local subscriptions and partly from Government contributions, and the management should be entrusted to a composite body consisting of representatives of the subscribers and the nominees of the Government taken in due proportion. In case popular subscription is not forthcoming the entire money should be found by Government and the Municipal and District Board funds, and the governing body should be organised accordingly. In addition to these special superior carpentry and smithy schools, there should be schools or

classes for teaching ordinary carpentry and smithy in each tahsil.

Provision should be made in this district for instruction in the manufacture of bell metal and brass also.

The suggestions submitted about general elementary education in industrial schools and about carpentry and smithy schools for each tahsil are intended for application to all districts and tahsils.

JUBBULPORE DISTRICT.

In this district the industries that seem to afford scope for development are (1) pottery and porcelain, (2) stone and marble, (3) shellac and (4) sugar. Schools for giving instruction in these industries will be found very useful. In regard to pottery and porcelain it might be considered whether any satisfactory arrangement might not be made with Messrs. Burn & Co., under a system of grant-in-aid based partly on capitation grant and partly on grant by result.

Pottery in Wardha and Yeolmal Districts.

A school for pottery and porcelain should be opened at Warora, and after it is found how it succeeds another might be opened at Wun, in the vicinity of which also the materials required for superior kinds of earthenware are said to abound.

Carpentry schools in other Districts.

Schools for superior kind of carpentry will do well in the following districts—Chanda, Seoni, Hoshangabad, Mandla, and Raipur—as they have large forest areas with abundance of good timber.

Hand-loom weaving in other Districts.

The hand-loom weaving industry exists more or less in every district. It stands next to agriculture in giving employment to and supporting large numbers. While there should be at Nagpur a hand-loom weaving school equipped with every kind of improved looms and with appliances required for the preparatory processes, there should be one weaving school organised on a humbler scale in each district. At Burhanpur in the Khandwa District the work turned out, especially in lace, is in some respects superior to that of Nagpur. There should be at this town a school as well equipped as the one proposed for the latter city. It should further be one in which gold and silver lace work is taught.

The dyeing industry and the paper industry still exist in this town and the carpets called "Jajams" are also turned

out. The first and the last can conveniently be taken in the proposed school for weaving and preparatory processes. The second will require a separate school by itself.

The manufacture of "Jajams" is also carried on in the Betul District and at Wun in the Yeotmal District (in Berar). In the weaving schools of those districts the preparation of these articles should receive special consideration.

At Akot in the Akola District and at Ellichpur (now in the Ammoti District) the manufacture of strong and thick cotton carpets was a paying industry at one time. At both these places schools for carpet weaving as also for weaving should be established.

Bell metal and brass manufacturing schools seem wanted in the following districts:—Damoh, Mandla, Hoshangabad, Bhandara.

At Buldana a considerable number of various kinds of articles of steel and iron, such as scissors, nut-cutters, knives, &c., used to be prepared and they had a good demand. The smithy school there should be such as would enable the disappearing art of these artisans being preserved and imparted to others.

The weaving school for the Buldana District should be located at Deulgaon Raja.

Sericulture and Tassar Silk Weaving.

Bilaspur is the district where a tassar silk weaving school will not only do well, but is in a manner wanted. The Committee on Industrial Education appointed by the Government of India in 1901 recommended the establishment of an institution for experiment and instruction in sericulture at Sambalpur subsidiary to the chief one proposed to be established in Bengal. As Sambalpur is no longer in this province a school like that proposed by the Committee (*vide* Report, pages 22-23) should be established at Bilaspur or Raipur.

Manufacture of Sugar.

In the Betul and the Chhindwara Districts, where sugarcane plantation exists on a fairly large scale and can be made more profitable than at present if sugar manufacture is established, it would be well if some encouragement for experiments in this direction is given.

Bamboo Work.

Bamboo work should be taught at Chanda, Raipur and Hoshangabad.

Industrial Survey.

The suggestions submitted above are put forward with diffidence as owing to, the absence of a properly conducted industrial survey it is extremely difficult to prepare a suitable and comprehensive scheme for technical education. The necessity of such a survey, which was admitted in the Resolution of the Government of India in the Home Department No. 179, dated the 18th June 1888, was emphasised by the Committee presided over by Col. Clibborn (*vide* Report, paragraph 58) and restated authoritatively in the speech delivered in the Supreme Legislative Council on 28th March 1906 by the Hon'ble Mr. J. P. Hewett (now Sir John Hewett), member for Commerce and Industry in the Council of the Governor-General.

Provision for Industrial Experiment.

III. The Committee just referred to point out that before improvements in methods and appliances can be generally introduced, experiment is required :—

- (i) to test the commercial value of discoveries ;
- (ii) to examine the methods and appliances of certain industries with a view to introducing improvements either :—
 - (a) by suitable alterations ;
 - (b) by the introduction of implements and processes used in other countries ;
- (iii) to test the practicability of producing at profitable rates goods now imported into India in large quantities or of working up raw material before export ;
- (iv) to train instructors in the results of the investigations in so far as they lead to the discovery of improved methods and appliances suitable to Indian conditions.

It is not possible to have in this province institutes where work on the lines indicated above can be carried out for all or most of the different industries which exist or can be established here. It is hoped that the utility of an institute for experiment and instruction in sericulture as recommended above will be acknowledged and effect given to the suggestions of the Committee on this matter. But though similar institutes for other industries cannot be provided it is quite feasible to apply in a modified form and on a smaller scale than that contemplated in the Report the very valuable recommendations made therein. For the present action may be confined to two or three departments of industries :—

- (i) hand-loom weaving ;

- (ii) oils and fats and their preparations for commercial purposes ;
- (iii) lac, tans and dyes.

(i) There is a large number of patterns of handlooms provided with the fly-shuttle attachment each claiming superiority over the rest as being constructed on the most improved plans and being most effective and economical. In the case of some of these there is no doubt that some at least of the merits claimed are well founded. But it is becoming obvious that looms suited for one kind of work or one part of the country are not equally efficient for or in others. In the absence of a recognised body, qualified and prepared to give authoritative advice, persons with small means have been sorely disappointed in their expectations or compelled to earn their experience at a great cost. The difficulties are increasing, as in the ardour for industrial development which has manifested itself recently new types and patterns of hand-looms, are put on the market every day. With a view to minimise these difficulties to some extent and to find out the relative merits of the better patterns of handlooms, a prize competition was instituted in December last by the Indian Industrial Conference for both Cottage and Factory looms. Out of the thirty-two looms brought into the Exhibition ground at Calcutta only ten were entered for competition. The reason why the others failed to do so is obvious. And yet the makers of those looms have been able to sell their productions almost as easily as the tested ones.

It is also necessary to test the feasibility and commercial value of the alterations and improvements which are suggested from time to time. And it is equally, if not more, necessary to have an institution where some special thought would be given to discover methods for improving the efficacy and utility of the handlooms.

While some progress has been made in the matter of handloom itself hardly any advance has been made in regard to saving of time or increase of efficiency of the preparatory processes.

It is suggested that there should be one large Central School of handloom weaving where in addition to teaching workers there should be scope for the kind of experiment and instruction as is laid down in paragraphs 81 and 85 of the Industrial Education Committee's Report. This school should be located preferentially at the place where provision is made for instruction in textile manufacture, with power-driven spindles and looms,

The additional expenditure which the carrying out of this object will involve need not be very great. It is not necessary to have a specialist or an expert of the highest kind and of the most varied knowledge and experience. It is quite feasible to have on a salary of two to three hundred rupees a month a person with sufficient qualifications to answer our requirements as set out above.

(ii) and (iii). The oil industry of the province is growing and the preparation and refinement of cotton seed oil, rossa oil, &c., the improvement in the processes employed in expressing oil from linseed, sesamum, gingelly, rapeseed, &c., and the manufacture of paint, varnishes, soaps, candles, &c., are matters which demand urgent consideration. In the Nagpur Institute provision should be made for conducting experiments for testing the commercial value of the industries dealing with these products in the manner in which the Government of Madras made experiments in regard to aluminium under the direction of Mr. Chatterton or are now doing in regard to chrome tanning. Similar action is also very desirable in regard to lac, tans and dyes. If our provincial institution at Nagpur works in co-operation with that of Madras, as it should, there would be great saving of time, energy and money. With a competent Professor of Chemistry who has studied science not only in its general aspects but with special reference to manufacturing industries and one assistant professor under him, all the demands on the chemical side of the institute in regard to the Agricultural College, the Arts Colleges and the proposed industrial department can be fairly met.

Drawing and Manual Training.

IV. These subjects which form clause (4) of the Resolution I of the Conference do not stand in need of elaboration. Their value as a training of the eye and hand, and as cultivating exactness, precision and lightness of touch, is now universally admitted. Their peculiar importance in India lies in the fact of their counteracting the purely literary tendencies of the race and, emphasizing the dignity of natural work. Drawing should be compulsory in the Upper Primary, the Secondary and High School courses and manual training while compulsory for those who take the High School course should also be thrown open to such students in the Upper Primary and Secondary Schools as deserve to avail themselves of the same. The text book of Manual Training for Indian Schools of Professors Alexander

Scholarships.

On the matters contained in sub-clauses (a) and (b) of clause (5) of the resolution no special suggestion has to be made beyond submitting that the number of scholarships should be sufficiently large. On sub-clause (c) it has to be submitted that the allotment of the State scholarships only to mining will not meet the purposes for which these scholarships have been instituted. The mere existence of abundance of mineral resources in the province is no reason for expecting an admittedly backward province to supply competitors in a branch of technical knowledge which has made very little progress till now anywhere in India. It was only very recently that the mining course was established in the Sibpur Engineering College. It is no wonder that none of the persons who applied for the scholarship last year was found possessed of the special knowledge which is very properly insisted upon as a necessary qualification. It is suggested that the number of State Scholarships for scientific and technical study outside India should be increased to three and that they may be awardable for any one of the following:—(1) Mining; (2) Mechanical engineering; (3) Electrical engineering; (4) Textile manufacture; (5) Sericulture and (6) Industrial chemistry. Pending this increase in scholarships the rigidity of the existing rules should be relaxed to the extent of removing the restriction of the scholarship to mining and throwing it open to persons wishing to complete their education in one of the branches (1), (2), (4) and (6) mentioned above.

No, 1290—VI-9, dated Nagpur, the 14th October 1907.

From—Major T. C. PLOWDEN, I. A. Third Secretary to the Chief Commissioner, Central Provinces.

To—Rao Bahadur R. N. MUDHOLKAR, B. A., LL. B., Advocate of the Central Provinces and Berar, and President, Central Provinces and Berar Provincial Industrial Conference.

I am directed to acknowledge the receipt of your letter, dated the 21st May 1907, in which you make suggestions for the improvement of industrial education and for industrial development in the Central Provinces and Berar.

2. Before discussing your proposals in detail, I am to convey to you an expression of the Chief Commissioner's great appreciation of the interest which you have taken in the matter and of the labour which you have expended in formulating your schemes. While Mr. Craddock is in thorough sympathy with the object which you have in view, he fears that it will be many years before these provinces can have a complete system of technical education without

relying upon the institutions of other provinces. To begin with, the expense would be prohibitive, and in many respects the provinces are not yet sufficiently advanced to justify the establishment of large independent schools for several industries. In the case of large and new industries, which could be carried out only with considerable capital, Government can do nothing direct: such capital must be found by private enterprise. As you will observe from the following paragraphs, which deal with your suggestions in detail, Government already gives indirect assistance by means of scholarships with a view to enabling promising young Indians to qualify themselves for employment as skilled managers and assistants in existing or projected large industrial concerns, such as cotton mills and mineral enterprises.

8. You suggest that a higher course of instruction in textile fabrics be attached to the Amraoti Technical Institute and you estimate the initial cost at Rs. 15,000 and the annual recurring expenditure at Rs. 6,000. Though this would be only a second grade institution the expenditure proposed would be quite inadequate to start anything really useful in the shape of advanced instruction in the preparation of textile fabrics. The scale on which provision is made for the teaching of this subject at the Yorkshire College at Leeds or the Bombay Victoria Jubilee Technical Institute will show that anything on the scale suggested would be of very little use. Moreover, the Chief Commissioner does not consider that the industrial development of the province has yet reached the stage at which the establishment of an expensive college for an advanced course of instruction in textile industries would be warranted. I am to point out that in the meantime Government has taken advantage of the existence of such institutions elsewhere by encouraging provincial students to attend them with the help of scholarships. One student has already been sent to England with a State scholarship to study this subject; and in order to secure qualified scholars for the State technical scholarships in Europe, the Chief Commissioner has decided to give three scholarships tenable at the Victoria Jubilee Technical Institute at Bombay. Mr. Craddock believes that more good will accrue by thus sending students to good institutions outside than by starting an inferior institution within the provinces.

4. You propose that a course of instruction in industrial chemistry in charge of the Professor of Chemistry, helped by an assistant on a salary of Rs. 200-850, should be added to the syllabus of the Nagpur Victoria Technical,

Institute. Undoubtedly there is a considerable demand in India, and some in the Central Provinces, for industrial chemists for employment at mines, sugar factories and other works. The addition to the Nagpur Victoria Technical Institute of the course of instruction suggested by you would mean substantial expenditure in additional laboratories and equipment and extra staff; but the Chief Commissioner is prepared to organize at that Institute post-graduate teaching in mining chemistry and to start a class in industrial chemistry, if managers of existing factories will define the branches of industrial chemistry in which they think they could offer useful and attractive employment to young men so trained. The start would necessarily be on a modest scale.

5. With regard to mining, it is understood that your proposals aim at starting at the Jubbulpore Engineering College (a) a lower course of instruction in the vernacular to train foremen for mines and (b) a higher course in English which would be considered equivalent to the first part of the mining course of the Sibpur College to which students should be admitted to complete their course. Mr. Craddock doubts whether either proposal is feasible. It would be difficult to graft a vernacular course on to the existing college, and the Sibpur College authorities would almost certainly refuse to accept, on the terms proposed, students who had passed half their period of instruction at another institution. You are perhaps not aware that, at the request of this Administration, the Sibpur Engineering College authorities have agreed to admit for the whole mining course such students as are trained up to their entrance standard at the Jubbulpore Engineering School; and enquiries are in progress as to whether such a standard can be arranged for at the Jubbulpore Engineering College. One student was sent to England with a State scholarship to study mining in 1905, and two more have just gone. The Chief Commissioner proposes to give three or more scholarships, tenable at the Sibpur Engineering College by students who will undertake to be trained as mining engineers. For the present Mr. Craddock does not consider that anything more can be done towards the encouragement of mining education.

6. Before leaving that part of the subject which relates to the facilities offered to young men of advanced education to qualify themselves for well-paid employment in large concerns, I am to say that it is proposed to have some more advanced post-graduate teaching in science at the Victoria Technical Institute at Nagpur, while teaching in mechanics will it is understood, be provided at the Victoria Technical

Institute at Amraoti, as soon as it is completed. The Chief Commissioner does not consider that the Administration would be justified in expanding existing institutions, or raising them at great expense to an equality with more advanced institutions in other provinces, until provincial development has further expanded and the demand for trained men has further increased. The supply in this case must follow the demand, or the advanced and expensive training will only tend to disappointment if those trained cannot find suitable avenues for the practical exercise of the art they have learnt. Such a result would merely cause discontent and defeat the object in view by making technical training unpopular.

7. The second branch of the subject is far more difficult since it relates to a different stratum of society and requires an improvement of handicrafts and cottage industries of which several are in a depressed condition. You propose to open a number of craft schools in certain districts for teaching handicrafts which are peculiar to such districts, particularly where the industry is in a decaying state or has even disappeared. While the Chief Commissioner agrees with you that the object in view should be to revive and improve such industries, he doubts very much whether such handicraft schools as you suggest are the best means for attaining this object. The Indian system under which a son or relative (in most trades even a stranger) is taught his trade by a worker in that trade meets all requirements so far as the teaching of existing methods is concerned. The real requirement for the development of these industries is not a system of teaching *existing* methods but a system of teaching *improved* methods. If an industry is dying out, it will not be revived by teaching the same methods that have failed to keep it alive and flourishing; the causes of decay must be diagnosed, and a treatment prescribed that will eliminate these causes and lead to improvement. In Mr. Craddock's opinion the proper course is to ascertain what industries there are, to select those which seem to be capable of improvement, to find out the methods by which they may be improved, and then to impart those methods to the classes likely to carry on the industries. There are, as may easily be judged, opportunities for failure at every turn and the chances of successful competition with machinery must often be small. The first step should be to collect all the available information on the subject. A fairly large amount has been collected at various times, but much of it is buried away in monographs and special reports, and its extraction, tabulation and classification will be a preliminary step. When this is done it will be necessary to visit and see in working all the industries

which survive; if they are flourishing they may perhaps admit of some extension; if they are depressed they may admit of some improvement; but before any practical step is actually taken the assistance of experts will be necessary. The Chief Commissioner intends to place this work under the direct supervision of the Director of Agriculture and to depute an officer in the ensuing cold weather to make an industrial survey of the province and collect in a handy form as complete information of existing industries as it is possible to obtain. The officer making the survey will require in each district all the assistance that can be given him by gentlemen interested in the development of industries, and it is hoped that the assistance will be real and substantial. He will also receive such help from District Officers as they can reasonably give with due regard to their many duties. If, as is hoped, it is found possible to hold an Industrial Exhibition in Nagpur in November 1908, the officer in question will be able to assist in its organization. By that time much information not now available should be at the disposal of the Administration, which will then be in a position to determine future policy in the matter of the most promising industries. All the information so collected will be submitted to, and discussed by, a specially selected Committee.

8. With regard to your suggestions on the subject of carpentry and smithy work, I am to inform you that for some time past it has been in contemplation to establish an Industrial School in Nagpur as an experiment. The scheme has not been proceeded with because the hope that the public would support it by liberal contributions has not been realized; as you were informed in Mr. Maw's letter No. 307, dated the 26th February 1907, it has not been found possible to enlist any local interest in the scheme. This is partly because the public at large are very busily occupied with their own affairs, and do not feel any special inward calling to devote their money to the improvement of classes who seem to them to be fairly well occupied, and partly because the scheme has been too vague and indefinite to attract interest. But it is also largely due to the fact that the more clamorous sections of the Swadeshi party are more interested in political opposition to the Government, and in the desire to find profitable employment for educated or semi-educated youth, than in the real betterment of the humble weaver or leather worker. They may conceal this even from themselves, but these, and no other, can be the reasons for their refusal to co-operate with the Government in any scheme for the improvement of handicrafts. In these circumstances it is left to the Government to move;

and orders are now issuing for the early construction of the buildings required for the school of handicrafts. The Director of Agriculture (who will informally perform the duties of Director of Industries) has been directed to give effect to the scheme as outlined by Sir Frederic Lely in Mr. Slocock's letter, No. 10291, dated the 5th September 1904, a copy of which was forwarded to you with Mr. Gown's letter, No. 3987, dated the 29th March 1906. The scheme provides for the instruction of boys of the artisan class or any class that like to come forward in smithy, carpentry, wood work, metal work and (as soon as the best form of handloom for local conditions can be determined) in weaving. The institution will comprise a hostel for boys who may come from outside villages, the necessary shed for workshop classes, and quarters for teachers. Later on, when the institution has actually come into being, the Chief Commissioner has no doubt whatever that it will receive much support from those genuinely interested in the subject, and the success which it achieves will be proportionate to the degree of this support. The subsequent management of the institution and the extent to which it can be placed under a Committee containing non-official members must depend on the amount of assistance it receives from the public. If the school is successful it may later on be possible to have similar schools in other districts. At present great difficulty is experienced in securing the services of a suitable staff for even one school, and the estimated expenditure (Rs.12,000 a year) is considerable. One object of the school will be to train suitable craft masters for employment in similar district schools. District Industrial schools have been tried in the past and have failed, but with a more carefully prepared foundation and more gradual growth there may be more hope of success.

9. With reference to your remarks on the subject of pottery and porcelain, I am to say that the Chief Commissioner understands that Messrs. Burn and Company will not take Indian apprentices at their Jubbulpore works. The small pottery works at Warora have now been closed. If prospects were good enough private firms would have started long ago to work the clays of Warora and Yeotmal.

10. Mr. Craddock does not consider that a school in sugar manufacture is feasible at present. Although the crop is of comparatively minor importance, the Department of Agriculture is doing its best to investigate both the methods of cultivation and indigenous manufacture. The testing of imported varieties has been started at the Raipur farm, and the improvement of other factors in cultivation is under investigation. Attempts have been made to introduce

Improved handmills, and arrangements have been made to determine the loss of efficiency in the indigenous processes ; but until the cultivation of sugarcane is extended and concentrated in compact areas the Chief Commissioner fears that sugar factories are not likely to prove a success. He hopes that some of the large irrigation works under construction or projected will enable this extension and concentration to be effected.

11. The *Tassar* industry has received a great deal of attention. The result of enquiries has been to show that the defect lies rather in the inadequate supply of raw cocoons than in the processes of manufacture. A special investigation was made by the late Mr. N. G. Mukerjee of Bengal, and an Agricultural Assistant is now undergoing a course of training at the Chaibassa (Bengal) Silk Farm with the object of starting a farm in these provinces if it is found feasible. Attempts have been made without success to introduce the Japanese methods of reeling and the latest enquiry tends to prove that these are not so good as the Indian methods. There is nothing new to teach in a school.

12. In conclusion I am to refer you to Chapter XIII of the Central Provinces Education Manual, which contains a list of scholarships available for different branches of technical education in addition to the scholarships mentioned above. As you will have observed from paragraph 8 of this letter, you are mistaken in thinking that the State scholarships to Europe are confined to mining ; under the orders of the Government of India, engineering is the only subject excluded. This Administration has selected mining and the textile industry as the most suitable for these provinces at present, but this does not exclude other subjects if suitable candidates present themselves. As regards the number of scholarships, it is understood that though one only is attached to the Central Provinces and Berar, others could be secured from the Government of India if suitable candidates come forward. The present difficulty is to secure good candidates, a matter in which the assistance of the Provincial Industrial Association will be cordially welcomed.

APPENDIX III.

THE INDUSTRIAL CONFERENCE HANDLOOM COMPETITION.

Preliminary Report.

To

THE GENERAL SECRETARY,

The Indian Industrial Conference, Calcutta.

Sir,

Out of 82 looms exhibited in the Exhibition, 14 looms were found fit to enter for competition as per the conditions of the Conference, of which nine competed for the prizes, six as factory and three as cottage looms. A tabulated statement of the results of our examination has been appended herewith.

The Factory loom of Salvation Army Industries of Anand, Gujarat, and that of Mr. B. K. Ghosh of Chandernagor have scored 188 and 183 marks respectively out of 200. In the Salvation Army loom taking-up motion requires further improvement and shedding is not automatic. In the other loom, all the motions are automatic and it is a copy of the Japanese handloom, but the working of the loom requires to be made light and easy by using long treading levers and diminishing the friction in the picking shaft and lever and by providing a seat, at a convenient height, for the weaver to sit and work.

Thus though both the looms have not yet come to the highest standard of efficiency required, yet as an encouragement for further improvement and better work we propose two prizes of Rs. 150 and Rs. 100, respectively, to be given to these looms as 1st and 2nd.

Of the three Cottage Looms, the loom of Messrs. Lascar & Co., scored 184 and Sayaji Poor Man's Loom 124 out of 200 marks.

The price of the loom of Lascar & Co., which is nearly similar to an ordinary Serampore Fly-Shuttle Loom, is Rs. 50, and picking is not automatic, while the price of the other is only Rs. 20 and it has automatic picking, but the parts of the loom require to be made strong. With a view that cheap and effective looms alone can be within the reach of the poor, we after the test was made, came to the conclusion that the maximum price of a cottage loom should

be only Rs. 25 instead of Rs. 50 as was advertised. Judging from this standard, the loom of Lascar & Co., will have to be considered as a factory loom and thus it will get 117 marks. But we cannot do so now contrary to the advertised terms.

Though both the looms have yet to be further improved upon, we propose that two prizes of Rs. 150 and Rs. 100 may be given to Sayaji Poor Man's Loom and Lascar's Loom respectively as first and second among Cottage Looms.

CALCUTTA,
16th January 1907.

} Yours faithfully,
RAOJI BHAI PATEL.
M.A. SAMPATH IYENGAR.
MANMATHA NATH BASAK.
KUNJABEHARI DE.

Full Report.

Report on the Handloom Competition held under the auspices of the Indian Industrial Conference at the Calcutta Exhibition of 1906-07, with remarks on the Handloom Section of the Exhibition.

The harmonious action of the following five principal motions in a loom produces cloth:—

- (1) Shedding (dividing warp threads into layers).
- (2) Picking, or motion of the shuttle,
- (3) Beating up the weft, or motion of the slay for driving in the weft.
- (4) Taking up the cloth woven.
- (5) Letting off the warp.

There is also a sixth necessary motion which does not work, *viz.*, pushing back the slay to make room for the next stroke of the shuttle.

The looms exhibited may be classified with reference to the mechanical contrivances adopted to secure the working of these motions.

CLASS I.—In which all the above movements are actuated by the action of foot-treadles or by a wheel turned by hand, or by the movement of the slay.

The following were the important exhibits under this class:—

- (1) *The loom exhibited by Mr. B. K. Ghose of Chandernagore.*—It is a copy of the Japanese handloom worked by foot-treadles. Its working was satisfactory though the loom was a little too heavy to work. The loom is priced at Rs. 90.

(2) *Shivaji loom exhibited by the Bombay Loom Company.* This is a modification of the Japanese handloom. The weight used to regulate the taking up motion is made to hang down instead of being lifted up and a balance wheel is provided to secure the steady motion of the crank shaft. The loom is priced at Rs. 130.

(3) *The Lame and Blind Automatic Loom.*—This is also a modification of the Japanese handloom ; taking up motion is connected with the motion of the slay and the upper shaft is directly turned by a handle connected with it by level wheels. The frame work was not steady. The price of the loom is Rs. 95.

(4) *Krishnabrindavan's Patent Johar Loom.*—This should be considered a power-loom rather than a handloom. This was the only loom in the Exhibition which showed real originality and good workmanship. All the motions of the loom are secured by the revolution of an ecliptic wheel attached to one shaft. As necessity is the mother of invention, the inventor finding it difficult to get a proper crank shaft for this loom, which was meant to be a copy of the power-loom, hit upon this new method of communicating motion. The inventor of this loom should be encouraged to make a handloom of proper size, as one of that kind is likely to work very smoothly and lightly. If it be properly made it may supersede all the existing costly automatic handlooms in the market.

(5) *The loom exhibited by Mr. B. K. Dhur* was a copy of the power-loom meant to be a handloom, but not useful as such.

(6) *Messrs. Hattersley's Domestic Loom.*—This was found to be capable of giving greater production than any other automatic loom and was found somewhat heavy in working. Our weavers accustomed to lazy working of very light wooden looms may not willingly take to it. The price of the loom is Rs. 180.

CLASS II.—Only shedding being actuated by foot-treadles, the rest of the motions being connected with the motion of the slay worked by both the hands.

The following were the important looms under this class :—

(1) *The loom exhibited by Mr. Osborne Maxwell of the Salvation Army Works, Anand, Gujarat* was the best of this kind. The loom seems to be after Mr. Churchill's loom with the picking and taking up arrangements improved. The loom is well constructed and sound in all its parts. The price of the loom is Rs. 80.

(2) *The factory loom exhibited by the Sayaji Loom Works, Baroda, requires greater stability in some of its parts. It has proper arrangements made for adjusting the levels and heights of slay and yarn beams. The price of the loom is Rs. 50.*

CLASS III.—Shedding and picking being joined and actuated by foot-treadles, and the beating up of the weft and the taking up of the woven cloth being done separately by hand as in ordinary handlooms.

The Simplex Loom of Pali Silpasala was the only one of this kind. The price of the loom is Rs. 35. This is simple in construction.

CLASS IV.—Shedding done by foot-treadles, picking connected with the back motion of the slay which is worked by both the hands. The rest of the movements secured directly by hand as in ordinary handlooms.

A loom of the kind was the Sayaji Poor Man's Loom exhibited by the Sayaji Loom Works, Baroda. In this loom the weaver has to work sitting at a pit having his warp stretched on the floor as in ordinary looms. This is simple and cheap. The price of this loom is Rs. 25.

CLASS V.—Looms with fly-shuttle slay attached.—There were three varieties of this kind.

(1) *Fly-shuttle slay adopted to ordinary pit-loom without yarn beam being provided.*

(2) *In addition to slay, yarn beam also provided to the pit-looms.*

(3) *Slay adopted to a moveable frame-work containing yarn and cloth beams.*

In all these looms the movements are caused independently of one another as in ordinary country looms worked directly by hands and feet.

Frame Fly-shuttle looms exhibited by Messrs. B. K. Ghose of Chandernagor and P. N. De of Chinsura, and Laskar & Co. of Raipur (Birbhum). Pit Fly-shuttle looms provided with yarn beams were exhibited by the local weavers, Babus Kiran Chandra Sen, Hari Chandra Das and three others, and Mr. P. N. De of Chinsura.—These were found the cheapest and most convenient forms of fly-shuttle looms to be adopted by weavers that do their work in their own homes. These looms with slight modifications in forms and sizes are the same as the Madras, Bombay, Madura and Mysore fly-shuttle looms, all of which are copies of English fly-shuttle looms.

Two looms were exhibited, one by the Bengal Silk Mills Company and the other by the Sayaji Loom Works, Baroda,

The former, a foreign one, was in good working order and cloth of six feet was woven in three hours 30 minutes. The latter was an attempt to construct such a loom with as many locally made parts as possible but was not in working order on account of breakages in transit.

Messrs. Hattersley & Sons exhibited a *Tape Weaving Loom* priced at Bs. 250, a *Towel Loom* priced at Bs. 180, and a *Silk Weaving Loom* priced at Rs. 235.

There were also *Benares Looms for weaving Kinkabs* with skilfully arranged Harnesses for picturesque designs.

The *National Weaving School of Calcutta* exhibited different kinds of looms used in the school, *vis.*, *Hattersley Fly-shuttle Looms, etc.*

Besides the above looms, which were in working order, there were a number of model looms. Some of them were exhibited by students fresh from college and by some Government officials. In these models very ingenious, original mechanical inventions were displayed in crude form. If their school education had offered opportunities for having their hand and eye trained in mechanical work, their ideas would have brought them credit as useful inventions. They were not trained to appreciate form and proportion as the eye had not been exercised in drawing and practical work nor the hand used to the handling of tools and instruments and hence, can do but very crude work.

The Model looms exhibited by Messrs. Bankim Lal Das, Mani Mohan Ghosh and Lalit Mohan Ghosh, Romesh Chandra Dordar and N. M. Mookerji contain original ideas which can be usefully developed with more practical knowledge of the different processes of weaving.

Appliances for Processes preparatory to Weaving.

SPINNING.

There were three exhibits useful for the purpose. One of them from Darjeeling intended for spinning wool, is an ingenious adaptation of the mill spinning spindle for hand work.

The second was from the Weaving Institute of Holenarsipur in Mysore State. In this the spindle is turned by a foot-treadle and both the hands are used for spinning. This is used for spinning wool and any kind of fibre and cotton.

The third was a local exhibit, a simplified form of Charak.

Winding Machines:—

(1) A useful bobbin and Peru winder exhibited by the Sayaji Loom Works, Baroda.

(2) There were useful models from the Weaving Institute of Hole-Narsipur, Mysore, and from Mahendralal Banerji of Calcutta.

(3) A bobin winder with 12 spindles priced at Rs. 152 and a pern winder with 12 spindles priced at Rs. 172 were exhibited by Messrs. Hattersley and Sons.

Warping Mills.—One machine was exhibited by Messrs. Hattersley & Sons. This is suited for making warps more than 100 yards in length but these warps are not useful for sizing after the Indian methods. This serves the same purpose as the old English wooden warping mill used in the Basel Mission Factories. These latter, however, had a greater facility for putting in leases. Hattersley's mill was priced at Rs. 150.

The other warping mill is an original invention exhibited by Sadhu Charan Sarkar, Hari-Narayanpur, Nadia, a poor man not a weaver by caste. This is an improvement upon the native peg warping, and is a real advance from within.

A wheel 4 ft. 9 in. in diameter is divided into three concentric circles and pins arranged round the circumference of these circles receive the yarn as the wheel rotates and preserve the leases formed. The machine, when tested by actual work, was found capable of warping one knob in 30 minutes. The mechanism for turning the wheel is roughly made and does not work smoothly without jerking. This was priced at Rs. 50.

Sizing Machine.—

There was one exhibited by the Sayaji Loom Works, Baroda. This is yet in its experimental stage and is intended for handloom factory works.

The other sizing machine was exhibited by Messrs. Hattersley & Sons and it is intended to saturate the warp with size and to squeeze out the superfluous size, brushing and drying being done on a separate frame. These machines were not exhibited in their working order.

Loom Competition.

The Industrial Conference had announced awards of Rs. 500 to the best Cottage and Factory Handlooms exhibited. A Committee of experts consisting of Rao Bahadur Raoji Bhai Patel, Director of Agriculture and Industries, Baroda, Messrs. Henry H. Ghosh, Bysac, and Kunja Behari De of Calcutta, Mr. B. L. Govilla, Textile Engineer and Chemist, Kurja, United Provinces, and Mr. M. A. Sampath Iyengar, Superintendent, the Weaving Institute, Hole-Narsipur,

Mysore State, was formed. The Committee examined the looms in their capacity and in the construction of their important parts. The looms were kept working for seven hours and the results of their examination have been given below, and a tabulated statement is appended.

For the second time, a loom competition was held on behalf of the Exhibition Committee. In this competition a few local fly-shuttle looms were specially got in to compete for the prize, so that their working capacity might be compared side by side with the new improved looms. In this instance looms were kept working for six hours. The results of this competition also have been given below and a tabulated statement is appended.

The Competition Test.

The looms were tested by the Committee with reference to the following points :—

- (1) Mechanical improvements and construction.
- (2) Adaptability.
- (3) The work done.

Under the head of Mechanical Improvements much importance was attached to the arrangements made to secure the easy and proper working of the shedding, picking and taking up motions, and of the motions of the slay. The looms were also tested to see whether the parts were strong enough to bear the required strain without being unnecessarily bulky. The general workmanship in the manufacture of the machine was also noted.

In regard to adaptability, the Committee took into consideration the following points:—

(1) Whether the price was within the means of those for whom the machine was intended ?

(2) Whether the loom was suitable for working with warps prepared according to the country method or necessitated the use of preparatory processes to which our weavers were unaccustomed, or the use of appliances which would be too costly to be possessed by individual weavers ?

(3) Whether the construction of the loom was simple enough to get damaged parts repaired easily by local artisans ?

The Work done was tested by—

(1) The highest number of picks per minute attained in fast working for a short time.

(2) The effective number of picks per minute arrived at as follows :—

A. Work was taken for 7 hours 15 minutes, and the total number of picks on the cloth divided by the number of minutes in the whole time.

B. The structure of the cloth produced.

The Results of the Tests.

In the first test the following were found the most successful :—

- (1) Salvation Army Loom, Prize Rs. 150.
- (2) Mr. B. K. Ghose's Loom of Japanese pattern, Prize Rs. 100.
- (3) Laskar & Co.'s Loom (ordinary fly-shuttle loom of the English handloom pattern). Prize Rs. 100.
- (4) Sayaji Poor Man's Loom, with automatic picking which is actuated by the back motion of the slays. Prize Rs. 150.

In the second test, the following were the most successful :—

- (1) Mr. B. K. Ghose's Japanese Loom.
- (2) Sayaji Poor Man's Loom.
- (3) Mr. B. K. Ghose's Ordinary Fly-shuttle Loom.
- (4) Babu Kiran Chandra Sen's Pit Fly-shuttle Loom.

General Remarks :— All the looms were worked by expert weavers with more than ordinary speed and at the end of 7 hours all appeared much tired. In the hurry to turn out as much work as possible the structure of cloth was somewhat neglected. In the second test they were more careful. Fly-shuttle looms in different forms have all equally done good work. Automatic looms on account of their high prices are entirely beyond the means of individual weavers to possess them. To take full advantage of the increased speed of the shuttle in these looms, better processes of winding, warping and sizing than the weavers are accustomed to, will have to be introduced with the help of costly new mechanical appliances.

Now the vital question that has to be decided in the development of the handloom industry in India is whether it is possible to develop it along the lines in which it has so far progressed.

One of the great authorities in cotton weaving, Mr. Richard Marsden, has expressed himself as follows :—

"The skill of Eastern races seems to have spent itself in achieving the most perfect results of which manual processes are capable... The products of Indian, Chinese and Japanese arts, especially in textiles,

in excellence of colouring variety, beauty of design and perfection of execution, are something that the mechanical production of the West is a long way from equalling but to which they may with advantage aspire."

Our weaving industry has developed so far as a cottage industry. If it is to continue as such, our mechanical improvements to increase the efficiency of hand labour must be such as will not compel the weavers to become mere flesh and bone parts of some costly machinery having no idea of how and why the machinery performs its rythnical movement. And our efforts to improve the industry should not become subject to such condemnation as Prince Kropotkin has made: "Skilled artisanship is being swept away as the survival of a past condemned to disappear, for the artist who formerly found æsthetic enjoyment in the work of his hands is substituted the human slave of an iron slave."

Apart from the large portion of weaving work that power mills should do, handlooms have got as much work or even more work to do. Each has its own sphere and although factory work economizes labour, the economic gains to be derived from this domestic industry for a hundred years to come should not be undervalued even in pounds, shillings and pence.

Improvement in the human machinery of the weaver by systematic education and regular work must go hand in hand with the improvement of the appliances for his work. The industry can flourish only under the stimulus of a well organised trade which must be helped by every citizen of India with the responsibility felt and expressed by a prudent economist :

"The trade does not belong to the merchants, capitalists and workpeople of the present generation. But that is a great national property in which they possess only a life-interest. This they are bound by every sentiment of affection for their children and love for their country, to pass on to succeeding generations, not only unimpaired but increased in value. To neglect this duty will be to deprive millions of English people in the future of the means of livelihood and the nation of its most important resources. This would be practically criminal."

RAOJI BHAI PATEL,

Director of Agriculture and Industries, Baroda.

M. A. SAMPATH IYENGAR,

Superintendent, Hole-Narsipur Weaving Institute, Mysore.

The Second Indian Industrial Conference Handloom Competition, Calcutta.

FIRST TRIAL.

| No. | Kind of Loom. | Name of the Exhibitor. | Time. | | Cloth woven. | | Width of | Effective | REMARKS. |
|-----|---|--|-------|----|--------------|-----|------------|-----------|--|
| | | | hrs. | m. | ft. | in. | the cloth. | picks. | |
| 1 | Simple fly-shuttle loom similar to English handloom. | Mr. B. K. Ghose, Chandernagore. | 7 | 15 | 21 | 11 | 40½ | 33-6 | Clean edges, breakages good many, 40's yarn. |
| 2 | Automatic handloom resembling Japanese handloom worked by foot power. | Do. | 7 | 30 | 24 | 7 | 40 | 34-6 | Edges clean, structure good, 40's yarn. |
| 3 | Sayaji factory loom | Sayaji Loom Works, Baroda. | 7 | 30 | 23 | 4 | 42 | 31-2 | Cloth damaged, full of breakages, 40's yarn. |
| 4 | Sayaji pit factory loom | Do. | 7 | 30 | 15 | 7 | 42 | 20 | |
| 5 | Sayaji cottage loom | Do. | 7 | 30 | 17 | 2½ | 43 | 30 | |
| 6 | Factory loom | Mr. Osborne Maxwell of the Salvation Army, Anand, Gujarat. | 7 | 30 | 25 | 2 | 40½ | 37-8 | Structure quite satisfactory, 40's yarn. |
| 7 | Ordinary fly-shuttle loom of English handloom pattern. | Laskar & Co., Raipur (Birbhun). | 7 | 30 | 23 ft. | | 44 | 31-9 | Structure satisfactory, 40's yarn. |

Calcutta Industrial Exhibition Handloom Competition:

SECOND TRIAL.

| No. | Kind of Loom. | Name of the Exhibitor. | Time. | Cloth woven. | Width of the cloth. | Effective picks. | REMARKS. |
|-----|---|----------------------------------|----------|--------------|---------------------|------------------|---|
| | | | hrs. mi. | ft. in. | in. | | |
| 1 | Simple fly-shuttle loom similar to English handloom. | Mr. B. K. Ghose, Chander-nagore. | 6 18 | 25 8 | 44 | 33 | Edges not clean, breakages not pieced up satisfactorily, structure fine, 40's yarn. |
| 2 | Automatic handloom resembling Japanese handloom to be worked by foot power. | Do. | 6 15 | 28 10 | 43 | 41 | Clean edges, uniform structure, 40's yarn. |
| 3 | Poor man's loom or fly-shuttle slay adopted to ordinary pit loom with automatic picking arrangement. | Sayaji Loom Works, Baroda. | 6 | 25 10 | 42 | 46 | Edges clean, structure good, 40's yarn. |
| 4 | Factory loom picking and take up motion connected with the motion of the slay to be worked by hand shedding by foot treadles. | Do. | 5 11 | 20 1 | 42 | 34 | Structure somewhat poor. |
| 5 | The lame and blind automatic loom worked by hand power. | Mr. Shaik Mahomed Bakur. | 6 15 | 19 6 | 41 | 25 | Clean edges, uniform structure. |
| 6 | Pit fly-shuttle loom | Babu Kiran Chandra Sen. | 5 51 | 16 3 | 46 | 48 | Warp and weft 80's, well finished cloth. |

Calcutta Industrial Exhibition Handloom Competition—*contd.*

SECOND TRIAL—*contd.*

| No. | Kind of Loom. | Name of the Exhibitor. | Time. | | Cloth woven. | Width of the cloth. | Effective picks. | Remarks. |
|-----|--------------------------------|---------------------------|----------|---------|--------------|---------------------|------------------|---|
| | | | hrs. mi. | in. ft. | in. | | | |
| 7 | Pit fly-shuttle loom ... | Mr. Goluck Behari Rokhir. | 6 | 21 | 15 | 45 | 30 | 40's warp and 50's weft, clean edges, uniform structure. Warps and weft. 40's double, very close structure, during the whole period two persons worked alternately, uniform structure, well finished cloth. |
| 8 | Hattersley's Domestic loom ... | Messrs. Allen Bros. | 5 | 30 | 63 | 22 | 92 | |
| 9 | Pit fly-shuttle loom ... | Mr. Harishchandradas. | 6 | | 13 | 44½ | 30 | |
| 10 | Pit fly-shuttle loom ... | Mr. P. N. De ... | 6 | | 12 | 41 | 20 | |
| 11 | Frame fly-shuttle loom ... | Do. | 8 | | 12½ | 41 | 21 | |
| 12 | Simple loom ... | Do. | 3 | | 4 1 | 42½ | 15 | |
| 18 | Jacquard machine ... | Bengal Silk Mills Co. | 8 | 30 | 6 | | | |
| 14 | Benares loom for Kinkhab ... | Mr. Habibulla ... | 8 | 30 | 8½ | | | |

APPENDIX IV.

INDUSTRIAL SURVEY QUESTIONS AND ANSWERS.

AMRAOTI, 1st October 1907.

DEAR SIR,

The accompanying circular letter, containing a set of questions framed for the purpose of facilitating the collection of information on the present condition and future possibilities of the industries of each district of British India and the Indian States, was issued by me last year and addressed to nearly a thousand educated countrymen of ours in the various parts of India. The response it elicited was, I am sorry to say, most meagre and disappointing; only twenty gentlemen having taken the trouble of replying to it. Their replies were published as an appendix to the Annual Report presented on behalf of this office to the last session of the Industrial Conference held at Calcutta. I send herewith a copy of the set of questions aforesaid, with the request that you will take an earnest interest in the subject and collect the needed information. I need not tell you that it is only by the willing co-operation of gentlemen in your position, keenly interested in the material progress of the country, that the Industrial Conference can satisfactorily perform the duties which it has imposed on itself. The first essential of all work is knowledge. But the information at our command on industrial subjects is lamentably inadequate, and must be supplemented by efforts made in each locality by persons like you. These efforts should comprise (1) the bringing together of the information contained in the available official publications, and (2) local inquiries. I earnestly invite you to set yourself to this important task and send to this office as full information as you can possibly put together. I shall thank you to send your reply before the 10th of November to enable me to include it in the Annual Report which will be presented to the next session of the Conference as was done last year.

I remain,

Yours faithfully,

R. N. MUDHOLKAR,
General Secretary,
Indian Industrial Conference.

* * * * *

QUESTIONS TO BE ANSWERED.

A.—AGRICULTURE.

1. What is the condition of the agricultural industry in your district ?
2. Has the whole or the greater portion of the culturable area been brought under cultivation ?
3. What is the general quality of the soil ?
4. What is the general condition of the land-owning and cultivating classes ?
5. To what extent are the lands held on a proprietary tenure by the cultivators themselves, to what extent by privileged tenants, and to what extent by mere tenants at will ?
6. What steps are being taken in your district for the improvement of agriculture by—
 - (a) Supply of cheap capital ;
 - (b) Extension of scientific and practical instruction ;
 - (c) Employment of improved appliances ;
 - (d) Resort to recuperative processes like manure, etc.
7. To what extent has advantage been taken of the village co-operative credit system, and what amelioration has it effected in the condition of the peasantry ?

B.—MANUFACTURING INDUSTRIES.

8. Name the existing manufacturing industries in the different towns and villages of your district under the following heads :—
 - (1) Textile fabrics—Cotton, Wool, Silk, and Jute.
 - (2) Vegetable and animal products.
 - (3) Leather, horn and paper.
 - (4) Pottery, porcelain and glass.
 - (5) Metals.
 - (6) Chemical industries.
 - (7) Furniture and decorations.
 - (8) Materials used in construction.
9. What is their present condition ?
10. What was their condition in the past ?
11. What is the approximate number of people employed in and dependent on them severally ?
12. What is the approximate amount of capital employed in them severally ?
13. State how far they have been affected by—

14. What are the Markets for the products of these industries, *i.e.*, do they supply only a local demand, or are they sent to other markets in noticeable quantities ?

15. What facilities exist to increase their supply if an increased demand arose ?

16. How far, in your opinion, are the existing industries capable of expansion,—

(a) by making advances to the artisans at low rates of interest ;

(b) by the improvement of the appliances in use ;

(c) by the imparting of special instruction, and

(d) by the employment of power machinery ?

17. What industries existed in your district formerly but have since decayed ?

18. What are the causes of their decay ?

19. Is it practicable to revive any of them profitably ?

20. If so, suggest measures to bring about their revival.

C.—MINERALS AND OTHER NATURAL PRODUCTS.

21. Name the mineral and other natural products of your district which are or can be manufactured into finished articles of consumption and use.

22. Which of these are manufactured in your district ?

23. Which, if any, of these are sent to other parts of the country for manufacture ?

24. Which of them are exported to foreign countries in their raw state, and re-imported as finished articles ?

D.—CAPITAL.

25. What banking facilities are there for the support of the industries in your district ?

26. Have any urban industrial banks been started in any town of your district under the provisions of the Co-operative Credit Societies Act ?

27. If so, give particulars in regard to their organization the capital employed, the conditions of lending and borrowing, etc.

E.—TECHNICAL EDUCATION.

28. What facilities are there for training young men in the various industries that exist in your district ?

29. If there are any special schools for the purpose, give particulars in regard to their curricula,

30. Is instruction given both in the practice of, and the principles which underlie, an industry, or, is it theoretical merely or merely empirical?

31. What success has attended these schools?

32. Are industrial and commercial classes attached to any of the schools in your district?

33. If so, give full particulars in regard to them.

34. Have any students been sent abroad from your district to acquire technical, industrial or commercial education?

35. What are their qualifications and were they tested?

36. Who, or what agency, has sent them, and under what conditions, if any?

37. In what countries are they being trained?

38. What arrangements are made to utilise their special technical knowledge by the supply of capital or otherwise, to start or develop the industries in which they receive special training?

39. Are there at present in your district any persons who have received special training in any industry? If so, what are the industries in which they have been trained?

40. How are they employed at present?

41. If their knowledge is not being utilised, what steps can be, or are proposed to be taken, to utilize it?

F.—INDUSTRIAL ASSOCIATIONS.

42. Is there any industrial association in your district? If so, give particulars in regard to its objects, rules, funds, past work and present activity?

ANSWERS TO THE ABOVE.

(1) BABARAV JAIRAM BHISHI, Esq., *Banswara via Rullam.*

1. Banswara is a very poor State with an area of 1,946 square miles and a population of 149, 128. Its revenue is Rs. 1,50,000 only. It is indebted to the Government of India to the extent of about two lakhs of rupees.

2. I quote below what was written by the Settlement Officer, Mr A. T. Home, I. C. S., in the Settlement Report of 1904-06, on the mineral deposits of the State :—

‘The mineral deposits of Banswara have never yet been properly investigated and it is possible that Manganese ore as in the neighbouring State of Jhabua, or other minerals may some day be discovered. Iron mines were formerly worked at Lovania in the North-West of the State, and tradition is

current that gold was also found there. Stone quarries exist in numerous villages, the best known being at Talwana eight miles west of the capital.'

3. The iron mines of Lovania are not worked for want of knowledge and money. The mine at Khamera is worked by blacksmiths who have their houses there. They were digging *Kachlapathar of Loha* from the iron mines of Udvella, Sadadi, Bamapoda and Yogpura, but from the commencement of this year they have been able to obtain only so much iron as is required for their own work. The reasons for this are given below. The mouth of the Udevella iron mine fell down in last year's rainy season and the poor blacksmiths are not able to open another mouth. They have not also been working the other three mines as more cheap iron than before was imported from Bombay this year. Till this year no or almost little iron had been imported from Bombay, on the other hand iron was being exported from here to the eastern side of Gujarat.

4. About eight miles north from Lovania there are the Parsola iron mines in Udepur State and there are also several iron and copper mines there. In about fifty places in Banswara State you will find iron mines.

5. People say that there was formerly a gold mine, that one Raja filled it up and made a small *mandir* or temple there. Dungree, which is about quarter of a mile south-west of Lovania village, probably has coal.

6. I have seen the Bengal and Warora coal mines, as also the gold mines of Africa. But as I have no scientific knowledge I can say nothing more definite about the mines in these parts.

7. The following information about the places where the mines are situated will be found of use by those who may desire to visit them :—Rutlam is a railway station. Selana is 10 miles from Rutlam and there is a dak bungalow there. Danipipla is 10 miles from Selana. It is a police *thana* of the Banswara State and about 40 *Mahajans* reside there. Eighteen miles from Danipipla is Banswara, the capital of the State. Eighteen miles from Banswara is Lovania, where there are about 80 *Mahajans*. Parsola, in Tahsil Udepure, is 10 miles from Lovania, and 10 miles off it is Iagpura, where there is a police *thana* of Banswara State. Ilhambra is another 10 miles distant, and there also there is a police *thana*. A traveller can see from here the Udvella, Khamera, Sadadi, Bamanpada and Yogpura mines. Banswara is 18 miles from there, and so the visitor may get back to Rutlam.

8. About 20 miles south of Banswara there are also some mines. Two European companies are trying to get con-

cessions for working them, but any Indian entering the field will have a prior claim.

9. It is my belief that in the Banswara and Udepur States there is more mineral wealth than in the Central Provinces where Tata & Sons are going to work.

(2) BABU AMBICA CHARAN MAZUMDAR, *Faridpur*.

1. The condition of the agricultural industry in Faridpur is fairly satisfactory. But the craze for jute growing is gradually absorbing the major portion of culturable areas, excepting the *beel* tracts where paddy cultivation still preponderates.

2. With the exception of the swamps nearly the whole district is under cultivation.

3. The soil is generally alluvial and therefore quite fertile.

4. The landowning classes are generally middle class *Bhadrалоkes*. Their condition is generally deteriorating; but the actual cultivating classes are comparatively well off and would be better still if they were economical.

5. Tenant proprietorship does not exist here. Three-fourths of the tenants possess the right of occupancy, only a small fraction being tenants at will.

6. There is an yearly Agricultural Exhibition at Faridpur and seeds and other rewards are given to *bona fide* agriculturists. The institution has been in existence for over 30 years; but beyond the cultivation of potatoes I do not think it has helped agriculture very much. The Faridpur District Association has recently taken up the subject and an account of its working can be given only next year.

7. Two Co-operative Credit Societies have been established quite recently. It would be premature to make any forecasts of their working.

8. A sort of fine *Barley* is being manufactured at Dasartha in this district which has been properly tested and found to be very wholesome and of excellent quality. It is sold here and may be also found in Calcutta.

Nibs and knives are also manufactured here. The nibs are largely exported to other districts; but the knives are sold only locally.

17-20. Sugar and weaving industries existed here very largely. The latter has revived under the impetus of the Swadeshi movement; but the former is still decaying, sugar-cane cultivation having fallen off on account of ravages by

wild animals. The sugar industry furnishes an important as well as a difficult problem. It can only be revived by power machinery without which it cannot stand foreign competition.

21—24. Formerly there was pearl fishery in the river Kumar in this District. It has long died out. An effort might be made to ascertain if pearls exist any more in the shells to be found in this river.

Shell lime is obtained from the shells to be found in abundance in this district. A methodical working of this business may prove a very profitable concern.

25. There is no bank particularly to help industries, although the weaving industry receives some help from the Faridpur Loan Office, Ltd.

26. Two Co-operative Credit Societies have been recently started.

28. There is a small technical school established at Faridpur. It at present deals only in carpentry.

34. Some students have been so sent by the Scientific and Industrial Association, Calcutta; but I cannot give the exact number.

42. The Faridpur District Association recently established proposes to deal with industrial questions also.

(3) BAO BAHADUR D. R. SHRIKHANDE, *Damoh (C. P.)*.

2. Almost all the available land is under cultivation.

3. Half the district is rice-growing and the other half ragi-growing.

4. Tenants are generally poor. Seven per cent. may be doing well. All malguzars are in debt with few exceptions.

6. (b) One experimental farm is opened.

17. Paper-making in Panchamnagar has decayed owing to competition.

19. It is not practicable to revive any of the decayed industries.

The answer to all other questions is *Nil*.

(4) SETH DAMODARDASA K. RATHI, *Beawar (Rajputana)*.

[My answers should be taken as coming out of local enquiries only. But the information about land has been taken from Government officials as no other authentic source could be found. The answers pertain to the town of Beawar only.—D. K. R.]

A.—AGRICULTURE.

(1) The bulk of the population which is rural, is devoted to Agriculture. The industry as a whole is not so paying as to induce people to pay more attention. Several years in the last two decades being those of low rainfall, the condition of agriculture is going from bad to worse. This year also is feared as one of terrible famine and in the near future thousands of men will be found starving.

2. Area has been sown to the normal extent and not much of culturable land remains waste.

3. Generally poor and very inferior to that of Berars, somewhere hilly and somewhere plain. Not rich even in isolated places.

4. Poor and in a very wretched condition but having no aspiration or any ambition to better their state and shy of entering any other field of earning.

5. Approximately $\frac{1}{2}$ by the ex-proprietary tenures and owners, $\frac{1}{4}$ by mortgagees, $\frac{1}{4}$ by tenants at will.

6. (a), (b), (c). *Nil*.

(d) Ordinary manure is only used and near the town mill and factory. refuse and blow dust, &c., of mills used for manure. No scientific method is used to improve the land.

7. *Nil*.

B.—MANUFACTURING INDUSTRIES.

8. (1) three cotton ginning, six pressing houses, one cotton mill working with 18,000 spindles and 623 looms.

One cotton mill under construction, handlooms working in the town and a few in villages.

Hand spinning wheels working all throughout the town and many of the bigger villages.

Wool washing and scouring carried in town by hand preliminary to the same being sent to Europe.

Silk weaving was tried in local mill, but on account of very slack demand was abandoned.

No jute industry exists neither is there found any jute here.

(2) Cotton cleaning done by hand extensively in town press houses. Bones collected all throughout for export at the cost of agriculture, which principle the rude villagers would not acknowledge although explained in every way.

(3) (a) Leather washed, and cleared for shoe-making and export. A large trade carried on in raw and partly cured hide and leather.

(b) No horn trade ever existed.

(c) Paper was formerly manufactured but under competition with machine the industry has become extinct.

(4) Pottery work done generally for local use. No porcelain work nor of glass.

(5) Iron, Brass and Bronze (कॉपी) work generally done on a good scale in the town. But the industry has declined on account of the keen competition with outside articles and also through these craftsmen getting better livelihood in mills and factories locally as well as at Cawnpur and Ahmedabad, and also in Railway Workshops.

(6) Dyeing done on a good scale. But some dyers joined the mills getting better wages in working the looms. Some emigrated to Ahmedabad on account of bad trade, their customers, the villagers being in bad condition. The town people generally use English dyed and printed goods being decent looking and cheap although less durable.

(7) Nil—except some imitations of ordinary tables, etc.

(8) Slate (stone) and building stone comes in abundance into the town and goes to adjoining places and districts. Ordinary bricks and tiles made for the use of factory buildings only where stone would not do

Almost all wood work required for ordinary dwellings done locally as also metals—excepting screws, hinges, etc., which are now replaced by imported ones on account of their good look although of very little durability.

9. Answered above in reply to query (8).

10. The town is generally prospering owing to the expansion of trade. The town is only about 70 years old. The district was formerly desolate and an abode of robbers and dacoits who would not mind murdering an innocent traveller.

11. (1) Ginning Factories 600 hands in season.

Pressing Factories 500 to 5,000 hands in season.

1 Cotton mill employing 1,500 hands regularly.

1 Cotton mill employing about 800 to 400 hands regularly.

Handlooms employ 200 hands in the town.

Accurate figures for villages unavailable but there may be approximately 200 to 400.

Hand spinning employs 2,000 women in leisure time excepting several months in the year such as Chaitra and Chaturmashya.

Wool washing employs about 200 men in season.

(2) Cotton cleaning included in presses No figures available for other professions under this head.

(3) (a) About 600 hands.

(4) 200 hands all throughout including villagers.

(5) 500 blacksmith hands. } in town and villages.
50 Brass and Bronze. } Accurate figures not available.

(6) About 500 to 600 hands employed in dyeing and printing according to good or bad time.

(7) About 400 hands employed in carpentry work including villages.

(8) According to demand for stones, slabs and pieces the numbers of hands vary from 50 to 600.

Numbers of men employed in tiles and brick trade vary from Nil to 200.

| | Rs. |
|--|-----------|
| 12. Cotton Ginning | 1,25,000 |
| Presses | 4,20,000 |
| Mill, one working, about | 10,00,000 |
| Mill under construction will cost about .. | 5,00,000 |

Other figures not available.

13. No definite idea formed about this as practically, before British rule, there was no organization of industries on account of the inhabitants being in a primitive condition. It may be said that dyers and printers are losing ground against imported fabrics.

14. (1) Local and other parts of Bajputana for all hand Industries.

(2) Ports for raw materials.

(3) Bengal, Punjab, Madras, United Provinces and local for mill cloth. Engineers from Europe have come for mill yarns.

15. The unskilled labor being cheap, an increasing demand for it will surely benefit the hand industries. The mills will expand with increased demand.

16. (a) By making advances and improving appliances hand weaving can expand.

(b) Hand dyeing and printing can expand with improvement in appliances, imparting of special instruction and by increased demand.

Machinery is badly need for—

(1) Printing and dyeing of fabrics ;
 (2) Working wood, and
 (3) Crushing oil which is done on a large scale employing about 800 hands,

17. Paper.

18. Cheapness of machine paper.

19. No.

20. *Nil.*

C.—MINERALS AND OTHER NATURAL PRODUCTS.

21, 22, 23 and 24. Mica is only explored and exported in raw condition to foreign countries other minerals such as asbestos and graphite, etc., found but remain unexplored. No minerals manufactured.

D.—CAPITAL.

25. Practically none on scientific principles. The people borrow from Hindoo and Mahomedan Sowcars.

26. and 27. None.

E.—EDUCATION.

28. Apprentices were taken for many years up to 1906, and paid for learning weaving, etc., but since they all leave after learning—none are now taken and the weaving in Krishna Mills is now done partly by local and partly by imported labor. In all other industries the people learn merely by practice. Some Engineers have been trained by the Krishna Mills who are now employed in the U. P. and Punjab.

29. *Nil.*

30, 31. *Nil.* 32. *Nil.* 33. *Nil.*

34. No. But two students are apprenticing themselves in the Krishna Mills for Engineership, one of whom gets a scholarship and the other will get one shortly.

35. *Nil.* 36. *Nil.* 37. None. 38. None.

39. Some men have been specially trained at Bombay in dyeing and printing on modern principles and they are prospering.

39, 40 and 41. Some young men are employed in learning the art of managing a Cotton Mill and their services seem to be utilised by the mill in which they work.

Some of the Madras, Sind and Kashmir students returned only last month after receiving training in cotton sizing and weaving. It is not known how their knowledge will be utilised, as the parents of all these are well to do people but not enterprising.

F. INDUSTRIAL ASSOCIATIONS.

42. None.

Remarks.—If capital be forthcoming Beawar can very well maintain a Woollen Mill—also an iron foundry and a wood working concern. Any enterprising gentleman may open a cotton seed oil factory, and soap can also be made. Wool and cotton seeds are great staples in the market and hence this suggestion.

5. P. NATESA IYER, Esq., *Mayavaram* (Tanjore District).

A.—AGRICULTURE.

1. The Agricultural Industry in the District is in a tolerably good condition ; and from year to year it is being improved.

2. Almost the whole of the irrigable area has been brought under cultivation ; but portions of Pattukottai, Thiruthurai pundi and Tanjore taluks, have to depend upon rain ; and in such cases, all have not been brought under cultivation.

3. The general quality of the soil of irrigable area is clay. But rain-fed portions consist of either gravel or sand. On the whole the soil requires yearly manuring.

4. Nearly $\frac{1}{4}$ of the land-owning classes are in embarrassed circumstances. The majority of the cultivating classes are very poor.

5. Except in portions of Pattukottai and Tanjore taluks the lands are the absolute property of the Mirasidars themselves ; and the cultivators have no proprietary interest in them ; and very small portions are either owned by Zemindars, or Inamdars where the Rent Recovery Act is in force ; and in such places, the cultivators have a proprietary interest ; and almost all the others are merely tenants at will.

6. (a) No steps are being taken for the supply of cheap capital.

(b) No steps have been taken for extension of scientific instruction. As regards practical instruction, no doubt some steps have been taken in a few centres of the District both by Government officials, and private gentlemen. But practically little work seems to be done ; and even the little that is done by Government officials is not made as popular as it should be. But in course of time matters might improve.

(c) It may be said that there is almost no employment of improved appliances. The old method of ploughing is continued. Here and there by lectures and by some respectable Mirasidars taking an interest in the matter, some effort is being made to introduce new and improved appliances.

(d) The old method of manuring the fields by dung and certain kinds of leaves, etc., continues.

7. The Village Co-operative Credit system is not known at all in many villages in the District and the Registrar of Co-operative Credit Societies has not done much in this District.

B. — MANUFACTURING INDUSTRIES.

8. (1) In almost all the Taluks of the District weaving goes on of cloth worn by women as of old. Improved methods have not been introduced except to a very slight extent.

As regards wool, silk and jute, it may be said that nothing of the kind exists at all. No doubt silk is purchased by merchants in these places, and these silks are dyed here and used.

(2) Plantains, jack fruits, mangoes, and such like fruits are available on a large scale. As regards animal products—excepting fish in some of the seaport towns, nothing worth mentioning is produced here.

(3) *Leather.*—As an industry it is *nil*. Raw hides are exported to several places.

Horn.—No manufacture.

Paper.—Do.

(4) *Pottery.* No doubt in almost all places in the District pottery work goes on in a large scale, not by any improved and new methods but in the old manner.

Porcelain and glass Nil.

(5) *Metals.*—Copper, brass, bell-metal utensils of various descriptions are prepared in some of the places, and sent to distant places for sale.

(6) *Chemical Industries*—*Nil*.

(7) *Furniture and decorations.*—As regards this in some places, wooden furnitures, such as chairs, tables, mats, etc., are prepared. But these even cannot be said to be made on any grand scale.

(8) Materials used in construction cannot be said to exist on any large scale except what is absolutely necessary for the District.

(9) The present condition is that they have considerably deteriorated. Owing to the introduction of foreign

(by foreign it is not meant outside India—but outside the District) things as a substitute for indigenous ones, and also for want of capital and co-operation the whole thing is going down. Now and then some effort though not of a satisfactory character, is made to revive these industries.

(10) The condition of these industries seems to have been of a very satisfactory character in the past.

(11) In towns the important industries, consist of weaving and metal works. In almost all villages, agriculture is the chief industry and so a very small portion of the population, say 1/10 alone, can be said to depend upon such pursuits.

(12) In weaving, very few have capital of their own. The weavers carry on their profession by borrowing things and repaying in money when possible. But there are few persons who have no doubt some capital to begin their profession, and in course of time, they become either rich or poor according as their business flourishes or not.

(13) Many of the industries have been considerably affected by competition.

For instance Male cloth.—Most people do not go in for Swadeshi cloths because they find machine-made cloths are finer and cheaper.

Female cloth.—Foreign female cloth apparently more fanciful and dead cheap.

Metals.—By the introduction of zinc and aluminium, etc., vessels, native vessels have lost much of their fancy and attraction.

Hides.—Similar is the case.

Oil.— Do. do.

(14) Cloths alone are sent to some distant places in the Presidency. Paddy is sent to some distant places.

(15) No facilities at all exist to increase their supply.

(16) (a) Agriculture is the chief industry. There are also several artisans. By making advances, at low rate of interest, these cannot be much improved, unless new methods are introduced.

(b) By the improvement of appliances, no doubt much can be done. The people are intelligent and capable of turning out good work.

(c) Special instruction is not imparted at all. There are very many schools for general education. People who are willing to learn special branches find it very difficult.

(d) Some time will have to elapse before power machinery is introduced with any advantage, for the people have to be first taught the rudiments.

(17) Formerly lace embroidery, dyeing industries, and weaving, etc., existed but they have decayed.

(18) The causes are the following :—

(1) Desire for Government employment.

(2) Want of organized capital.

(3) Competition of foreign articles.

(4) Emigration of coolies on a large scale.

(19) Weaving can be revived most profitably.

(20) Measures to bring about the revival—

(1) Joint Stock Companies should be formed.

(2) There must be capital enough.

(3) Improved looms, etc., should be introduced.

(21) Nothing. (22) (23) and (24) *nil*.

D.—CAPITAL.

(25) There are no banking facilities at all.

(26) Nothing.

(27) Do.

E.—TECHNICAL EDUCATION.

(28) There are great facilities. People have a natural liking to learn the industries, but no schools where the necessary instruction is given have been opened.

(29) No special schools.

(30) Do.

(31) Do.

(32) Elementary commercial classes have been attached to some of the schools in the District.

(33) Excepting the fact that boys reading in schools for general education, also take up one of these minor technical subjects, nothing worth mentioning has happened.

(34) No. (35) to (11) No.

F. INDUSTRIAL ASSOCIATION.

(42) No industrial association at all.

6. J. B. SUBBAIYA, Esq., *Coimbatore.*

Five or six miles away from this town is a small village called Savaripalayam. It contains only a few houses and the people are all employed in weaving several varieties of checks and shirting cloths. These are generally called Coimbatore checks. They are of the same pattern as those of the checks of the Basel Mission Weaving Company of Calicut. The Coimbatore checks are very cheap and vary in price from 4 as. to 9 as. per yard. But the pity of it is that these weavers are poor and generally live a hand to mouth existence. At the end of every week they sell their products to the local shopkeepers. Thus their goods are not advertised. Considering the durability of these cloths and their cheapness, I am of opinion that if brought to the notice of the public, they will find a ready sale. This is an industry which is well worth encouragement at the hands of all lovers of Swadeshi. There is unfortunately no big shop that deals in these checks of shirting cloths. There is also here a large mill which spins yarns of inferior counts and whose products are sent to several parts of India. In the local Central Jail, weaving is an important industry. Bed covers, dhotis, patties and checks are made.

7. JOGINDRAVATH SAMADDAR, Esq., *Khulna, BENGAL.*
A. — AGRICULTURE.

1. The agricultural industry in this district is in a declining state.

2. Nearly the whole of the cultivable area was brought under cultivation but now some 5 lakhs of *Bighas* are lying waste. Moreover, nearly $\frac{1}{4}$ th of the whole district has become unpaying and it is feared that things will take a worse turn. The following paragraph which I cull from "the Telegraph" (Daily) will substantiate to a certain extent my statements. "We earnestly beg to draw the kind attention of Mr. A. Ahmed, the popular Magistrate and Collector of Khulna, as well as of the Government to a petition praying for the opening of a canal from the river *Allrabanki* through the Village *Gangni* under the jurisdiction of the Police Station *Mollarhat* in Khulna. This proposed canal which would extend to half a mile only will make 30,000 *bighas* of land fertile by enabling the fresh water of the *Allrabanki* river to water this land, which now remains almost uncultivated owing to the superabundance of saline water that makes cultivation impossible. In these days of scarcity and malaria, if the cutting of a canal of half a mile only would make 30,000 *bighas* of land fertile, thus providing both food and water to many people, we do not see any objection why Mr. Ahmed who has done and is

doing so much for Khulna, should not take the initiative in recommending to the Government the construction of the canal when as a matter of fact some public-spirited gentlemen are willing to bear all or partial costs for the undertaking." (The *Telegraph* 20th February 1903). The attention of the Government was drawn to it but owing to the opposition of a Zemindar through whose land the canal is to be cut through, the scheme has not progressed at all.

3. Sandy-loam, loam, clay-loam, peaty-loam, and loamy-sand.

4. Precarious excepting big-landowners and tenure-holders who are tolerably well.

5. One tenth of the cultivators' land is held on a proprietary tenure ; three-fourths as privileged tenancy, and the remainder as non-occupancy or tenancy-at-will.

6. (a) Practically no steps are being taken. Very rarely by the Government and not at all by private persons.

(b) Very recently and insufficiently by the Government and by the District Agricultural Association.

(c) Practically *nil*.

(d) Practically *nil*.

7. Through the exertions of Mr. A. Ahmad, C. S., one or two Societies have been started. Babu Jadunath Biswas, Zeminder of Bagghat, tried to start two Societies— one of these has been converted into a Grain Bank, and the other is not in a flourishing condition. The raiyats are too uncultivated and very slow to take advantage of these schemes. The Zemindars and the intelligent section are apathetic and practically very little is being done now-a-days.

B.— MANUFACTURING INDUSTRIES.

8. (1) Only coarse jute which is sent to Calcutta.

(2) No systematic breeding of animals. Among vegetable products *gur* (treacle) may be mentioned.

(3) No sorting of leather generally. The raw skin and horn taken from carcasses left in the open fields and sold to purchasers.

(4) Inferior pottery for household purposes.

(5) Only malleable iron obtained from foreign countries is wrought into several varieties of implements, and tools. A few of these were exhibited at the Khulna Agricultural and Industrial Association held under the auspices of Mr. A. Ahmad C. S., Magistrate and Collector of Khulna, and these were found to be tolerably well made. Gold and silver are utilised for ornaments but the finish is not of a high order.

(6) *Nil.*

(8) Bamboos ; wooden materials. Ordinary bricks and tiles.

9. Not improving.

10. Was not in a flourishing condition.

11. One-fiftieth portion only.

12. Practically none.

14. With the exception of jute which is sent off to Calcutta and *gur* which is exported either to Backergunge or to Calcutta, the products supply a local demand.

16. The existing industries are fully capable of expansion. A technical school has been started—the starting of which was due to Mr. S C. Mukerji, I.C.S., the former Magistrate and Collector of Khulna. An experimental farm has also been started where experiments are being carried on in several branches.

F.—INDUSTRIAL ASSOCIATIONS.

42. *Nil.*

8. RAOJI GOVIND, Esq., *Hoshangabad* (C. P.)

1. The condition of the agricultural industry is not satisfactory.

Some Malguzars and tenants have now begun to raise bunds (embanking of fields). Others, though anxious, cannot do so for want of funds.

Notwithstanding the conciliation courts some tenants have lost their lands owing to indebtedness.

The advantage of conciliation courts was not given to the Malguzars, many of whom are likely to lose their estates on account of heavy indebtedness.

2. The greater portion of the cultivable land is brought under cultivation, but the crops (it is feared) will not germinate fully for want of moisture in the soil. In greater portion of the soil cotton seed was sown but owing to the stoppage of rains, some portions of the fields were again ploughed and the rabi crops were sown which for want of moisture, it is apprehended will not fully germinate. Probably Government estimate is 88 per cent. (about the land brought under cultivation).

3. In Harda Tehasil 2 as. out of the whole area is

| | | |
|-------------------------------|---|--------------------|
| | | मरियार (best soil) |
| | 2 | ब्रावड |
| | 8 | मोरन |
| (particularly in Cherwa tract | 4 | हाकड (lead soil). |
| In Seoni Tehasil—like the | | Harda Tehasil. |
| In Sohagpur Tehasil | 8 | मोरन |
| | 8 | राकड |

In Hoshangabad Tehasil—almost like Sohagpur. On the whole—one-fourth of the whole area in the district is good and one-fourth is bad, the rest is ordinary.

4. The majority of them are heavily indebted and for want of funds and on account of uncertainty in the fixation of rents and the term of the settlement they do not and cannot make any improvement in their holdings.

5. Proprietary tenures are partly (about half) let out by the plot proprietors and Malguzars to others, for want of seed and sufficient number of bullocks.

The transfer of proprietary rights in *Sir* to creditors has been proceeding rapidly. There has always been a decrease in the area of the *Sir* fields. This is due to their indebtedness and the unsatisfactory character of the season.

6. (a) An urban society was started in Harda last year and four rural banks in other villages of the district. This does not meet the wants and necessities of the agricultural and artisan classes. There is yet time to see their results. The tenants are supplied seeds, &c., by their Malguzars and other creditors and Banias.

(b), (c), (d) A Government model farm was opened at Powarkheda, 3 miles from Hoshangabad where improved appliances are used at a considerable cost, which is beyond the power of ordinary agriculturists to make use of. No practical instruction is given anywhere in the District. A few agriculturists have now begun to make use of cow-dung and other country manures. Some have begun to raise bandhias (embanking) around their fields.

7. It is too early to say anything about it at present. Mostly the tenants borrow seed and other loans from their Malguzars and from Banias.

B.—MANUFACTURING INDUSTRIES

8. (1) There are eleven gin factories, four cotton presses and three hand looms in the District. Jajams, Sutaras (country rough carpets), are prepared in Harda and Sahagpur. Weavers

prepare rough cloth up to 20 counts in many villages of every Tahsil. Rough bangles are prepared in four towns.

2. There are some gardens which produce vegetable and other animal products, sugarcane, &c. No potato cultivation.

3. One leather factory (not by machine) but managed by a European in Harda.

4. One factory of pottery only is started this year like that of Burn & Co., Jubbulpore.

5. In Handia, Hoshangabad and Harda the Kaseras prepare brass pots only.

6. None.

7. One at Rasulia, a mile from Hoshangabad, managed by Missionaries.

8. There are two big markets, one at Tharsi and the other at Rahetgaon, near Harda, for sale of timber brought from jungles in the interior of the district. Ordinary Kumbars prepare in almost all the villages of the district bricks and tiles on old fashion.

9 and 10. Most of the ginning factories will be closed this year for want of sufficient quantity of cotton owing to scanty rains and also for want of sufficient capital to purchase cotton and also due to inefficient and incompetent managers of these factories. When there were only two or three factories and the cotton yield was good and sufficient, they flourished very much and that was the inducement to others to start more such factories, all of which, more or less, receive this year a heavy shock. The pottery work factory is not likely to flourish at present, owing to the tiles, pipes, &c., being inferior to those turned out by Burn & Co., Jubbulpore.

11. On gins about 600 to 700 men are engaged during the working seasons. About 200 men on presses (cotton) and about 2,000 in other industries, such as Kumhars, Kaseras, Weavers, &c.

12. On gins about five lakhs of rupees, on presses (cotton) about two lakhs, on pottery about 20,000; others are worked by individuals with a small capital who scarcely make a decent earning.

13. Brass pots, tiles, bricks and rough cloth are not very much imported in the district except the metal sheets.

14. They supply the demands of the districts only.

15. None for the present,—unless and until the well-to-do class receive technical education and also learn how to combine,

16. By resorting to all the means suggested in (a) to (d) of this question, the industries of the district are bound to flourish.

17. Weaving industry.

18. Foreign competition.

19. Certainly it is practicable to revive many old decayed industries most profitably.

20. If the weavers who now work in the old fashion in many villages of this district are encouraged by supply of capital and by instruction on improved handlooms, they will work wonders. At least one weaving school to impart instruction in improved methods, should be opened here. Some gentlemen here and also in Harda are thinking of raising private subscriptions for this purpose. When one industry like this gets a start and begins to work properly, the other small industries should be taken in hand one by one. Expert supervisors and skilled workmen in each and every branch of the industries are wanting. This want should be met first.

C.—MINERALS AND OTHER NATURAL PRODUCTS.

21. It is understood that there are certain silver mines in Joga of the Harda Tahsil, but they are not yet properly tried.

There are stone quarries in Hoshangabad and morrum quarries in Harda.

There is a kind of grass in the Hoshangabad Tahsil of which paper can be made, but the experiment is not yet tried by any one.

There is a big jungle in the Harda Tahsil in which there is a kind of timber (probably called salai) which can be used for matches if a match factory were started here. There are coal mines in Bagra in the Hoshangabad Tahsil and the work is, I learn, under experiment by a European firm who commenced the work of experiment five or six months ago.

In Rangpur and Chedka of the Sohagpur Tahsil there are coal mines but the work is not undertaken here as yet.

22 and 23. There are two big markets of timber (sag) which is exported to other districts and provinces, particularly Jalgaon and Khandesh.

Flag stones taken out from Hoshangabad quarries are sent to other districts and provinces. Nothing is exported to foreign countries except cotton and grain (including wheat and til seed). Some kacha stones are found and taken out from Bagda hill in the Sohagpur Tahsil. The earth (matti) taken out of these kacha stones is used for pottery work.

D.—CAPITAL.

25. None for the present. There are many rich bankers in the district but they do not understand the advantages of starting such banks for the support of any such industries.

26. Only one urban bank was started in Harda, under the provisions of the Co-operative Credit Societies Act.

27. It was started in 1906. It is managed by the well-to-do and educated Malguzars. Its capital is Rs. 8,000. I had to begin by purchasing 100 shares of Rs. 10 each. Interest charged is 12 as. to 15 as. per cent.

Money is lent to artisans, small shopkeepers and agriculturists on easy terms, and whenever there is no demand the money is lent on hoondies for a very short period. Money is lent on the personal security of two respectable men. Rs. 1,000 have been lent to another rural bank of this district on easy terms and on 8 as. interest.

E.—TECHNICAL EDUCATION.

28. Want of mutual faith and co-operation amongst the people exists and therefore nothing can be done here unless the Government co-operate and give their advice and help. If this is done there are many facilities for training young men.

29. None.

30 to 33. *Nil*.

34. I have sent only one boy at my expense to the Calcutta National Weaving School. None else besides him.

35. He studied up to the 1st English class and was a menial servant of mine. He seemed to me to be very intelligent and willing to learn.

36 to 38. I sent him with a view to teach other weaver boys gratis when he returns.

39. None.

40 and 41. *Nil*.

F.—INDUSTRIAL ASSOCIATIONS.

42. *Nil*.

(9) P. SUBYANARAYANA, Esq., *Rajam (Visagapatam)*.

A.—AGRICULTURE.

1. Generally good.

2. Yes.

3. Good.

4. Landlords are prosperous but tenants are poor.

5. About $\frac{1}{10}$ on proprietary tenure; the rest are tenants-at-will.

6 and 7. None.

B.—MANUFACTURING INDUSTRIES.

8. (1) Rajam, Pondur, Boddam, Kancharam, Mamidipille, Senavaram, Potnuru and Jami are the chief centres of cotton weaving and spinning. Chittivalsa has a jute factory.

2. Nakkapalli and Srungavarapukota are noted for lac and wood works.

3. Vizagapatam ivory and horn works are of world-wide fame.

4. Mining of manganese is carried on by English companies on an extensive scale in Chipurupalli and adjacent taluks.

5. Manufactories relating to leather, pottery, metals, oils, furniture, &c., are carried on in several parts of the district in a primitive style.

N. B.—The following remarks apply only to the textile industry which is the only one carried on on a large scale and upon which about 40,000 people depend for living.

9. The present condition is encouraging owing to the Swadeshi movement.

10. It was gradually decaying.

11. About 40,000.

12. Cannot be estimated.

13. Materially affected by competition with imported articles.

14. Bengal, Orissa, besides local market.

15. Enough of weavers to meet increased demand.

16. (a) Much, but the step is fraught with difficulties. (b) Improvement will be in proportion to the efficacy of the new appliances. (c) Much good can be expected. (d) Much expansion will be the result.

17 to 20. None could be named.

C.—MINERALS, &c.

21. Manganese, iron, graphite and mica.

22 and 23. None.

24. Manganese.

D.—CAPITAL.

25 to 27. None.

E.—TECHNICAL EDUCATION.

32 and 33. A carpentry class is attached to the Mrs. A.V.N. College, Vizagapatam.

34 to 41. None. Two young gentlemen went of their own accord to Japan to learn the making of pencils, soaps, matches, &c. They returned from Japan and left for England for the study of law.

F.—INDUSTRIAL ASSOCIATIONS.

42. There seems to be one at Vizagapatam but only in name.

Note.

The pencil factories at Bimlipatam and Anakapalle, the Vizagapatam Spinning and Weaving Company (Handlooms) at Rajam, the rice mills at Vizianagram and Vizagapatam, perfumes, soaps, matches of B. V. Nath of Vizianagram—all started since the advent of Swadeshism—show that Vizagapatam District has also partaken in the general awakening.

(10) G. V. SHRIKHANDE, Esq., Saugor (C.P.).

A.—AGRICULTURE.

1. The condition of the agricultural industry in Saugor is not satisfactory as the district has been suffering from a series of famine years for the last decade and poor crops have taken the place of valuable crops. Cropped area of the last settlement was 938,864 acres ; at present it is 814,502 acres.

2. No. The district area is 2,564,480 acres. The Malguzari area is thus at present, including a few ryotwari villages, 2,029,844 acres. Of this 140,047 acres is not available for cultivation.

The net available area for cultivation is 1,899,797 acres, while the cultivated area at present is 920,022 acres inclusive of the new fallow ; or, in other words, the margin for extension of cultivation is still 51 per cent. on the total culturable area.

3. The general quality of the culturable soil is fairly good.

The area classified by soils at the last settlement is :—

| | | | | | |
|---------|---------|------|---------|---------|------|
| Mar. | 7,259 | acs. | Rathia. | 54,282 | acs. |
| Mund I. | 280,836 | " | Patua. | 210,162 | " |
| Do II. | 301,082 | " | Bhatua. | 44,252 | " |
| Baiyan | 108,649 | " | Kachar | 1,141 | " |
| Kabar. | 27,026 | " | | | |

4. The landowning and cultivating classes are mostly indebted and their general condition cannot be said to be satisfactory.

| | | | |
|--------------|-------------|----------------------------------|------------------------|
| 5. Sir | 125,196 ac. | } Absolute occupancy. 158,280 ac | |
| Khudkast | 88,064 " | | } Occupancy. 227,081 " |
| Malikmakbuza | 37,119 " | | } Ordinary. 488,688 " |

6. (a) No steps whatever.

(b), (c) and (d). *Nil*.

7. The system has not been introduced yet in this District.

B.—MANUFACTURING INDUSTRIES.

8. (1) Cotton industry is not now important in the Saugor District ; the decrease has been very marked during the last decade ; a little thread is still spun by hand, generally by women in the spare time and used in the manufacture of coarse carpets, bags and cloths.

For weaving, ordinary weaving cloth mill spun thread is now mostly used.

Cloth is woven to some extent in large villages all over the district ; the chief centres are Saugor, Rehli, Deori, Gourjhamar, Garhakota and Rahatgarh. White dhotis with red borders for men and red cloths with black borders for women are principally woven. In 1850 Garhakota was described as a chief cotton mart, the principal articles woven being "addhas" or cloths in red, white and black stripes, which were made into "lahengas" or skirts for women. Very few of these are, however, made now. The weaving castes are principally Kories and Chadars who weave only coarse cloth. There are a few hundred Koshtis in the district and a few houses of Momins or Mohamedan weavers in Saugor. These Koshtis make good "saries" and "dhotijoras" with silk, gold and silver thread. The Momins also turn out good specimens of cloth. A cotton press has been opened recently at Garhakota. Cotton cloths are dyed in Saugor, Rehli, Garhakota and Gourjhamar, but the industry is also decaying. Saugor is said to have been famous for its dyeing industry and to have had a large export trade in former times, but this has now altogether vanished ; many of the weavers now buy coloured thread.

Kusum or safflower, which was formerly extensively used as a dyeing agent, is now scarcely ever employed owing to its cost, and indigo and "al" (*Merinda certifolia*) though not entirely discarded, are being supplanted by aniline dyes. In 1880-91 there were 400 acres under indigo and other dyes, but practically none are grown now in the district.

Wool.—Coarse country blankets are woven from the wool of sheep by the "Gardarias" or shepherd caste, who combine this occupation with sheep-breeding and tending. The local supply is insufficient and blankets are imported from Bundel-

khanda and Cawnpore. The local blankets are black, white or chequered in black and white. Blankets of superior quality are made in Khurai Tahsil. The blankets prepared at Khurai are called "ral." - Some pinjaras in the Saugor City make "namdas" of unspun wool which are covered with cloth to form native saddles.

Silk is imported in small quantities for making borders of dhotis and saris and for preparing "kad" and "muktas." This is only used by the Koshtis in the town of Saugor.

Jute is neither cultivated here nor used for textile fabrics.

"Sun" (hemp) is grown in the district and is used in making ropes and "tat-pattis."

4 - POTTERY, PORCELAIN AND GLASS.

There are a number of potters in the district; nearly every village has a few Kumbars to supply its requirements for earthenware vessels which are used extensively for cooking and storing water and grain. The vessels are coloured red, white, yellow or black before being baked. The quality of the earthenware is generally superior to that of the Southern Districts, and the pottery of Shahgarh owing to some quality in the clay, has special reputation for strength and durability. The Kumbars also make bricks and tiles.

At the Dewali festival the Kumbars make "cheraghs," a variety of clay figures and ornaments and give them a glittering whitish colour with lime and mica: while the mochis make painted dolls and images of gods and animals.

There is a good industry at Saugor where Allahabad tiles are manufactured.

Porcelain is imported into the district. Glass bangles are made in Saugor, Pithoria, Garhola, Garhakota and Rahatgarh. Balls of rough glass are obtained from Cawnpore. The bangles made locally are now being superseded by those of transparent glass imported from Europe.

Rude glass bottles are made for holding sacred waters, scented oils and medicines.

Lac bangles are also made and are much used by females in the month of Srawan. Beads and necklaces of lac and ornaments for the ears and head are worn by children and women of the lower castes.

2.—VEGETABLE AND ANIMAL PRODUCTS.

Wheat and oilseeds, gram, cotton and ghee and "gad" are the principal articles of export. "Gu-" (raw sugar) is manufactured locally. These articles are chiefly exported from Saugor, Khurai, Bina, Bamora, Patharja and Kareli.

Cotton is mainly grown in the south in the Rehli Tehsil. Betel-vine leaves are sent to Northern India as also timber and grass.

Teak is the timber principally used for building and other purposes, while bijesal, saj, and koha are those next in favour.

Wood charcoal is used for smelting and bamboo charcoal for refining. Teak charcoal is generally used only by Lohars and Dhobis. Bamboos are plentiful and are used for building purposes, and basket and mat-making. These are now exported to Cawnpore.

Mahna, achar, and tendu are the chief minor produce of the district jungle; the flowers of the former and the fruits of the two latter trees are collected in large quantities for food by the poorer classes. From the seeds of the achar tree "chiranj" is extracted. Gum is largely collected from dhaura, khair and saj trees. This is used for food and for export.

Catechu is boiled from the wood of the khair tree. Lac is collected in large quantity though the lac insect is said to have died in the famine years. The other minor products are honey and wax.

Herds of small buffaloes are driven to Chhattisgarh for sale from this district.

3. LEATHER, HORN AND PAPER.

Other exports are hides, horns, bones and skins of cattle. Considerable quantities of sheep skins are also sent away; these are used for making drums, bookbinding and also for shoes. The skins and horns of the antelope are also exported in small quantities for ornamental purposes.

The export of dried jerked meat has recently become an important and lucrative trade with Burma and Madras.

Big slaughterhouses have been established at Saugor, Khurai and Rahatgarh where about 1,000 heads of cattle are slaughtered daily during the working season.

Formerly paper was made in this district but the industry is now extinct.

Leather industry in Saugor is also most important. It is, however, a village and not organised industry. The Chamars make articles of leather used in agriculture and also shoes. Saugor shoe is noted and is even exported. Better class of shoes have ornamental designs worked with silk, cotton thread and lace; shoes are mostly made in Saugor and Rahatgarh.

There are good carpenters in towns who turn out high class work and English furniture. Ornamental wood-carving is also

done to order and some of the temples and houses contain very good specimens of this work.

Kanderas or turners make tops, toys, cups, chessmen, "haggas" and other articles, and also do lacquer-work. Bamboo-workers also muster strong in Saugor.

8.—MATERIALS USED IN CONSTRUCTION.

The district of Saugor abounds in good materials for building purposes. It has good clay for bricks and tiles and fine Vindhyan rocks, yielding sandstone, which is well adapted for building purposes and a number of quarries are worked. The best are at Rahatgarh and Maswasi near Saugor from which large slabs are obtained. The houses in several villages are built and roofed entirely with sandstone slabs.

Teak and other timber is plentiful.

9, 10 and 13 The present condition of all these industries, having come in contact with cheap machine-made articles, is quite unsatisfactory, declining and decaying. Before this their condition was much better.

11 and 12. Statistics are not available.

14. These industries, as has been stated above, supplied mostly local demands and surplus products were exported to surrounding districts.

15. Land and labour is still comparatively cheap at Saugor and will facilitate any increase in the supply, if a demand arose.

16. The existing industries are capable of expansion—
(a) by making advances to artisans at low rates of interest;

(b) by improvement of the appliances in use;

(c) by the imparting of special instruction, and

(d) by the employment of power machinery.

17. Almost all the industries described above still exist but in a decayed form.

18. Cheap foreign articles in the market without any protection or appreciation for the locally made articles.

19 and 20. Cotton goods, dressing and curing of hides and metal works can be much improved with profit by the means noted under head 16. Saugor had formerly a large industry of gold and silver workers, but they are now hard put to it to make a living. There are a few Sonars at Khurai and Itawa and one or two in most large villages. They prepare the ornaments of gold and silver used by the people, besides plates, chains, bells, bones, etc., etc. Squar's son sits all day

with his father watching him work and handling the ornaments ; they also receive some training in freehand drawing at home.

Ornaments are now also largely made of bell-metal by the sub-caste of Andhia sonars. Eating and drinking vessels are also made of this mixed metal, but they cannot stand fire and cannot be used for cooking purposes. Bell-metal industries exist in Saugor, Pijora, Jaisinghangar, Rahatgarh, Isurwara, Deori, Khimlasa and Malthone.

Brass and Copper work.—Water pots and dishes are made of these metals by the hammering process, while drinking and cooking pots, instruments, idols and toys are mainly cast. Copper horns for use as musical instruments are made at Malthone, and sent outside the district. Brass working industries exist at Saugor, Khurai, Itawa, Garhakota, and Rehli.

Iron works.—Most villages have a lohar or blacksmith who makes and mends agricultural implements. Imported iron is now principally used and many articles are imported ready made by Bohras, but cooking utensils made of iron and melted at Hirapuri and Barkhera villages in this district are preferred to the imported articles. Ornamental iron nut-cutters are made at Deori. Some lohars in Saugor can make good and strong locks.

6. CHEMICAL INDUSTRIES.

The local Vaidyas and Hakims prepare their "Matras and medicines." The "attars" produce different "Itras," scents, scented water and 'sharbats.'

7. FURNITURE AND DECORATIONS.

Carpenters are found in most villages who make the wooden implements of agriculture. There are a few good workmen.

C.—MINERALS AND OTHER NATURAL PRODUCTS.

21. Deposits of iron are found in the north of the district in the villages of Tigora, Heerapur, Baraitha and Amarman—all of the Banda Tahsil.

The mines near the latter village are in Government Forest. This Department lets its mines to a contractor for a small sum and iron workers pay him. In the other mines any one is free to extract ore in payment of a royalty of as. 8 per year on each furnace maintained. The number of furnaces has decreased in recent years. In 1899 there were 78 furnaces ; in 1903 there were only 31.

Sandstone of a superior quality is found in Rahatgarh and Maswasi and in Shahgarh soft stone is obtained which

is made up into cups and vessels. The red clay found in Shahgarh is worked up into earthenware of a good quality and superior strength.

Mica exists at Baraitha, but is not worked.

22. Iron and sand stones are used in the district.

23. None except a little iron which is sent to Cawnpore.

24. Hides, horns and bones.

D.—CAPITAL.

25. None except the local money-lenders.

26. None.

27. *Nil*.

E.—TECHNICAL EDUCATION.

28. None whatever. Recently a class has been opened in the High School for the sons of Lohars, Sonars and carpenters where drawing is taught.

11. M. VENKANAH, Esq., Vizianagram.

A.—AGRICULTURE.

1. The district of Vizagapatam is the largest in the Madras Presidency. More than nine-tenths of it consists of Zemindary land, and of the remaining only a fifth comes under *inam*. Hence agricultural statistics are available only for the *ryotwari* and minor *inam* lands in the three Government taluks of the district. The maritime plain and most of the valleys in the Agency Tracts are very fertile. The old tools and implements with which agriculture has been carried on from time immemorial are still in vogue everywhere. The ploughs, the seed drills and other appliances are wholly unsuited to modern requirements and are susceptible of considerable improvement. On the whole the soil is fertile, yielding abundant crops, such as paddy, cambu, ragi, gingelly, gram and cholam. Owing to the high prices which jute has been fetching of late, a large area which has hitherto been under 'wet' cultivation is now brought under jute as being more lucrative. Sugar-cane is extensively cultivated in the Palkonda Taluq and in the valley of the Sarada round Anakapalle. Formerly cotton and indigo were grown over a wide area, but since the discovery of the artificial dye, the latter has been abandoned, with the result that the numerous indigo factories scattered over the district are to be found in a crumbling and dilapidated condition, having been overgrown with cypresses.

2. The district may be divided into two portions, namely the Agency Tracts and the plains. The former is hilly and is covered with dense and impenetrable forests. The greater part of the cultivable area in the inland parts is brought under cultivation. There is, however, no inconsiderable land in some of the Zemindary tracts which has been left 'uncult' and 'low.

3. The soils of the district as classified in the three Government taluks divide themselves into the two main groups of red ferruginous and black, which may again be subdivided into clays, loams, and sands. The black soil is chiefly found in the alluvial valleys of the streams and rivers, the higher land being usually red.

4. The major part of the population live by agriculture, and in the absence of any industrial activity worth speaking of, they have no alternative avocation to which they can readily take in the event of the failure of the monsoons.

5. The system of tenure in the Zemindary tracts which denies occupancy right in the land does not tend to improvement or careful cultivation of the soil. The Zemindars do not encourage the pauper cultivator and let the land to tenants of substantial means. In most of the estates the ryots do not enjoy a fixity of tenure and the assessments are constantly and avariciously enhanced at the sweet will of the Zemindars. Moreover, most of the *pattas* granted by these Zemindars contain the most rigid and ungenerous stipulations, such as that no trees shall be felled or planted by the tenants without permission and the custom of paying the Zemindar in kind. In these circumstances it is not unnatural to find that the ryots as a class should be wallowing in abject poverty in the Zemindary tracts, while the condition of those in the Government taluks fares no better.

6 (a) There is no supply of cheap capital in the district to finance agricultural or any other industry. The cultivators borrow from the Sowcar at usurious interest with the result that they find themselves unable to refund either in cash or kind, and after undergoing the privations and harassments consequent upon litigation in the Indian civil courts, turn out coolies or labourers or migrate to the more fertile parts such as the Godavari District or Burma in search of livelihood.

(b, c) In 1904 the District Agricultural Society was formed and cattle shows had been held at Vizianagram, Kasimkota and Bobbili. Practical demonstrations in ploughing with new and improved implements were held for the benefit of the agriculturists. But owing to extreme poverty of the ryots, they are unable to avail themselves of these

advantages. From the very outset the Association which has been under official control, does not show much vitality, nor have the public any reason to enthuse over its results so far.

(d) There is hardly any doubt that the soil is gradually becoming infecund, *pace* Dr. Voelcker. Water and manure are the chief wants of the ryots in the district. There are, however, many small rivers, but as they flow mainly through the Zemindary tracts, their contents are not utilised for irrigational purposes on a large scale. The ryots depend mostly on wells, tanks and mountain streams, and in the event of failure of monsoonal rains, they have nothing to fall back upon. Everywhere cow-dung, which is largely burnt as fuel, is used as a manure, but it does not fertilise the soil proportionately to the loss sustained every year. It is only in places adjacent to Municipal towns that night-soil can be procured and utilised as a manurial substance. The outlying fields of the villages are fertilised with the litter of cattle-sheds and the urine of farm animals. The ryots are ignorant of the use of mineral and artificial manures.

7. It is a pity that the district has not yet taken advantage of the Co-operative Credit System.

B — MANUFACTURING INDUSTRIES.

8. Next to agriculture cotton weaving is the chief occupation of the people.

(1) Rugs and carpets are made at Jami in the Srungavarapukotu Taluq. They are also woven at Anakapalle and Payakarowpeta in the Sarvasiddhi Taluk. In the east of the district the weaving centres are Rajam, Siripuram, and Ponduru, three neighbouring villages in the Palakonda and Chipurupille Taluks. In the first named coloured cloths are woven which are of a soft and exquisite texture. They are not only sold in the plains, but also sent in large quantities to Ganjam, Orissa and Bengal. Weaving is also carried on in Siripuram and Ponduru where women spin a fine gossamery yet strong thread which approximates to 150's and weave cloths which are famous for their softness and durability. Other places where cotton weaving forms an important industry are Vizianagram, Duppada, Jonnavalasa, Denkada and Anakapalle.

The local jute is spun and woven into gunny-bags by steam at the mill at Chittivalasa near Bimlipatam. In a few villages near Palakonda, Anakapalle, and Vizianagram jute fibre is woven into long strips of gunny which are cut up and stitched into bags.

(2) The chief centre of jaggery trade is Anakapalle where sugar-cane is now largely grown. Iron mills are used there for pressing the cane. Messrs. Parry & Co. have been encouraging the cultivation of cane by advances of money and improving the quality of the jaggery manufactured by hiring out to the ryots metal vessels for the storage of the juice in place of the earthen pots generally used by them. Jaggery is also manufactured on a large scale at Rayaghada and Palakonda which are situated on the outskirts of the plains. The oils used in the plains are all made in the primitive wooden mills in almost every town and village. Castor oil is prepared in Vizianagram in two mills which are more or less paying.

There are two rice mills in Vizianagram which were started only last year.

There are three tanneries in Vizianagram and one at Jeypore. All of them are owned by Mahomedans. Tanned hides and skins are exported on a large scale from the port of Bimlipatam.

Large quantities of horns are sent from the Agency and are exported to foreign countries.

Vizagapatam is the centre of ivory work in the district. The industry is in a flourishing condition and has won medals at Exhibitions. Fancy articles such as chess-boards, photograph frames, card cases, and trinket boxes are made from tortoise-shells, horns, porcupine quills, and ivory combs of exquisite pattern are also prepared and largely patronised by Europeans.

Lacquer work is done at Anakapalle, Chandanada, Etikoppaka, Lakavarapukota and Srungavarapukota.

Wood of fine quality is turned on the primitive lathe and lac of various colours is then applied to it. The articles made in the places consist of cots, toys of different kinds, chess-boards, small boxes, tumblers and platters.

Glass bangles are made in several villages round about Anakapalle, Yellamanchili, Chipurupalle, Vizianagram, Paidipalem, and Navarangapur.

A pencil factory called the 'Krishna' Pencil Manufacturing Company has been started at Bimlipatam. The plant and machinery are fresh and cost about Rs. 15,000. The daily outturn is encouraging and with efficient and more economical management it will prove a very paying concern. The factory is managed by a Bengalee expert who underwent training in Japan.

(5) Fine work in gold and silver is done at Rajam, Bobbili, Parvatipore and Vizianagram. Cups, rose-water sprinklers, small silver boxes and vessels are neatly executed in these places. Ornamental work in gold and silver is done

in Vizagapatam and Vizianagram. Brass and bell metal work is usually done by the Kancharis in Parvatipore and Anakapalle, Bobbili, Somalingapalem, Ellamanchali, Anantavaram, Lakavarapukota. The work consists in casting vessels and utensils and giving them a fine polish.

(7) Wood work such as cots, chairs and tables is done at Vizagapatam and Tallavalsa.

(8) Materials used in construction are to be had in abundance in the district. Since the major portion of it is hilly, rocks and stones are procurable everywhere. Lime is quarried throughout the district and shell-lime is produced on the littoral tracts. The Agency supplies large quantities of wood for building houses. The inner valleys of the hills in Palakonda are full of iron-wood (*Xylia dolabriformis*), satin wood (*Chloroxylon Swietenia*), and other varieties of timbers. Among the most characteristic trees in the hills are the *nulla maddi* (*Terminalia tomentosa*), *Cedrela microcarpa*, *Buchanania Latifolia*, *Pterocarpus-marsupium*. Noticeable among the hills are *Shorea robusta*. Bamboos are exported, but teak wood is very scarce.

(9) & (10) It is sad to find that many of the industries, if not all, enumerated above, were once in a flourishing condition, but are now slowly but surely decaying.

(11) According to the last Census Report the population supported by agriculture in the Agency is estimated at 699,069, the percentage of the agricultural population being 82.14; the percentage on agricultural population of actual workers is put down at 44.41, while the dependents are 55.58. The population supported by agriculture in the plains is 1,431,158, the percentage of agricultural population being 68.71; the percentage of agricultural population of actual workers is estimated at 64.05, while the dependents are 35.94.

(12) Of the industries which have been affected by imported articles, weaving of cotton goods may be mentioned first. Fabrics below 40s are not affected by foreign competition, while those above that count have gone down. The lower classes use the former, while the middle and upper classes go in for the latter. The lower classes are, therefore, true but unconscious Swadeshists.

(13) *Vide* remarks on the cotton industry.

16. (a) The establishment of Co-operative Credit Societies will go far to advance the existing industries by financing them at low interest.

(b) New and improved tools and implements will the agricultural and other industries.

(c) The opening of Experimental Farms and demonstrations in weaving on handlooms by experts will prove useful in expanding the existing industries.

(d) The Raipur-Vizianagram Railway which is now in course of construction will open up the Agency to trade and commerce. A jute factory wholly manned by natives and located in the centre of the jute-producing tracts will prove a very paying concern.

A sugar factory at Palakonda or Rayaghada, or at Anakapalle, a comb factory and chrome-tannery at Jeypore may prove advantageous to enterprising capitalists.

17 and 18: Indigo-making was a great industry and the whole district is still dotted with deserted indigo-vats and factories.

The trade has dwindled to nothing since the discovery of the German synthetic dye.

C.—MINERALS AND OTHER NATURAL PRODUCTS.

Agency Natural Products.—Paday, ragi, cholam, cambu, gram; gingelly, niger and mustard; saffron, turmeric, garlic, arrow-root; tamarind, soap-nut, ginger, and long pepper; honey and wax, horns, hides and skins; dammer and lac; marking-nut, myrabolams and tanning barks.

Mineral Products.—Iron is made from the local ores and smelted on a small scale in the Agency.

Plains.—*Natural Products.*—Paddy, ragi, cho'am, gingelly, and jute.

Mineral Products.—Manganese ore.

D.—CAPITAL.

(25 and 27) There are no banking facilities for the support of industries in the district.

E.—TECHNICAL EDUCATION.

There are no facilities for imparting technical education in the district.

F.—INDUSTRIAL ASSOCIATION.

There are two Industrial Associations in the district, one of which is located at Vizagapatam and the other at Vizianagram.

12. G. LAKSHMANNA, ESQ. AND G. BAMACHANDRA RAO, ESQ., *Rajahmundry.*

A.—AGRICULTURE.

1. In the Godavari District, the condition of the Agricultural Industry may generally be considered satisfactory

Many kinds of grains and corn, cotton, cocoanuts jute, tobacco, etc., are grown in abundance. But the chief product is paddy of various sorts and qualities. This year the lands suffered much for want of seasonable rain, which is scanty during the last quarter of the year, the most important period for agriculture. Even in the Delta canals the usual system of supplying water on a free scale has been modified by the introduction of changes by the P. W. Department. So, for want of water, the crops this year present an unhappy condition and foreshadow no good results or harvest.

2. Yes. Almost the whole of the cultivable soil is under cultivation. In the present season the various villages and especially the fields by the side of the canals present a vast ocean of waving green corn extending as far as and even beyond what one can see. This is due for the most part to the canals and the great Godavari anicut, which stores water in the river during the hot months.

3. For the most part the soil is fertile and produces many kinds of grains. In the *Lankas* or islands in the river, excellent tobacco is grown in abundance. In the Amalapur Taluk cocoanut trees are grown in a healthy way.

4. Not quite satisfactory except in the case of the Zamindars who are few in number. The taxes are heavy and greatly oppress the cultivating classes. Added to this the meagre and unsatisfactory supply of water has created great discontent amongst the cultivators against the Government. The Delta Superintendent and the Revenue Inspector ought to be improved in their pay so that their demands on the cultivators may be few and far between.

(1) Under the first tenure few lands are held.

(a) Neither the Government, nor even individual proprietors on a large scale, supply cheap capital to the ryots. The former is ever ready to "wring from the hard hands of peasants their vile trash," i.e. the taxes regularly and mechanically without any the least mercy even in unfavourable years; while remission of taxation is a thing unknown in this district during even the worst famine years. In certain cases no doubt the Zamindars and proprietors unwillingly supply capital beforehand, though not at a cheap rate, lest their fields become barren and yield no produce on account of the wretched condition and the miserable poverty of the ryot.

(b) No private individuals introduce scientific methods or give practical instruction to the ryot. But the Government, through the beneficent influence of Mr. Alfred Chatterton, opened an experimental farm at Samalkota where sugar-cane and other articles are grown on scientific methods and by resort to good and useful manure. This farm is opened

here so that the cultivators may be benefited by examining and following the not complicated or difficult methods followed by the agriculturist in this new experimental farm.

(c) Generally speaking no improved implements are employed. However, of late the Samalkota Experimental Farm is introducing slightly modified and improved implements which can be easily adopted by the ordinary cultivator.

(d) No improved kinds of manure are used ; but the old sorts are still in use everywhere. The farm at Samalkota referred to above is making an innovation in the matter by using scientific manure.

7. No Co-operative Credit Society was started in this district as yet ; but a District Agricultural Association was formed with the District Collector as the President. But even this Society seems to have produced no good results or in any way affected for better the condition of the peasantry or even of the members thereof.

B.—MANUFACTURING INDUSTRIES.

8. (1) *Cotton*.—The manufacture of cotton goods is plentiful throughout the district. For the most part this industry is carried on by the weaving classes on their old and unimproved looms. Very fine cloths (dhoties, saris, etc.,) are produced at Uppada (near Coringa), Thatipaka (near Nagaram), Bendemurlanka, Mora and various other places even to 200 counts and more. At Zampeta (Rajahmundry), Mandapata, etc, beautiful checks for the use of coats and shirting are made and exported in large quantities to other provinces in the country. A small factory of improved handlooms was recently started at Nidadavole with the modest capital of Rs. 12,000, but it appears not to be in a flourishing condition. Improved looms are also used here at ajahmundry, Mandapata and other places. Cloth is woven at Cocanada out of plantain fibre. A new experimental farm was opened at Rajahmundry by Mr. S. Veeraswamy in which the perennial varieties of long-stapled cotton is grown. From this cotton, yarn used in Dacca muslins can be spun. The trees are growing luxuriantly.

Wool is used in the manufacture of carpets at Ellore and in the Central Jail, Rajahmundry.

Silk—Nil.

Jute.—A Jute Mill was constructed recently at Ellore (now in the Krishna District) with a captial of about 7 lakhs of rupees, the greater portion of which amount was collected by shares. The factory began work a few months back under the supervision of Mr. McIntosh, a Scotch Jute Expert. About 700 labourers are employed in it and the work is going

on satisfactorily. The gunnies manufactured are not exported to any distant places ; but are consumed here only in the Godavari and Kistna Districts ; and yet the mill is unable to supply the demand of even these two districts. This is the only large factory in our district ; and if it were placed under good management and yields good profits or dividends, many more factories will surely arise in the district. For the people here do not require an innovation or a guiding example to follow in the same path, be it good or bad. It is thus that hundreds of mushroom provident companies were started but the infant mortality amongst these companies was almost 100 per cent. Now a large number of rice mills also are arising in a similar scale. Hence, if but this jute factory is made a useful and profitable concern, it will have rendered great benefit in the construction of factories in this district. But if this, the first bold venture fails, it will do incalculable mischief and create great difficulties in undertaking profitable concerns on a similar scale.

Sugarcane, which grows in abundance in the district, is made use of in the big factory at Samalkota belonging to Parry & Co. In this factory, refined sugar and rum are manufactured and this factory supplies the demand of sugar and rum in this district.

Not much of leather or horn industries. There is not a single mill for the manufacture of paper. Hides are exported in large quantities to foreign countries.

(2) *Pottery, porcelain and glass.*—*Nil.*

(3) *Metals.*—*Nil.*

(4) *Chemical Industries.*—*Nil.*

With regard to furniture, the carpenters here supply only the local demand ; but no export trade is practised.

9. The chief industry of the district is handloom weaving. There are fine workmen who can produce beautiful cloth and of a durable texture. For want of patronage and appreciation these looms had fallen out of use during the last two decades or more. But it is refreshing to note that the *Swadesi* and *Boycott* movements have once again revived this once famous industry and the weaver classes and the handlooms are up again and doing excellent work. Without exaggeration it may be said that during these famine days the *Swadeshi* movement saved the weaver classes from poverty, wretchedness and hunger. However, much more remains before us and we hope gradually to improve the present industries and supply cloth of all kinds on a large scale to other parts of the country as we are doing on but a small scale at present.

11. It is difficult to give numbers in answer to this question ; but we may roughly say that there are over 50,000 people employed on the handloom industry in the various towns and taluks throughout the district. In the rice mills themselves, which abound in the district, there are employed about 10,000 coolies. In the jute mill at Ellore some 700 labourers are working, while also a large number are engaged in the weaving of carpets which industry is in a flourishing condition at Ellore and is in need of patronage and appreciation from the country.

12. The capital of the jute mill at Ellore is over 7 lakhs Rs. while rice mills in the district should have cost not less than at least 15 lakhs. In Rajahmundry itself there are about half a dozen of these rice mills.

With regard to the weaving industry, it would not be possible to give even rough figures of the capital employed. The poor and destitute weavers invest what little amount they own, and have to wait, till the cloth produced therewith is disposed of, for again putting more money into the industry. They are sadly lacking in capital : Organised work, recourse to starting handloom factories on the basis of Joint Stock Companies and providing these village weavers with advances would largely increase the present outturn of cloth. The capital of the sugar factory at Samalkota seems to be over 5 lakhs of Rs.

13. I shall under this heading take only cloth which is the most important industry in the district and has a great future before it. With regard to *Dholies* (cloth for weaving) during the last two decades or more the Manchester *mull* has achieved an importance and sale which cannot be described. Every one and especially the educated classes would wear no other cloth but this foreign *mull*. Just before the *Swadeshi* movement came into importance ; the foreign *Mull* commanded the markets and reached the climax or zenith of its importance. But the *Swadeshi* and Boycott movements have struck a strong blow at this foreign cloth. Gradually, the use of this *Mull* began to decrease and our *Swadeshi Dholies* are once again taking its place. Thus we find that the foreign goods are gradually giving place to *Swadeshi* ones. The same rule about the Manchester *Mull* applies as well to checks and cloth used for coats and shirting. The one article that the district is sadly lacking in production is woollen cloth. In this direction, the foreign article still commands the local markets.

14. At present the handloom cloth woven by the weavers is not only able to supply the demand in the district ; but is also exported to some extent to other provinces and

cities, especially Calcutta and Madras. Zampeta checks also are exported even in greater quantity to Madras and the neighbouring districts ; while Ellore carpets command a sale throughout the country, but have of late experienced a perceptible fall for want of patronage.

15. If demand increases, there is no doubt that production as well will increase in a proportionate degree. Men of moderate means are ever ready to help production by paying advances to weavers, or by opening looms of their own accord to supply demand. It is only necessary that the few Zamindars of our district should cast off their lethargy and torpor and take advantage of the times by investing large capital in the construction of factories and mills. The very fact that, since the advent of the Swadeshi movement, the old weavers have once again taken to their looms in large numbers and are producing cloth of different qualities and kinds to supply the demand indicates that there will be no drawback in production, if only there is demand.

16. Even now, some expansion is apparent in the industries by advances being made by wholesale dealers and shopkeepers. But the present advances are but meagre and extend only to a few cases. Surely the existing industries (we mean the industry of cloth which is the chief one in the district) is capable of *great* and even *rapid* expansion if only "advances are made to the artisans at low rates of interest." For this purpose an Industrial Bank or something of the sort is required.

By the introduction of improved appliances great progress can be and will be achieved in the Industrial field. Thus at Rajahmundry, Nidadavole, Mandapeta and other places in the district, improved handlooms and fly-shuttle looms are introduced ; and it is gratifying to note that good cloth of a fine and beautiful texture is produced there. It is hoped that the weavers would learn from these improved looms and introduce the same in their own homes thus saving labour, time and money.

The weavers in the District sadly stand in need of special instruction in improved machinery. Some two years back steps were taken to impart instruction to weavers and for this purpose an improved loom and a Bengalee expert were brought here from Calcutta ; but this instruction did not last long as it was given up a few months later. Great progress can be achieved by imparting instruction to the artisans in the district by special experts on improved looms, instruments and machinery.

Power machinery would greatly increase the industries. Thus we find a practical illustration of this in the Ellore jute

Mill and the various Bice Mills in the district. In a few years, we hope to start some factories, through the wealth and munificence of our Zemindars and with the help of practical knowledge of several of our young men, who had gone to Japan and other foreign countries to learn various industries. Further it is reported that the Raja of Pittapur will shortly construct a factory with a capital of 12 lakhs of Rs. for ginning, spinning and weaving of cotton.

17. The carpet-weaving industry of Ellore used to be in a rather flourishing condition some decades back. The carpets produced there were highly valued and praised in distant places in India and even in foreign countries. The Ellore carpets had a great name throughout the country and were being used by Zamindars and Bajas in their palaces. But during the last two or three decades they have decayed.

18. The decay of Ellore carpets is chiefly due to want of patronage and appreciation from elsewhere. The Government Central Jails at various places in the Presidency are now producing carpets in large numbers and this has to a large extent handicapped the carpet industry of Ellore. Even now there are a few companies of weavers employed in carpet weaving at Ellore.

19. Yes ! It is practicable to revive the once famous carpet industry of Ellore.

20. The carpet industry of Ellore can best be revived by a wide patronage and appreciation of the same by the wealthy classes of the country. The weavers employed in this industry are in a poor condition and require the help and co-operation of rich men. A practical means of infusing life into this industry is by starting a company on a large scale for this industry, wherein these intelligent weavers can be employed on reasonable salaries.

C.—MINERALS AND OTHER NATURAL PRODUCTS.

21. So far as our knowledge goes no valuable mineral products can be had in the District. But in the Agency Taluks, *mica* is found and now some Europeans are engaged in the digging of this mineral product.

The Agency parts abound in large forests where valuable timber, especially teak, can be had in large quantities. These teak trees are brought to Rajahmundry in large numbers and afford great trade.

22. The mica ore is sent abroad by the Europeans employed there to foreign countries, but is not manufactured in the district.

23. As we have said in answer to the above questions, mica, the only mineral product to be had in the District, is exported abroad.

24. *Nil.*

D.—CAPITAL.

25. There is no special Bank in the district for the support of the industries ; but there is a branch of the Bank of Madras at Cocanada which lends money on mortgages.

26. *Nil.*

27. *Nil.*

E.—TECHNICAL EDUCATION.

28. Amongst the general class of ordinary weavers the training is undergone in their very homes, as there is a special caste which is hereditarily attached to this industry.

Also training on improved looms is imparted in the handloom companies at Nidadavole and Rajahmundry. But there is no special school, where weaving is taught as an art by itself. A few years back a Bengalee expert and an improved loom were brought from Calcutta and a weaving school was opened at Zampeta (a suburb of Rajahmundry) inhabited by a large number of weavers. But unfortunately this weaving school had a premature death and there is not a trace of it left behind.

The National school which the citizens of this district intend opening at Rajahmundry shortly will impart Technical and Industrial instruction in conjunction with liberal Education.

29. There are no special schools, as mentioned in answer to the above question, for imparting instruction or training in the industries of our district.

30. In the generality of the weaver classes, instruction is given only in the practice of industry in a hereditary succession from the very childhood of boys ; but no instruction in the principles which underlie the industry is given.

31. There are no schools at all. The one school opened at Zampeta (near Rajahmundry) some years back, fell a victim to infant mortality after living for two or three months.

32. *No.*

33. There are no such schools at all ; but I hear there is a movement abroad to start rural schools in the various villages by the Government wherein it is intended to impart instruction on agriculture, carpentry, the smaller industries, etc., from the very lowest classes ; and give good practice to the eye and the hand in the earliest stages as is done in Germany, and other countries on the Continent.

34. Yes! The following are the names of the students and the countries they left for.

- | | | |
|------------------------------------|-----|----------|
| (1) Vangala Venkata Narayana, B.A. | ... | Japan. |
| (2) Alapati Gopala Rao | ... | Japan. |
| (3) Goteti Janaki Ramiah | ... | Japan. |
| (4) Mallampalli Narasimham | ... | England. |
| (5) Evena Satya Narayana | ... | England. |

Besides the above students who had gone to foreign countries, about half a dozen young men went to Bombay, Poona, Calcutta, Meerut, etc., to undergo training in the manufacture of candles, soaps, etc., and also to receive instruction in Mechanical Engineering in the Victoria Technical Institute at Bombay.

35. Of the five students that went to foreign lands the first, Mr. Venkata Narayana, is a graduate of the University of Madras, who passed high in Chemical Science. The fourth Mallampalli Narasimham, passed the Matriculation (Entrance) examination and was studying in the Senior F.A. class when he left together with the fifth a few months back for England. The other three young men (Nos. 2, 3, 5) studied as far as the Matriculation class.

36. It may be worthy of note to mention that almost all the above students (excepting the first) left the country without the knowledge of their parents or guardians. The first alone, Mr. Venkata Narayana, left some 2 years back for Japan, having been provided with a scholarship of three thousand rupees by the *Alamur Provident Institution*, whereas with regard to the other four, the second and third, Alapati Gopala Rao and G. Janaki Ramiah, left India some 20 months back for Japan without the knowledge of their parents. The former is the only son of one of the richest merchant princes of Rajahmundry and took with him (providing expenses, etc.) his friend Mr. Janaki Ramiah. They are still in Japan. They underwent training in the manufacture of soaps, candles, biscuits and glass and porcelain; while the fourth and fifth, Messrs. M. Narasimham and E. Satyanarayana, also left for England some 3 months back without the knowledge of their guardians.

37. The reply to this is found in the answer to Q. 34. Two are being trained in Japan and the remaining two in Great Britain.

38. With regard to Messrs. Gopala Rao and Janaki Ramiah, as I mentioned in answer to Q. 33, they shall, I hear, in a few months buy machinery in Japan necessary for the construction of a factory for the manufacture of glass and porcelain ware, for biscuits, and then go back to India together with a Japanese expert, whom (I hear) they engaged

on a monthly salary of Rs. 250 or thereabouts. So they will manage the factory to be started by Mr. Bhaskara Ramayya, while the other two, Narasimham and Satya Narayana, left for England only a few months back and it is not yet clearly known what they are studying there. So we need have no anxiety about their future course so soon. They are in well-to-do circumstances and the latter is owner of a large property (several lakhs) a part of which he will no doubt employ in the enterprise after returning to his native land some two or three years later.

39. Yes. There is at present one young man, Mr. Vangala Venkata Narayana, B.A., who returned from Japan a month back after undergoing full training there—both theoretical and practical—in the following industries:—Dyeing, Calico-printing, manufacture of soaps and candles, etc.

40. At present Mr. Venkata Narayana is doing nothing. He says that the best and most useful industry he had undergone training in is dyeing and calico-printing and that a capital outlay of some 5 to 6 lakhs of rupees is required for opening a factory for dyeing and calico-printing. But, so far, no such amount is forthcoming and so his scientific and expert knowledge in these industries may after all prove futile, if no capital is made available.

He says, failing this project, he intends starting a soap and candle factory at Rajahmundry with a capital of Rs. 50,000, which some wealthy citizens of Penumantra seem to have promised to advance.

41. It is not advisable that Mr. Venkata Narayana's great knowledge in the important industries of dyeing and calico-printing should go unutilised. If no single individual—if there is any such, it should no doubt be a Zamindar or a Rajah—is coming forward to advance the whole capital of Rs. 5 to 6 lakhs, then I think it is the incumbent duty of the leaders and wealthy merchants of the district to co-operate at once and collect the required money and in the form of shares for a joint stock company wherewith the factory can be constructed as was done in the case of the Ellore Jute Mills.

42. At present there is no Industrial Association in our district. But over an year back a District Association was started at Rajahmundry with Mr. S. B. Sankaram, B.A., as its Secretary. Under its auspices he delivered some speeches on industrial subjects in the Town Hall and collected money on the Deepavali day two years back from every house at Rajahmundry. This money which amounts to nearly Rs. 250 was spent in buying a loom and bringing a Bengalee expert who opened a school and taught handloom weaving to the

local weavers on the improved loom for a few months. But all this activity of the Association died away and it has practically no existence at present.

(13) BABU PUBNENDU NARAYAN SINHA, *Bankipur*.

A — AGRICULTURE.

1. The Bihar cultivators are well known for their intelligence and they are hard-working. They have got a traditional agricultural lore, rich in useful information.

2. In some districts the whole of the culturable area has been brought under cultivation; in this, the greater portion.

3. The general quality of the soil is clay, clay loam and sand-loam.

4. There are big and small landholders, rich and poor cultivators. They are generally well off, but a large class of cultivators live from hand to mouth and many of these are badly off, specially in the congested district of Arrah, where there is more labour than land.

5. The class of tenant proprietors is increasing gradually. Most of the tenants have occupancy, only a small percentage form tenants-at-will. In Diara lands the tenants are mostly tenants-at-will.

6. (a) *Nil*.

(b) The Divisional Agricultural Association with its District Associations is trying to spread scientific and practical instruction in agriculture. This Association is under Government auspices.

(c) The Association is trying to introduce improved appliances.

(d) The Association is trying to introduce recuperative processes.

7. The system has not yet been introduced in the district nor in Bihar.

B.—MANUFACTURING INDUSTRIES OF PATNA DISTRICT.

8. (1) Textile fabrics.

Cotton—Town of Bihar—Dhotis, charkhanas, dupattas, saris, imitation Dacca muslin.

Khasrapur and Dinapur—Table cloth, towels and bed-sheets.

Fatwa—Charkhanas, napkin.

Patna City—Durries.

Wool—Patna City—Woollen carpets, asris.

Bihar—Woollen wrappers.

Silk and Mixed—Bihar—Dhoti, dupatta.

Jute—*Nil*. Fatwa—Bapta and charkhanas.

Embroidery, embroidered cloth of sorts, lace, embroidery threads—Patna City.

(2) Vegetable and animal products—Sugar, gur (molasses), castor-oil, linseed-oil, mustard-oil, castor, linseed and mustard cakes, safflower—dye, flour, pickles, butter, soap.

(3) Boots and leather straps.

(4) Glass made articles. Glass is blown and made into several fantastic shapes, flower stands, teapots, sticks, etc., with the help of simple implements. This is one of the oldest industries of Patna City. Glass-bangles or churis. Glass tickles or forehead drops.

(5) Steel trunks, portmanteaus, despatch boxes in Patna City.

Iron railings, iron gateways, iron benches—Dinapur and Bihar School of Engineering. Cutlery—Dinapur.

Brassware.

Tinware.

(6) Photography and painting.

Electro-plating.

Ink.

(7) Drawing-room furniture, carriages, wood-carving, house-painting.

(8) Building materials (except iron beams).

9. The industries are in a good condition, except carpet industry, which is decaying.

10. Towel, table cloth and bed sheet industries are of a recent origin; so are steel trunks and iron industry and soaps. Butter industry is largely encouraged by Railway Refreshment Rooms. Of the old industries carpet and wood-carving are decaying and also the dye industry.

11. I cannot give the number for which reference may be made to the Census Report.

12. This requires detailed enquiry for which there is no time. Besides, the capital must vary from year to year.

13. Vegetable dye has suffered from importation of chemical dye.

The prospect of textiles generally is brightening, though they had suffered before.

14. Only the following articles have more than a local demand and are sent to outside markets.

(i)—Table cloth, towel, bed-sheet, napkin, imitation Dacca muslin, carpets, both cotton and woollen, asnis, butter, glass-articles, glass-

bangles (churis), tinware, cheap cabinetware of Dinapur.

15. No facilities except what private enterprise would afford.

16. (a) There are local capitalists who make advances. I do not at present see the urgency of further advances.

(b) This is possible with respect to almost every industry.

(c) Special instruction is badly needed.

(d) Difficult to say.

- | | | |
|-----|---|---|
| 17. | { | Carpet industry has decayed. May be revived by the supply of capital and introduction of new skill from Mirzapur. Vegetable dyeing cannot be revived in competition with the cheap chemical dyes. |
| 18. | | |
| 19. | | |
| 20. | | |

C.—MINERALS AND OTHER NATURAL PRODUCTS.

There are no mineral and natural products in the district.

D.—CAPITAL.

25. The manufacturers as distinct from the artisans make advances to the artisans.

26. No.

E.—TECHNICAL EDUCATION.

28. There is the Bihar School of Engineering at Bankipur, which teaches carpenter's and smith's work.

29. It is a Government School that teaches Survey, Engineering and Mechanics. The standard is almost the same as in the Sibpur School of Engineering.

30. Instruction is theoretical and practical.

31. Boys pass in increasing numbers each year, but they have not yet started any shop.

32. No.

34. Yes, by the Scientific and Industrial Association.

35. They have some University qualification tested by the Committee of the Association.

36. Do.

37. Japan and other countries.

38. Nothing as yet.

39. Ambika Charan, B.A., has come out as an Electrical Engineer from Japan.

40. *Nil*.

41. He has recently come.

42. There is a branch of the Calcutta Industrial Association.

F.—INDUSTRIAL ASSOCIATIONS.

There is also the Bihar Industrial and Agricultural Exhibition Committee the object of which is to hold an Industrial and Agricultural Exhibition every year at Bankipur, to secure a full and improved representation of all the industries of Bihar. Exhibitions were twice held at Sonapur under the auspices of the Association. In 1907, the Exhibition was held at Bankipur. In February 1908, the Exhibition will be held again at Bankipur. The Agricultural Department of Government contributes Rs. 500 a year to the Exhibition and the Patna District Board Rs. 100. The Committee also subscribe to the Fund. The balance is supplied by the gate money and contributions from other District Boards.

14. RAO SAHEB DEORAO VINAYEK, Akola (Berar).

1, 2, 3. I have not much to add to the information which Government reports and records contain. There are, I believe, all varieties of land in the Akola District, and nearly the whole of the culturable area is under the plough.

4. Barring the landholders, who are besides money-lenders, the condition of other landowning classes is not all that can be desired. They are fairly well off in years of plenty, but one drought throws many of them on the relief works or brings them face to face with starvation.

5, 6. I have no authentic information to supply except on clause (a) of question 6. As for clause (a).—Under the Co-operative Credit Societies Act, Societies have been established at some thirteen villages of this district. Besides these similar Societies were started by me at three other villages, years before the Act was applied to Berar. The object of all these is to raise funds by one method or another from among the members and to render them pecuniary help when it is needed. These Societies are, as it were, the places where, if so desired, the benefits of co-operation and mutual help can be learnt. The principle underlying them is not quite new to India, though the refined and methodical manner laid down by the Act is. It is as yet too early to pass an opinion on its success or otherwise. These Societies will, in all probability, stand in need of considerable pecuniary help from outside their members ;

and to meet this contingency the establishment of a Central Bank at Akola with a moderate capital is under contemplation. This project is in the sympathetic hands of our popular and energetic Officiating Deputy Commissioner Mr. Jather and has fair chances of success. The attempt described above would, however, be a mere drop in the ocean as it were, regard being had to the vast requirements of the district in general. But if the Government keep up its sympathy towards the movement as at present, and if the people in whose interest the attempt is made freely join the movement, the people will be practically benefited.

8—15. I cannot just now give precise answers to these questions. I may, however, say that there are many ginning and pressing factories in this district. The number of persons employed therein and the dependents on them may be approximately 50,000; but they have this employment only in the cotton season. There are three oil mills and one cotton spinning and weaving mill working all the year round, and the number of persons employed in them and of the dependents on these, may fairly be estimated at 1,000. One more spinning and weaving mill is under construction at Akola and may, when in full swing, find employment for another 1,000, probably throughout the year.

16. There are not big industries in the district except cotton weaving, which, too, is confined to the production of coarse cloth only. This admits of improvement no doubt, but before supplying money, power machinery, or new appliances, general education among the masses and special training besides to the artisan classes is needed urgently. My experience in the Akola Industrial Association, which will be related presently, bears out this view.

17—20. In times gone by there were in existence several private industries such as the manufacture of salt, paper, dyeing colours, opium, ganja, toddy, Sindi and Mhoura wines, cutlery, potteries, thikadi and other oils, bangles, etc. But they have all practically disappeared, some owing to foreign competition, some to Government monopoly, and others for want of funds, of mutual confidence, of a desire to help one another, of perseverance, of honest and efficient management. It is certainly practicable to revive some of them at least under present conditions. Spinning, weaving and oil mills worked by steam power will increase the quantity as well as improve the quality of the articles. Government are also trying to improve agriculture by introducing new methods and by starting a model farm at Akola. There are, besides, good prospects of reviving pottery, tanning, dyeing, bangle-making, kosal oil and a few

other industries. The difficulties in the way are want of technically trained men, and of education among the masses, their ignorance of the real needs of the country and the means to supply them, apathy of the leaders, want of confidence in them on the part of the people, impatience of success, inexperience of business among those engaged in it and want of honesty and perseverance among managers. These defects are common among those who have lately been interesting themselves in matters industrial, though, of course, there are honourable exceptions. These are not all inherited defects. To this day millions worth of transactions are daily effected among men unknown to one another in the trading castes, and this is only possible by reason of the confidence they have in one another among themselves. Faith in one's neighbour is a necessary factor to ensure harmonious and successful working in joint business. And so is honest and efficient management. Radical changes are called for in the system of public instruction before the state of affairs we are talking of can be brought about. Want of money is not the only or the main obstacle in the way of successful industrial development. There is a great dearth of men who command respect alike for their attainments and their trustworthiness, and unless this can be remedied it is futile to hope for any great success.

21—24. I have no information. I may, however, state that an amount of raw material goes out of the country and comes again in the shape of finished articles. To this extent the country suffers a material loss every year.

25. The Bank of Bombay has a branch here and it supplies funds when sought for by business people.

26 and 27. Yes. One is in contemplation. See my answer to question 6 (a).

28 and 29. When the Berar Education Department introduced age limit rules in respect of students attending Government schools, about the year 1894-95, many good boys were cast adrift, and for their benefit I opened a technical class in the Native Cotton Ginning, Pressing and Spinning Co.'s Factory. The class is still going on. Good many boys have been and are being trained as fitters and turners and they have been earning enough to live respectably. Many were sent up for the Engineer's examination and about 25 passed in the examination of the Bombay Boilers Act. Of these, about 20 have been trained and sent up for the examination since the engagement of Mr. Govind V. Kolhatkar as engineer in my factory in 1907. Of these 25, about seven are second class and the rest third class engineers. Some of these are preparing for higher class certificates also. In addition to the above some

young men are under instruction in my factory in the spinning and weaving departments. There is also an industrial school conducted by Missionaries at Akola. The school is useful to the public and is well spoken of. It admits, I am told, only Missionaries.

80. The instruction given in the above class and school is only in the practice of the industry and principles are only taught so far as are absolutely required for sending out a thoroughly practical man into the world.

81. See answers to questions 23 and 29.

82 and 33. Not that I know of.

84 to 37. Yes. I have sent my cousin to Bombay to learn a branch of commercial education. He is an undergraduate. He is working in a respectable Indian firm dealing in cotton agency business.

38. He thinks of starting a business of his own here or in Bombay as circumstances permit.

39 and 40. There may be several whom I may not know. I know of only one person, Mr. Govind Vishnu Kolhatkar, whom I have engaged as my engineer. He is, besides being first class engineer of the Bombay Victoria Technical Institute, well up in spinning and dyeing, which were his special subjects. He is an all-round man and there are very few subjects as far as engineering, spinning and dyeing are concerned, of which he has not the requisite knowledge. There are good many qualified engineers and almost all of them are well employed.

41. As far as I know there is no necessity for doing anything.

42. Yes, there is one by name 'The Akola Industrial Association' established on the 20th April 1902 on the initiative and with the moral support of Kumar Sri Harbhamji Rawaji, the then Deputy Commissioner of Akola District. Its nominal capital is Rs. 1 lakh and the objects are as under :—(1) In the Akola District, to revive old industries that have decayed owing to want of encouragement. (2) To start and improve new industries. (3) To improve agriculture. (4) To improve the status of agriculturists. (5) To do every thing to promote the above objects. To accomplish the above objects—1. To collect useful information from India and outside. 2. To publish the same information by proper means for the people concerned. 3. To start scholarships and prizes and to give them to those deserving persons who receive instruction in any industry. 4. To find out markets for the products of the industries and agriculture. 5. To advance money to persons engaged in industry or agriculture

on moderate terms. 6. To advance loans on reasonable terms as to interest, and payments to associations or companies started on these lines. The Association was started for the Akola District but it was understood not to confine its effort to this district alone, and so directly it was started the Managing Board called a meeting and resolved, on the 21st April 1902, to use their first efforts towards improving the handloom weaving industry. A fly-shuttle loom of an improved kind and a man to work it were got down from Ahmedabad and it was set up and worked by the Akola Cotton Ginning, Pressing and Spinning Company. Samples of all cloths made in Berar were obtained. Berar weavers from all sides were invited and offered to learn to work the same. Many weavers were employed and taught the work, but only disappointment was in store for the Association. The weavers were in the end found to be so conservative that they would not, under any circumstances and conditions, exchange their old loom for the new. They would rather go on with their small incomes than earn more by substituting the improved for the old country loom. The Association was fortunate in getting any amount of assistance from the Company above named. The latter has erected a shed to accommodate 50 looms of the improved pattern with accessories so as to turn out 50 per cent. more cloth for the same cost and within the same time as the old looms. In fact, everything that this arrangement cost was found by the Company for the Association with the sole object of encouraging the weavers to use the new looms. The Company has thus to spend nearly Rs. 4,000 for the sake of the Association, and at least Rs. 1,500 out of this became a dead loss to it through the sheer indifference of the people for whose benefit it undertook the work. All this was, however, to no purpose, as the weavers refused to attach the fly-shuttle to their old looms, refused to work on the looms started by the Company on the piece-work system, refused all help from the Association in the shape of supply of material at a very small or no profit, of selling their goods which they could *not* sell in the market at *their* price to the Association for cost price, or in the shape of receiving advance of money required by them to go on with their work at a moderate rate of interest, and even refused to allow their boys to learn the fly shuttle working. The Association tried to change the attitude of the weavers through their own men and also through Kumar Shri Harbhamji Rawaji and other sympathetic high officers of Government, but all in vain. The experience of the Association is thus not very encouraging in this respect and it does not hope for better results in the near future. Success in this direction will only be possible when we shall have a new class

of weavers. For this general and technical education is wanted and Government assistance in the matter is indispensable. I am glad to think that it will be forthcoming at the hands of the local Administration. No doubt the experience of the Association is sad, but we should not allow it to dishearten us. I have lately added to my aforesaid Company a weaving shed and when this is in full swing I mean again to try to interest the weavers in shuttle looms. The cost of the preparatory work must be cheaper if ever we are to achieve success in this direction, I had, even when there were no power looms in my Company, prepared a warping machine to make a warp beam of 400 yards length and had made other arrangements also to wind cloth and unwind warps automatically. The preparatory work was thus made reasonably cheap. It can be made cheaper still, and the attempt is well worth making again.

The Memorandum and Articles of Association of the Association were framed and it was to be registered under the Indian Companies Act, but owing to the failure of the effort described above and other causes it had to be deferred. It is, in the meantime, intended to see what other industry the Association can take on hand. I have been inquiring what articles of every day use can be prepared and will command a market *in competition with imported ones*. I am in search of a man who will be able to prepare, among other things, candles, soaps, matches—sulphur and safety—,nibs, umbrellas and pencils. I had tried a Japan-returned Indian, who had professed to be able to refine cotton-seed oil which I had a mind to crush and send to market—local or foreign—for sale in its *refined condition*. The trial cost my Oil Mill Company a good deal, but proved unsuccessful owing, among other causes, to the incompetence of the man employed. The seed is in abundance in Berar, and if it can be profitably turned to use in the above manner it would repay the outlay. I have also tried another Japan-returned Indian who could prepare matches. A regular Company was started and large sums of money—rather more than Rs. 4,000—were spent in organising the business on a commercial basis, but the effort failed owing to several causes. I have a mind to try and put in practical shape some industry such as tanning, dyeing, or imitation ivory, and I am in search of a man competent to profitably work any of these three. The Association has above Rs. 5,000 in hand and can call in more if it can hope usefully and profitably to employ it.

The Indian Industrial Conference has been of late brought into being and the Akola Association has offered to act as its Berar Provincial Committee. The proposal is already before the Secretary, Rao Bahadur Mudholkar. In compliance with the request of the Provincial Industrial Conference of the

Central Provinces and Berar, information in regard to present industries and means to improve them was sought for. About 100 letters were sent to the leaders in the province, of whom about 6 or 7 gentlemen sent answers and gave some information. This, of course, is not full, but as it is it will be placed before the next sitting of the Conference.

At Lonar there is an old lake producing different kinds of salt in abundance. The product is sold by Government for a term of years to private individuals by auction. A well-to-do Mahomedan gentleman from Mehkar, Khan Bahadur Khwaja Abdul Bakikhan, is the present lessee. He has got heaps of salt, amounting to thousands of tons in store. I had a mind to see if the product could be turned to more useful purposes than at present, and I was in communication with the gentleman and also with an English firm in Bombay through whom I got the salts analysed, and was going to find out what better use could be suggested. The attempt seems to have been found by the gentleman not quite hopeful and he does not think it worth his while to proceed further.

At Buldana there are smiths' families. Among them there are several good workmen. They can be utilised very usefully but good advice from me and from many other gentlemen including even Kumar Shri Harbhamji Rawaji and Mr. Rustomji, the present able and energetic Commissioner, was thrown on unwilling ears. They have got their own crooked ideas of their worth and value and would not adapt themselves to the changed conditions of the country. When my attempt to remove them from their old associations to Akola and help them in all possible ways here failed, I, while at Buldana in May last, arranged to start a company *there* at their very door and take them in either as shareholders or even as servants to make some sort of cutlery, but I failed there too.

On inquiry I found that in the province there are some public-spirited gentlemen wishing to do something to improve handloom weaving and I suggested to them to try to open classes to teach fly-shuttle weaving and have also promised to lend my loom and man to teach the work if such thing is practicable at any place.

Since the Association did not succeed in seeing any particular industry started or actually helped, it has now resolved to offer rewards every three months to persons preparing useful articles. For the present India-made umbrellas, pencils, nibs and holders are the articles advertised for rewards.

I had the honour of being introduced to the Hon'ble the Chief Commissioner and during the interview I tried to

explain the present condition of our industries, I requested him to have a thorough industrial survey made of the province and to open craft schools at different centres to teach different branches of industries.

Since the Akola Industrial Association has been established and as the improvement of agriculture is one of its objects, I handed over to it the supervision of the three agricultural societies I had started. They are now to all intents and purposes branches of the Association.

Most of this I have done and am doing on my own responsibility but on behalf of the Association and with a view to lay formally before the Association for action any of my attempts that might be attended with success. I am not yet disappointed but think that we must continue to work patiently and quietly wait for success.

(15) AJODHYA DAS, Esq., *Gorakhpur.*

[The information given below is about the Gorakhpur and Basti Districts]

A.—AGRICULTURE.

1. Agriculture is the principal industry in these districts. It is conducted on old lines and the new scientific improvements have not been adopted as yet. The soil is fertile but it is losing its fertility on account of the increased pressure and the impoverished state of the tenants. Attempts have been made from time to time to introduce new staples, such as hemp, cotton and various kinds of rice but without success. Indigo was started about 1830 by European planters, and a better class of dye is produced here than in any other part of the United Provinces.

2. The average of the area brought under cultivation varies from 71·9 to 75 per cent.

3. The district of Gorakhpur is a submontane tract. Most of its soil is alluvial. The exact figures of the soil of this district are not available at this time.

As to the Basti District, the figures are as follows : -

| <i>Nature of soil</i> | <i>Percentage.</i> |
|-----------------------|--------------------|
| Loam or <i>Doras</i> | ... 65 per cent. |
| Clay or <i>matiar</i> | ... 27 " |
| Balna or sand | ... 4 " |
| Kachhar | ... the rest. |

The above figures may also be taken for the Gorakhpur District with this modification, that there the proportion of Kachhar is greater.

4. The general condition of the landowning and cultivating classes is not at all satisfactory. The successive failure of crops has made them very poor. As a result of this the tenants cannot improve the condition of the soil which has been exhausted by constant tilling. The peasantry is mostly indebted to the Zamindar.

The petty Zamindars are also mostly in debt owing to their love of litigation.

5. In these districts there are no proprietary tenants. In Basti District 46·13 per cent. is held by tenants-at-will and 33·52 per cent. is held by proprietors as their *Sir* or *Khudkast* (i. e., in their own cultivation), 21 per cent. by ex-proprietary tenants, 25 per cent is rent free and 19·86 per cent. is held by occupancy tenants.

The exact figures for Gorakhpur are not yet available, but, broadly speaking, the proportion is much the same as in the sister district of Basti.

6. (a) Of late Agricultural Banks have been started where loan is given to agriculturists at the rate of 12 per cent. which is lower than the usual rate charged by the money-lenders. These Banks being very few in number are not within easy access of most of the tenants who have still to depend upon the money-lenders and pay an exorbitant rate of interest

(b) There is no school giving any such instruction.

(c) Very little. Chiefly confined to indigo planters who employ improved ploughs for tilling the soil. Tamkahi is a big estate in this district and it is under the Court of Wards. There they use harvesting machines for cutting and gathering crops.

(d) There are no scientific methods in vogue but agriculturists employ ordinary manure before sowing crops. There is considerable export of bones from these districts which tends to reduce the fertility of the manures.

7. This system has been introduced here quite recently and the few societies that have been formed are making progress. It has not been here long enough to produce any change towards the betterment of the tenantry.

B.—MANUFACTURING INDUSTRIES.

8—20. These districts are purely agricultural districts and manufactures in the proper sense of the word are non-existent and thus the manufactures such as they are, are merely designed for local requirements.

(1) The principal industry is cotton fabrics.

(2) Vegetable and animal products none.

(3) Horn and paper, none.

Leather, but only for local requirements.

Sabar or deer skin leather is cured and pillow cases and bed-sheets are made out of them and sold in the market.

- (4) Pottery, etc., calls for no special attention.
 (5) Metal—none of special interest. Metal vessels are made at Bakhira and Merhawal in the Basti District, but the business is comparatively insignificant.
 (6) Chemical industries—none.
 (7) Furniture and decorations—none worth noting.
 (8) Materials used in construction, ordinary bricks and lime for local consumption.

In Gorakhpur the most considerable industry worth noting is the sugar refining which is carried on mostly on the old local methods prevailing in the district. In 1903 a large sugar refinery worked on European lines has been started. Manufacture of indigo is dwindling but still survives. The factories are owned and managed by Europeans. There is much room for improvement and expansion by using the methods enumerated in question 16. According to the last census in Basti—

- 56,500 persons were supported by textile industry.
- 32,500 by wood, cane and jungle products.
- 29,000 by metal work.
- 26,800 by earthenware and glass.

Another chief industry is textile fabrics. Here also there is great room for expansion. Want of capital is the cause of the decay of these industries. If advances be made to the Julahas and Konis I think they will be able to produce good fabrics.

For the present all these are only for local consumption with the exception of sugar which is sent to other places in some quantities.

Palanquins are made for local use.

C.—MINERALS AND OTHER NATURAL PRODUCTS.

21—24. In Basti and Gorakhpur *Kankar* of various kinds is to be found which is used as road metal as well as for making lime.

In Gorakhpur the chief mineral product is saltpetre which is extracted from saline efflorescence by *Lunias*.

D.—CAPITAL

25—27. There are two banks here over and above one District Bank started under the Co-operative Credit Societies Act ; but these afford no particular facilities for the support of industries.

E.—TECHNICAL EDUCATION.

28—41. None.

F.—INDUSTRIAL ASSOCIATIONS.

42. There is no Industrial Association.

APPENDIX V.

Report on the Work of the Berar Committee by Rao Saheb Deorao Vinayak, Akola.

Dated Akola, 28th November 1907.

To
THE GENERAL SECRETARY,
Indian Industrial Conference, Amraoti.

SIR,

As desired by Resolution No. 2, of the Provincial Industrial Conference of the Central Provinces and Berar, held at Raipur on the 31st March last, I have the honour to submit this report.

2. Directly the Conference was over I, on the 8th of April last, issued a circular letter to the leading men of Berar, including the members of the newly-appointed Berar Committee of the Conference to collect and send me information, among other things, about the old and new industries of the province and to suggest means to improve them. About 70 letters were sent but only six or seven gentlemen replied and gave some information. This, however, is not, as it naturally could not be, full and complete. Besides this, I have collected some more information to supply all of it to you ; but since our Local Government has been pleased to specially appoint a high officer to make a regular and thorough Industrial Survey of the C. P. and Berar, the information so obtained and now in my possession would naturally be of very little use to you. I think, therefore, that I need not give it here. I may, however, state here that Berar does not at the present day boast of any industry worth the name besides handloom weaving. This weaving consists mostly of coarse cloth except at Kolhapur and Anjangaon-Surji and a few other places where silk weaving is also carried on to a small extent. But I do not think there is need of my sending information on handloom weaving which is carried on on antiquated lines. At some places fly-shuttle is being used or experimented upon and next year I may be able to say something about it.

3. As I promised in my letter of the 10th instant, I beg to inform you as to what I have done during the year.

(1) On behalf of the Akola Industrial Association I have advertised that I shall give prizes for articles of every-day use which are good. I shall declare the result of my examin-

ation of the articles of workmanship which have been received from Bombay and Poona on the 1st December.

(2) I have been in communication with a gentleman here who manufactures candles. The machinery he uses is all India-made and the article prepared is found as good as the Bombay one. He hopes to sell it in the market at the same prices as the Bombay candles fetch. If he succeeds in doing so the business will be started on a moderate scale.

(3) I have been examining a cotton-seed oil project and one for the manufacture of umbrellas. I have crushed cotton-seed and refined the crude oil. I have been now getting the sediment turned into soap, etc. I am also preparing the required articles except iron framing, to make a complete umbrella. When this is done and the articles are found worth taking to the market, I shall see if a business can be started on commercial lines. This examination is, however, in an experimental stage and I cannot say more at present.

I have the honour to be,

Sir,

Your most obedient servant,

DEORAO VINAYAK,

Secretary,

Berar Committee of the Indian Industrial Conference.

APPENDIX VI.

Communication to the Provincial Committees.

From

RAO BAHADUR R. N. MUDHOLKAR,
*General Secretary,
Indian Industrial Conference.*

To

- (1) P. BOY CHAUDHURI, Esq.,
*Secretary (in charge), Bengal Provincial Com-
mittee of the Indian Industrial Conference,
Calcutta.*
- (2) LALUBHAI SAMALDAS, Esq.,
*Secretary, Bombay Provincial Committee of the
Indian Industrial Conference, Bombay.*
- (3) THE SECRETARIES,
*The National Fund and Industrial Association,
Madras.*
- (4) THE SECRETARIES,
*The United Provinces Industrial Association,
Allahabad.*
- (5) LALA MULKRAJ,
*Secretary, The Punjab Committee of the Indian
Industrial Conference, Lahore.*
- (6) KRISHNA RAO DESHMUKH, Esq.,
*Secretary, The Central Provinces Industrial
Committee, Nagpur.*
- (7) RAO SAHEB DEORAO VINAYAK,
Secretary, The Berar Industrial Committee, Akola.

SIR,

The Provincial Committees of the Indian Industrial Conference were established by Resolution VI of the First Conference held at Benares in December 1905, "for giving effect to the recommendations (of the Conference), generally encouraging industries and making an industrial survey in their several provinces, and compiling useful facts and sugges-

tions for submission to the next Industrial Conference in December 1906. In order to carry out these views each Committee is requested to raise suitable funds, appoint trustees, frame rules for the conduct of business and lay its accounts before the next Industrial Conference."

By Resolution V of the Second Indian Industrial Conference, the Committees were "asked, besides taking steps to promote industries in their several provinces, to compile useful facts and suggestions for submission to the next Industrial Conference, and to raise suitable funds for carrying on their work." I am to request you to send a report of the work done by your Committee in the present year in accordance with the foregoing Resolutions.

2. In accordance with Resolution VI of the last Conference, an Additional Assistant Secretary was to be appointed, "so that the Assistant Secretary may be free to visit the different provinces and help the Provincial Committees in all matters in which they may require assistance." And the Conference voted "a sum of Rs. 10,000 for meeting the expenses of the next twelve months and also for issuing a quarterly bulletin of industrial information under suitable management." In point of fact, less than half of this sum has been realised and it has not been possible, for want of adequate funds, either to appoint an Additional Assistant Secretary or to issue the bulletin. It is, however, essential that both of these things should be done. As our first President, Mr. R. C. Dutt, observed in his speech at the last Conference, one Assistant Secretary is required to visit the different provinces and help in the work which devolves on the Provincial Committees and to secure "a greater degree of co-operation between the Central Office and the Provincial Committees." The need of a bulletin, too, is great in the present circumstances of, and with the welcome awakening to the need of industrial development that we witness in the country. How to get the requisite funds is then the question. I hope that your Committee will give their attention to this important matter.

3. This leads me to the question of the future organisation and work of the Conference. I have been asked to communicate, for the opinion of the Provincial Committees, the papers received from Kumar Sri Harbhamji Rawaji of Rajkot and Mr. A. C. Sen of Calcutta on this question, and I send them herewith. It is true that if the Conference is to carry out its object effectually there must be regular, methodical work all through the year based on definite principles and carried on settled lines. At the same time no very elaborate and ambitious scheme stands much chance of success at this time. I have accordingly drawn up what I believe to be a few simple and workable rules which I send herewith. I request

you will be so good as to place all these three papers before your Committee and favour me with their opinion on them.

4. In regard to the carrying out of an industrial survey, I framed last year a set of questions with the object of facilitating the collection of the needed information and sent out nearly a thousand copies, but the response was most meagre and disappointing. I have, therefore, issued them again this year in the hope that some attention would be paid to so important a matter. I send a copy (with four spare copies) of the questions herewith and request you to obtain answers from qualified persons in your province. All replies received before the 20th November will be printed along with the annual report which we shall present to the next session of the Conference, following the precedent of last year.

5. A suggestion that has been repeatedly made is that translations should be made of the most important papers laid before the Conference and the vernacular renderings distributed largely. This is a means of disseminating valuable information which deserves to be adopted by the Provincial Committees. Regard being had to the number of languages into which translation will have to be made, it is obvious that the work cannot be undertaken by the Central Office. It falls within the sphere of the Provincial Committees and their earnest attention to this matter is solicited.

6. Sir Guilford L. Molesworth, an eminent retired Anglo-Indian who takes an abiding interest in the industrial movement and who contributed able papers to the Benares and Calcutta Conferences, asks the Conference to adopt the proposition quoted below :—

" That this Conference urges on the Government of India :— (1) To inaugurate a carefully considered policy of moderate import duties, which will not only yield a revenue that will relieve the land of the dead weight of taxation, but will also protect the industries of India from unfair and unrestricted foreign competition. (2) To foster International and Inter-Colonial trade by the exchange of mutual concessions and preferential treatment with the Colonies and Great Britain."

Please let me know whether it is the wish of your Committee that the subject of fiscal policy should be taken up by the Conference, and, if so, in what form a proposition should be placed before it.

7. It remains to request you to let me have the benefit of any suggestions your Committee may deem fit to make in regard to the next session of the Conference :—

- (i) Who should be invited to fill the office of President ;
- (ii) On what subjects papers should be called for and from whom ;
- (iii) What propositions should be placed before the Conference and who should be asked to speak to them,

(iv) Whether there should be a handloom competition as there was last year, and if your answer be in the affirmative, what amount your Committee will contribute for awarding prizes ;

(v) Any other suggestions.

I request you to convene a meeting of your Committee as soon as possible after receipt of this and communicate their opinions to me not later than the 8th of November.

I have the honour to be,

Sir,

Your most obedient servant,

R. N. MUDHOLKAR,

*General Secretary,
Indian Industrial Conference.*

APPENDIX VII.

Technical Department of the Bengal National College.

The work of the Technical Department divides itself into two branches, and in both, the Physical and the Chemical Departments act in co-operation with the Technical.

First, from the lowest classes of the school upwards through the Primary and Secondary Courses (excepting only in the case of the Intermediate class students offering the alternative literary course) a graduated course of technical instruction is given to our boys according to a scheme framed by Mr. Ranade, which was adopted by the Council at its last meeting. This technical instruction is given along with elementary instruction in Experimental Chemistry and Physics and also Botany and Physiology. What has already been referred to as the *mixed course* for the primary and secondary classes of the school is this combination of elementary, technical and scientific training with literary instruction. The teaching of *Drawing* is also necessarily compulsory in the mixed course. Up to the Fifth or Matriculation standard of the school the mixed course is compulsory ; and it is only in the Intermediate or the Sixth and Seventh standard course that students are given the option of taking up either the Literary or the Scientific and Technical Course. It is necessary to note, however, that the Literary Course boys (Intermediate) are given also the option of studying any one or more of the Commercial subjects prescribed for the Commercial Department of our Institution.

Besides the mixed course of studies for students of the primary and secondary classes, there are the students of the Technical Department proper. Candidates for admission into that Department are required to produce a certificate of having passed the Fifth Standard Examination of the National Council or any equivalent examination. The Technical Department students will receive in the General Department of the College a general scientific course of education in Physics, Chemistry, Mathematics and Drawing ; and in the Technical Department a special course of instruction in the following subjects :—

Machine Drawing ; Mechanics ; Steam Engines and Boilers ; Hand and Machine Tools ; Pattern-making ; Brass Moulding ; Smithy ; Turning ; and Fitting.

Besides receiving a scientific education in principles our students will be specially trained to apply the principles in practice so as to be able to take up the smaller industries not requiring the investment of large capital. Thus in the workshops attached to the Physical, Chemical and Technical Departments, the students will be taught and required to manufacture, as far as practicable, their own instruments and apparatus. It is proposed for the present to teach our students to manufacture articles under the following heads :—

I. CARD-BOARD AND PAPER-WORK.

- (a) Medicine cases.
- (b) Stationery boxes.
- (c) Other assorted boxes.
- (d) Envelope cases.
- (e) Portfolios.
- (f) Blotting pads.
- (g) Geometrical models.
- (h) Envelopes, letter-paper, postcards, &c., &c.

II. WICKER-WORK.

- (a) Arm chairs.
- (b) Waste-paper baskets.
- (c) Boxes.
- (d) Travelling bags.
- (e) Tea poy, etc., etc.

III. CLAY-MOULDING.

Clay figures.

IV. WOOD-WORK.

- (a) Candle sticks.
- (b) Picture frames.
- (c) Toys.
- (d) Handles, pen-holders and stationery cases.
- (e) Artistic furniture (fret work).
- (f) Wood-carving.
- (g) Instrument boxes.
- (h) Stands, tables, supports, lifts and other fittings and appliances for chemical and physical laboratories.
- (i) Drawing boards.
- (j) Set-squares.
- (k) T-squares.
- (l) Parallel rulers.
- (m) Geometrical drawing models.
- (n) Measuring scales.
- (o) Models of verniers.

(*f*) Kindergarten materials for children in elementary schools.

(*g*) Machine and engineering models (wheels, pulleys, inclined planes, screws, toy engines, culverts, bridges, etc., etc.)

V. METAL-WORK.

Scientific instruments and apparatus for physical and chemical laboratories.

VI. METAL-WORK.

Garden tools and agricultural implements.

VII. METAL-WORK.

Cutlery.

VIII. METAL-WORK.

Small hand-presses, pumps, pulley-blocks, screw-vices, etc.

IX. METAL-WORK.

Sheet-metal goods.

- (*a*) Locks and keys.
- (*b*) Trunks.
- (*c*) Candle sticks.
- (*d*) Water buckets.
- (*e*) Office boxes.
- (*f*) Canisters.
- (*g*) Varnish and oil cans.
- (*h*) Butter tins, etc., etc., etc.

X. METAL-WORK.

Grinding and polishing.

XI. GLASS-BLOWING.

Glass apparatus used in chemical laboratories.

APPENDIX VIII.

JOINT STOCK COMPANIES.

*Number and Particulars of Joint Stock Companies registered in each Province in British India
in the twelve months ending the 30th September 1907.**

| No. | Name of Company and Situation of its Registered Office. | Object. | Capital. |
|----------------------------------|--|-----------------------------------|-------------|
| I.—BANKING AND INSURANCE. | | | Rs. |
| (a) BANKING AND LOAN. | | | |
| 1 | Industrial Bank of India, Ludhiana, Punjab ... | Banking and Commission Agency ... | 5,00,000 |
| 2 | Madura Sri Ashta Lakshmi Sahaya Nidhi, Madura, Madras ... | Money-lending (mutual) ... | 1,89,000 |
| 3 | Idigarai Devalaya Paripalana Nidhi, Coimbatore, Madras ... | Do ... | 1,00,000 |
| 4 | Indian Specie Bank, Bombay ... | Banking ... | 2,00,00,000 |
| 6 | Madura Union Ela Chit Co., Madura, Madras ... | Money-lending (mutual) ... | 1,50,000 |
| 6 | Lyallpur Bank, Lyallpur, Punjab ... | Banking ... | 1,00,000 |
| 7 | Woriar Alliance Bank, Trichinopoly, Madras ... | Do ... | 1,49,985 |
| 8 | Agricultural and Commercial Bank, Tinnevely, Madras ... | Do ... | 2,00,000 |
| 9 | Superior Bank, Muzaffarnagar, United Provinces ... | Do ... | 20,000 |
| 10 | Bank of Multan, Multan, Punjab ... | Do ... | 2,00,000 |
| 11 | Indian Bank, Madras ... | Do ... | 20,00,000 |
| 12 | Trichinopoly National Bank, Trichinopoly, Madras ... | Do ... | 1,00,000 |
| 13 | Madura Sarvajana Upakara Sahaya Nidhi, Madura, Madras ... | Money-lending ... | 4,20,840 |
| 14 | Orient Bank of India, Lahore, Punjab ... | Banking Business ... | 5,00,000 |
| 16 | Shanmuga Sahaya Nidhi, Madura, Madras ... | Money-lending ... | 3,36,000 |
| 16 | Gaya Bank and Trades Association, Gaya, Bengal ... | Banking and Loan Business ... | 50,000 |

| | | | |
|---------------------------------|---|---|-------------|
| 17 | Shri Venkatesh Bank, Hubli, Bombay ... | Banking Business ... | 20,970 |
| 18 | Bengal National Bank, Calcutta ... | Banking and Loan ... | 50,00,000 |
| 10 | Malvalli Kasaba Sri Lakshminarasingswami Bank, Fort, Malvath, Mysore. | Banking ... | 30,000 |
| Total, Banking ... | | | 3,00,75,795 |
| (b) INSURANCE. | | | |
| 20 | National Indian Life Insurance Co., Calcutta ... | Business of Life and other Assurances ... | 10,00,000 |
| 21 | National Insurance Co., Calcutta ... | Business of an Insurance Company ... | 10,00,000 |
| 22 | National Insurance and Banking Co., Amritsar, Punjab ... | Life Insurance ... | 10,00,000 |
| 23 | Aswini Government Security Life Assurance Co., Vizagapatam, Madras. | Lo ... | 1,00,000 |
| 24 | Hindustan Co-operative Insurance Society, Calcutta ... | Insurance Business... ... | 1,00,00,000 |
| 25 | General Assurance Society, Ajmer ... | Insurance ... | 1,00,000 |
| 26 | Indian Mercantile Insurance Co., Bombay ... | Fire Insurance ... | 50,00,000 |
| Total, Insurance ... | | | 1,82,00,000 |
| Total, Banking and Insurance .. | | | 4,88,75,795 |
| II.—TRADING. | | | |
| (a) NAVIGATION. | | | |
| 27 | Swadeshi Steam Navigation Co., Tinnevely, Madras ... | Navigation ... | 10,00,000 |
| Total, Navigation ... | | | 10,00,000 |
| (b) OTHERS. | | | |
| 28 | Assam Combination Trading Co., Dibrugarh, Eastern Bengal and Assam. | Trade contract ... | 5,000* |
| 29 | Sonamganj Lakshmi Bhandar, Sylhet, Eastern Bengal and Assam. | Agriculture, Trade and Banking ... | 20,000 |

* Compiled from the *Indian Trade Journal*.

| No. | Name of Company and Situation of its Registered Office. | Object. | Capital. |
|--------------------------|---|---|----------|
| II.—TRADING—(Continued). | | | Rs. |
| (b) OTHERS—(Continued). | | | |
| 80 | National Spinning and Weaving Co., Calcutta ... | Spinning and Weaving Industry | 20,000 |
| 81 | Friends' Trading Co., Gorakhpur, United Provinces ... | General Trade | 20,000 |
| 82 | Etawah Fibre Trading Co., Etawah, do. ... | Trade in Fibre | 1,50,000 |
| 83 | Kallidaikurchi Sudesa Toli Pandasalai, Tinnevely, Madras ... | Trading in Swadeshi articles | 20,000 |
| 84 | Swadesa Paddartha Sangraha, Dharwar, Bombay ... | Trading in country goods | 20,000 |
| 85 | Mysore Raj Tobacco Manufacturing Co., Bangalore, Mysore ... | Curing and flavouring tobacco and Manufacturing cigarettes | 15,000 |
| 86 | Indian Stores Company, Karachi, Sind ... | Trading in Co-operative Stores | 25,000 |
| 87 | Tripura Jatiya Bhandar Co., Comilla, Eastern Bengal and Assam ... | Trading | 30,000 |
| 88 | Borsad Swadeshi Sahayak Mandal, Borsad Bazaar, Bombay ... | Trading in country-made goods | 5,000 |
| 89 | Agriculturists' and Artisans' Alliance, Madras ... | General Trading | 1,00,000 |
| 40 | All-India National Industrial Co., Ganjam, Madras ... | General trading | 10,000 |
| 41 | Surma Valley Weaving and Trading Co., Sylhet, Eastern Bengal and Assam. | Trading in Swadeshi Goods | 20,000 |
| 42 | Dacca Silpa Samiti, Dacca, Eastern Bengal and Assam | Trading | 20,000 |
| 43 | Bharat Bhandar, Mirzapur, United Provinces ... | Encouraging and extending production and consumption of Indian articles | 25,000 |
| 44 | Deccan Match Manufacturing Co., Karad, Bombay ... | Manufacturing Matches | 1,00,000 |
| 45 | United Swadeshi Trading Co., Bombay ... | General trading | 50,000 |
| 46 | Indian Cement Syndicate, Bombay ... | Manufacturing and selling cement | 30,000 |
| 47 | Nadiad Silk, Woollen and Cotton Handloom Weaving Co., Nadiad, Bombay. | Trading and manufacturing cloth, yarn, etc. | 50,000 |
| 48 | People's Swadeshi Stores Co., Hyderabad, Sind ... | Trading in Indian articles | 20,000 |
| 49 | Narasapur Industrial Improvement Co., Kistna, Madras | Selling country-made goods | 50,000 |
| 50 | Nowgong Trading Co., Nowgong, Eastern Bengal and Assam. | Trading | 20,000 |

| | | | | | |
|----|---|--|-----|-----|----------|
| 51 | Jalpaiguri Silpa Samiti, Jalpaiguri, Eastern Bengal and Assam. | Trading | ... | ... | 60,000 |
| 52 | Darbhanga Trading Co., Darbhanga, Bengal | General Trading and Commission Agency. | ... | ... | 20,000 |
| 53 | Pursharthi Co., Ajmer | General trading | ... | ... | 20,000 |
| 54 | Jogalekar & Co., Akola, Berar | Manufacturing and dealing in Swadeshi articles | ... | ... | 1,00,000 |
| 55 | Indian Soap and Candle Factory, Bombay | Manufacturing soap, candles and perfumery | ... | ... | 1,00,000 |
| 56 | Swadeshi Hosiery and Manufacturing Co., Bombay | General trading | ... | ... | 2,00,000 |
| 57 | Kamrup Industrial and Trading Co., Gauhati, Eastern Bengal and Assam. | Trade and Commerce | ... | ... | 50,000 |
| 58 | Covelong Salt Co., Chingleput, Madras | Trading in Salt | ... | ... | 80,000 |
| 59 | Dinajpur Trading and Banking Co., Dinajpur, Eastern Bengal and Assam. | Trade and Commerce | ... | ... | 1,00,000 |
| 60 | Kotechandpur Swadeshi Bhandar Company, Bengal | Trade in Indian manufacture and produce | ... | ... | 10,000 |
| 61 | Malegaon Swadeshi Co-operative Trading Co., Malegaon, Bombay. | Trade in Indian articles | ... | ... | 20,000 |
| 62 | Belgaum Match Manufacturing Co., Belgaum, Bombay | Manufacturing matches | ... | ... | 80,000 |
| 63 | Negapatam Weaving Co., Negapatam, Madras | Weaving Industries | ... | ... | 20,000 |
| 64 | Tanjore National Co-operative Emporium, Tanjore, Madras | Co-operative Stores | ... | ... | 20,000 |
| 65 | Small Industries Development Company, Bengal | Small Industries | ... | ... | 4,00,000 |
| 66 | Deshi Stores Company, Shikarpur, Bombay | Trade in country-made articles | ... | ... | 10,000 |
| 67 | Coimbatore Industries, Coimbatore, Madras | Chrome tanneries | ... | ... | 20,000 |
| 68 | Kansat Trading Co., Malda, Bengal | Trade and Commerce | ... | ... | 20,000 |
| 69 | Bengal Hosiery Co., Bengal | Hosiery business | ... | ... | 2,00,000 |
| 70 | Hit Karni Co., Agra, United Provinces... | General trade | ... | ... | 20,000 |
| 71 | J. Roy Co., Multan, Punjab | Do | ... | ... | 2,00,000 |
| 72 | Punjab Commercial House, Amritsar, Punjab | Do | ... | ... | 1,00,000 |
| 73 | Shah Brothers & Co., Bombay | Commission Agency | ... | ... | 4,000 |
| 74 | Alembic Chemical Works, Bombay | Chemical Works | ... | ... | 5,00,000 |
| 75 | Agra Boot and Equipment Factory, Agra, United Provinces | Tanning and Manufacturing Leather | ... | ... | 5,00,000 |
| 76 | Shri Ambica Merchant Co., Ahmedabad, Bombay... | General trade | ... | ... | 20,000 |
| 77 | Satara Swadeshi Commercial Co., Satara, do | Trade in Indian articles | ... | ... | 20,000 |
| 78 | Cuddalore Swadeshi Mercantile Co., Cuddalore, Madras | General trade | ... | ... | 20,000 |

| No. | Name of Company and Situation of its Registered Office. | Object. | Capital. |
|---------------------------------|--|---|-----------|
| II.—TRADING—(Continued). | | | Rs. |
| (b) OTHERS—(Continued). | | | |
| 79 | South Indian Agricultural and Industrial Improvement Co., Anakapalle, Madras. | General Trade and Commission Agency ... | 1,00,000 |
| 80 | Rangpur Tobacco Co., Rangpur, Eastern Bengal and Assam ... | Manufacturing cigarettes, cigars, snuffs and other products of tobacco ... | 1,00,000 |
| 81 | Ananda Bhandar, do do ... | Trading and Banking ... | 20,000 |
| 82 | Property Dealing Co., Lahore, Punjab | Dealing in immoveable property ... | 1,00,000 |
| 83 | Swadeshi Lala Co., Ahmedabad, Bombay ... | Trading in handlooms ... | 1,00,000 |
| 84 | Bombay Milk Supply Co., Ahmedabad, Bombay ... | Trading in milk, butter, etc. ... | 20,000 |
| 85 | Saidapet Industrial Co., Chingleput, Madras ... | Encouragement of industries and trade ... | 10,000 |
| Total, Others... | | | 41,70,000 |
| Total, Trading .. | | | 51,70,000 |
| III.—MILLS AND PRESSES. | | | |
| (a) COTTON MILLS. | | | |
| 86 | Swadeshi Weaving Co., Amritsar, Punjab | Working and manufacturing cotton, etc. ... | 50,000 |
| 87 | Kaliswarar Mills Co., Coimbatore, Madras ... | Spinning and weaving cotton ... | 0,00,000 |
| 88 | Maharana Bhowsingji Mills Co., Bombay ... | Spinning and weaving cotton, etc. ... | 10,00,000 |
| 89 | Ahmedabad Sri Ramkrishna Mills Co., Ahmedabad, Bombay... | Do ... | 3,25,000 |
| 90 | Swadeshi Industrial Spinning and Weaving Co., Vizagapatam, Madras. | Do ... | 1,00,000 |

| | | | | |
|------------------------------|---|-----------------------------------|-----|-----------|
| 91 | Broach Industrial Cotton Spinning and Weaving Co., Broach, Bombay. | Manufacturing and Spinning cloth | ... | 7,00,000 |
| 92 | H. H. The Maharana Shri Ajitsinghjee Dharangadra Mills Co., Bombay. | Do | ... | 5,00,000 |
| 93 | Kamakshi Mills Co., Tanjore, Madras | Spinning and weaving | ... | 10,00,000 |
| 94 | Jam Shri Ranjit Shinjee Spinning and Weaving Co., Bombay. | Spinning and weaving cotton, etc. | ... | 8,00,000 |
| 95 | Sir Rasulkhan Mills Co., Bombay | Do | ... | 10,00,000 |
| 96 | Guntur Hosiery Mills Co., Guntur, Madras | Do | ... | 50,000 |
| Total, Cotton Mills... | | | | 64,25,000 |
| (b) OTHER MILLS AND PRESSES. | | | | |
| 97 | Trading Vaishya Ginning and Cotton Press Mills Co., Agra, United Provinces. | Trade in Ginning Cotton, etc. | ... | 1,00,000 |
| 98 | Swadeshi Manufacturing Rice and Oil Mills and Trading Co., Ganjam, Madras. | Milling rice, etc. | ... | 5,850 |
| 99 | Barisal National Oil Mills Co., Nalchitti, Eastern Bengal and Assam. | Trading, etc. | ... | 75,000 |
| 100 | Nimar Cotton Co., Bombay | Ginning and Pressing Cotton, etc. | ... | 2,00,000 |
| 101 | Malwa Cotton Co., Bombay | Do | ... | 1,50,000 |
| 102 | Mahadeva Cotton Press Co., Bombay | Do | ... | 60,000 |
| 103 | Cocanada Jute Press Co., Godavari, Madras | Do | ... | 1,50,000 |
| 104 | Bhaguati Flour and General Mills Co., Ambala, Punjab | Wheat and Grain Millers | ... | 15,000 |
| 105 | Madanganj Pressing Co., Bengal | Pressing jute, cotton and hides | ... | 1,50,000 |
| 106 | United Ginning and Pressing Co., Bengal | Ginning and pressing cotton, etc. | ... | 10,00,000 |
| 107 | Swadeshi Calico Printing Co., Bombay | Bleaching, dyeing, etc. | ... | 5,00,000 |
| 108 | Bahrata Cotton Ginning Press Co., Barhali, United Provinces. | Manufacturing cotton, wool, etc. | ... | 1,00,000 |
| 109 | Barla Zaveri Ginning and Manufacturing Co., Ahmedabad, Bombay. | Ginning and pressing cotton, etc. | ... | 20,000 |
| 110 | Anakapalle Commercial Syndicate, Anakapalle, Vizagapatam, Madras. | Milling rice | ... | 50,000 |
| 111 | Karnatic Weaving Establishment, Bangalore | Weaving with improved handlooms | ... | 50,000 |

| No. | Name of Company and Situation of its Registered Office. | Object | Capital. |
|---|---|-----------------------------------|-------------|
| III.—MILLS AND PRESSES—(Continued). | | | Rs. |
| (b) OTHER MILLS AND PRESSES—(Continued). | | | |
| 119 | Jumna Flour Mills Co., Cawnpore, United Provinces ... | Flour manufacture ... | 3,00,000 |
| 118 | Hari Shunkar Busdeo Cotton Press and Ginning Mills Co., Debai, United Provinces. | Manufacturing jute, cotton, etc. | 96,000 |
| 114 | Jhotana Ginning Co., Ahmedabad, Bombay ... | Ginning and pressing ... | 36,000 |
| 115 | Sri Lakshmi Rice Mills Co., Guntur, Madras ... | Milling rice ... | 20,000 |
| 116 | Vizag Mills Co., Vizagapatam, Madras ... | Do ... | 5,00,000 |
| 117 | Century Flour Mills, Lahore, Punjab ... | Milling flour ... | 5,00,000 |
| 118 | Karachi Steam Roller Flour Mills, Karachi, Sind ... | Do ... | 4,00,000 |
| 119 | Bharat Press Co., Bombay ... | Ginning and Pressing cotton, etc. | 2,50,000 |
| 120 | Sri Tripura Sundari Cotton Press, Bezwada, Madras ... | Do ... | 85,000 |
| 121 | Zayathree Rice Mills Co., Sagaing, Burma ... | Rice-milling ... | 50,000 |
| 122 | National Trading Co., Rangoon, Burma ... | Oil-milling ... | 1,00,000 |
| Total, Other Mills and Presses... | | | 49,62,850 |
| Total, Mills and Presses... | | | 1,13,87,850 |
| IV.—SUGAR MANUFACTURE. | | | |
| 123 | Hadi Sugar Manufacture Works, Meerut, United Provinces .. | Manufacture of sugar ... | 1,00,000 |
| 124 | Union Indian Sugar Mills Co., Cawnpore, United Provinces ... | Do ... | 4,00,000 |
| Total, Sugar Manufacture... | | | 5,00,000 |

V.—PLANTING, MINING AND QUARRYING.

| | | | | | | |
|--|---|-----|-----|-----|--|-------------|
| 125 | Kuardi Coal Co., Bengal | ... | ... | ... | Business of mining and dealing in coal and coke. | 3,00,000 |
| 126 | East Kuardi Coal Co., Bengal | ... | ... | ... | Do | 2,00,000 |
| 127 | Huntodih Coal Co., Bengal | ... | ... | ... | Do | 2,00,000 |
| 128 | Bengal Bhatdee Coal Co., Bengal | ... | ... | ... | Do | 4,50,000 |
| 129 | Trichinopoly Treasure Trove Co., Nilgiris, Madras | ... | ... | ... | Mining, etc. | 30,000 |
| 130 | Hajee Prospecting Syndicate, Mysore | ... | ... | ... | Mining all sorts of minerals | 1,00,000 |
| 131 | Bengal Agricultural and Dairy Farm, Bengal | ... | ... | ... | Cultivation of cotton, jute, rice, etc. | 5,00,000 |
| 132 | Southern India Manganese Company, Madras | ... | ... | ... | Working manganese, etc. | 2,00,000 |
| 133 | Indian Granite Company, Madras | ... | ... | ... | Mining stones | 1,00,000 |
| 134 | Mysore Fruit Syndicate, Bangalore | ... | ... | ... | Fruit cultivation | 3,00,000 |
| 135 | Tata Iron and Steel Co., Bombay | ... | ... | ... | Mining iron ore, etc. | 2,31,75,000 |
| 136 | Banganapalle Minerals Syndicate, Madras | ... | ... | ... | Gold-mining | 99,990 |
| Total, Planting, Mining and Quarrying... | | | | | | 2,57,51,990 |

VI.—OTHERS.

| | | | | | | |
|------------------|--|-----|-----|-----|--|-------------|
| 137 | Guntur District Athmakuru Lift Irrigation Co., Guntur, Madras. | ... | ... | ... | Construction of irrigation channels for watering fields from the Kistna canal. | 12,200 |
| 138 | Belgaon Company, Chittagong, Eastern Bengal and Assam | ... | ... | ... | Acquisition of Belgaon Estate, etc. | 50,000 |
| 139 | Punjab Building Co., Lahore, Punjab | ... | ... | ... | Buying and selling of lands, building, etc. | 2,50,000 |
| Total, Others .. | | | | | | 3,12,200 |
| Grand Total... | | | | | | 9,14,09,835 |

*Abstract Table of Companies Registered in the Twelve Months ending 30th September 1907:
Compared with the Number Registered in the Nine Months ending 30th September 1906.*

| Description. | Numbers. | | Capital. | |
|---|--------------------|--------------------------|--------------------|---------------------------|
| | Jan.—Sep. 1906. | Oct. 1906— Sep. 1907. | Jan.—Sept. 1906. | Oct. 1906.— Sep. 1907. |
| | | | Rs. | Rs. |
| Banking Companies | 14 | 19 | 1,67,00,000 | 3,09,75,793 |
| Insurance Companies | 3 | 7 | 55,20,000 | 1,82,00,000 |
| Navigation Companies | 5 | 1 | 1,21,00,000 | 10,00,000 |
| Other Trading Companies | 46 | 58 | 70,53,200 | 41,79,000 |
| Cotton Mills | 22 | 11 | 1,80,52,000 | 64,25,000 |
| Other Mills and Presses | 16 | 26 | 47,80,750 | 49,02,850 |
| Sugar Manufacturing Companies | 2 | 2 | 5,00,000 | 5,00,000 |
| Planting, Mining and Quarrying Companies | 4 | 12 | 1,92,000 | 2,57,54,990 |
| Other Companies | 2 | 3 | 5,50,000 | 3,12,200 |
| Total ... | 114 | 139 | 6,57,23,950 | 9,14,99,836 |

APPENDIX IX.

(Re-printed from the " Indian Trade Journal " of
date June 27, 1907.)

INDIAN JOINT STOCK COMPANIES.

A YEAR'S PROGRESS.

The total number of Joint Stock Companies registered in India in the course of 1906-07 under the Indian Companies Act VI of 1882 amounts to 308 with a nominal capital of Rs. 11,80,33,075, compared with 277 companies with Rs. 7,93,51,568 in 1905-06 and 143 companies with Rs. 3,70,31,779 in 1904-05. There has, therefore, been a continuous growth in the number of companies in each successive year and in the average amount of nominal capital per company. This was Rs. 2.59 lakhs in 1904-05, Rs. 2.86 lakhs in 1905-06 and Rs. 3.83 lakhs in 1906-07.

On the other hand, it is necessary to examine the variations in the ratio borne by the paid up to the nominal capital at time of registration. The figures for the last three years as far as reported were:—

CAPITAL—R.

| <i>No.</i> | <i>Nominal</i> | <i>Paid-up.</i> | <i>Ratio of Paid-up to Nominal.</i> |
|---------------------|----------------|-----------------|---|
| 1904-05—143 | 3,70,31,779 | 86,88,379 | 10 per cent. |
| 1905-06—277 | 7,93,51,568 | 19,28,118 | 2.4 " |
| Increase 93.7 p. c. | 114.3 p. c. | —47.7 p. c. | |
| 1906-07—308 | 11,80,33,075 | 1,96,702 | |
| Increase 11.2 p. c. | 48.7 p. c. | —89.8 p. c. | |

The figures of paid up capital which are shown above represent in each case the sums actually paid up at time of registration. They do not necessarily afford any gauge of the prospects of the companies, but it is a fact that the market was inimical to the raising of capital and the contrast (which is a real one) between the respective centesimal ratios of paid-up to nominal capital has a certain interest.

The nominal capital is chiefly distributed under the following classes of industries :

| | No. | 1905-06. | | No. | 1906-07. | |
|--|-----|-------------|-------------|-----|-------------|-------------|
| | | Nominal—Rs. | Paid-up—Rs. | | Nominal—Rs. | Paid-up—Rs. |
| Banking and Loan | 45 | 68,33,748 | 25,618 | 55 | 4,20,69,505 | 43,766 |
| Insurance | 55 | 6,15,830 | ... | 51 | 83,71,270 | 525 |
| Navigation | 2 | 16,00,000 | ... | 5 | 1,25,00,000 | ... |
| Printing | 5 | 4,45,000 | 6,050 | 8 | 15,00,000 | ... |
| Trading | 77 | 1,03,79,000 | 8,30,000 | 96 | 1,09,85,700 | 11,971 |
| Cotton Mills | 27 | 1,58,50,000 | 3,89,600 | 18 | 1,60,07,000 | 80,460 |
| Jute Mills | 3 | 50,00,000 | ... | 2 | 41,00,000 | ... |
| Cotton and Jute Screws and Presses ... | 7 | 4,35,000 | 62,500 | 13 | 20,40,000 | ... |
| Coal Mining | 7 | 18,70,000 | 60,000 | 21 | 94,35,000 | ... |
| Land and Building | 2 | 14,00,000 | ... | 6 | 37,70,000 | ... |
| Sugar | 3 | 18,50,000 | 4,99,650 | 3 | 10,00,000 | ... |

Of the new nominal capital Rs. 5,09,40,775 or about 43 per cent was intended for Banking, Loan and Insurance Companies, 74 per cent. of this amount relates to companies registered in Bombay and 118 per cent. in Madras. Trading companies account for 21.6 per cent. (Rs. 2,55,35,700,) of which Rs. 1,25,00,000 or nearly half was to be invested in Navigation.

DIVISION OF CAPITAL.

Nearly 20 per cent. (about Rs. 2,35,89,600) of the aggregate capital was to be devoted to mills and presses, chiefly for working and pressing cotton, jute, wool and silk. A number of the mills and presses are registered in Bengal (nine with capital of Rs. 86,55,000); Bombay (fifteen with Rs. 90,70,000), and Madras (seven with Rs. 45,67,550). The new capital proposed in respect of mining and quarrying companies is Rs. 1,10,65,000, of which 85 per cent. was to be invested in coal companies registered in Bengal. The increase has been four-fold compared with the capital invested in coal companies during 1905-06.

About 73 per cent. of the total nominal capital invested in Joint Stock Companies during 1906-07 is concentrated in companies registered in Bengal and Bombay. Bengal had Rs. 2,85,37,500, being 24 per cent. and Bombay Rs. 5,81,08,100 or 49 per cent. Thereafter, but a long way behind comes Madras with a projected addition to joint stock capital of Rs. 1,33,80,625 or 11.3 per cent. of the whole.

The average capital of each company is Rs. 3,83,224 against Rs. 2,86,467 in 1905-06, the provincial averages being Rs. 19,76,077 for Bombay, Rs. 3,90,925 for Bengal, Rs. 1,21,642 for Madras. The average for Bombay is considerably higher this year owing to the registration of seven important companies, namely :—

| | Rs. |
|---|-------------|
| Indian Specie Bank | 2,00,00,000 |
| Bank of India | 1,00,00,000 |
| Bombay Steam Navigation Co. | 60,00,000 |
| All-India Insurance Co. | 50,00,000 |
| Shah Steam Navigation Co. of India | 30,00,000 |
| Bank of Western India | 25,00,000 |
| Finlay Cotton Mills | 20,00,000 |

The average for Madras is as usual lower on account of the extended application of the Companies Act to the business of small money-lenders, for no less than 84 Loan and Insurance Companies with a nominal capital of Rs. 60,40,775 were registered during the year in Madras, out of a total of 106 companies with Rs. 5,09,40,775 for All India.

APPENDIX X. *

INDIAN PATENTS.

(Filed in the Twelve Months October 1906—September 1907.) *

APPLICATIONS FILED.

1. J. N. Dey, of Howrah, for a self-adjustable easy chair.
2. Sreemanthula Kuppachary, of Madras, for an improved water-lift.
3. Rai Bahadur B. B. Chakravarti, of Benares, for improved lock-tile called 'Chakravarti' tile.
4. Tulsidos Khemchand Stpahimalani, of Quetta, for a pain balm.
5. Akbar Ali, of Ludhiana, for a loom with a single shaft for shedding, picking and beating up.
6. Surendra Nath Mukerji, of Calcutta, for Mukerji's patent sound doubling adjustment for attachment to sound boxes of disc talking machines.
7. Jawahar Singh, of Juwalapur, for an improvement in wheel and axle.
8. P. S. Mudaliar, of Palamedu, for a water-lifting machine.
9. Rama Dayal Fuller, of Aligarh, for improvements in oil lamps.
10. Chunder Nath Bose, of Bally, for a process of colouring celluloid and the like.
11. Abdul Rajak Abdul Rahim, of Surat, for a musical instrument called the bell instrument.
12. Lalit Chandra, of Gaultati, for improvements in lamps.
13. Cankala Kristnasawmy Veerasawmy Naidu, of Negapatam, for improvements in brief bags or carriers for legal and other documents and sundry articles.
14. Kandernath Mondul and Hira Lal Mondul, of Howrah, and Calcutta, for hand wheel bomar presses for pressing of loose jute from two maunds up to the weight of four and a half maunds in bales.

* Compiled from the lists published in the numbers of the *Indian Trade Journal* from November 1906 to November 1907.

15. A. K. Mazumdar, of Dhamrai, Dacca, for hirovia or the lady spindle.

16. Manockji Cavasji Petit, of Bombay, for an automatic brake for two-wheeled vehicles drawn by a pair of animals.

17. Kiriti B. Mukherji, of Calcutta, for a hand-machine for cotton-spinning or "Charka."

18. Ganga Singh, of Quetta, for recovering lost articles from inaccessible depths, whether in seas, rivers, wells, artesian borings or vertical Mining Shafts.

19. Radha Kissore Sinha, of Indeswar, Assam, for a fan moved by hot air pressure arrangement.

20. Nawab Hozoor Mirza, of Murshedabad, for improvements relating to suspended rope railways or tramways.

21. Prokash Chunder Chatterjee, of Calcutta, for an improved fly-shuttle loom to be called the "Sree Krishna Loom No. 1."

22. Radha Kissore Sinha, of Uttarbhag, P. O. Indeswar, for Kerosine gas-store of a syphon arrangement.

23. Rao Bahadur Chever Krishnachar Subba Rao, of Bellary, for a climax tread powder for man or beast for work in general.

24. Mr. Yusuf, of Meerut, for summer relief.

25. K. G. Subba Row, of Tirukolur, for a pair of cook's tongs.

26. D. S. Guanakan, of Bangalore, for improvement in Izal disinfectant called "Ozu."

27. Thakur Dutta Sharma, of Lahore, for a medicinal compound called Auritdhara.

28. P. Lall, of Mauza Narela, Tehsil Delhi, for a new variety or substitute for tea made from herbs, called "Imrat Sar Fiwan."

29. Dorabjee Burjorjee, Engineer, of Bombay, for an economic bamboo and paper roller for the cotton gin.

30. Khuisedjee Sorabjee Jussawala, of Bombay, for a contrivance for developing continuous and even motive power both from tide and ebb waters.

31. A. C. Imbert, of Vizianagram, for improved compressing or baling machinery.

32. Harichand Mancharam and Son, of Bombay, for a padlock without any joint.

33. Gajendra Kumar Paul, of Comilla, for improved box harmonium.

34. Ram Lal Das, of Calcutta, for producing musical tones of all pitches and qualities to be called Suralahari,

85. Ebrahim and Shaik Jaffer, both of Sholapur, for improvements in warping machines.

86. Karter Singh, of Rawalpindi, for a disinfectant to be known as "plunas."

87. Motilal C. Mehta, and the Sayajee Loom Works, Ltd., of Baroda, for improvements in take-up motions for looms.

88. Gangadhar R. Maugrulkar, of Sholapur, for improvements in the manufacture of grass matches.

89. Kedarnath Chakravarti of Kalighat, for a spinning machine to be called "The Bijoy charka."

90. Nil Kunth Nundy, of Calcutta, for a new or improved machine for making hookah tubes and the like.

91. Narain Singh, of Amritsar, for Swadeshi leatherless boots, shoes and slippers.

92. Jotendra Nath Bannerjee, of Calcutta, for johor's mechanical smokeless kerosine lamp.

93. L. K. Kirloskar, of Belgaum, for improvement in hand chaff or fodder cutter.

94. Kanhaiya Lal, of Delhi, for making a perpetual calendar of the Christian era.

95. Bawa Budh Singh, of the Public Works Department, Punjab, for a folding camp punkha.

96. Soruj Bali, of Lucknow, for flour mill.

97. Ashutosh Pollay and Wooma Churun Deshi, both of Howrah, for improvements of hand power jute press.

98. Sorabji Cursetji Arsiwalla, for a safety device for live electric cables.

99. Kartar Singh, of Rawalpindi, for a composition of chemical matter for expelling rats from premises forming an anti-rat preparation to be known as "rat scare."

100. Radhika Nath Saha, of Benares City, for improvements in stylographic, fountain and like pens.

101. Dusha Pestonji Framji Ghadiate, of Surat, for preventing accidents to life and property caused by the falling of aerial wires carrying electrical currents of high tension.

102. Ishwar Janeswar Khettry, of Sholapur, for improvements in warping machines.

103. Hara Dhan Mandal, of Howrah, for the efficient jute press.

SPECIFICATIONS FILED.

1. Motilal Chotalal Mehta, and the Sayajee Loom Works, Limited, both of Baroda, for improvements in take-up motions for looms.
2. Bonkim Lal Das, of Calcutta, for a cottage or factory loom to be called Bankim's Patent Domestic Loom.
3. Priva Natha Roy, of Darjeeling, for a semi-automatic spinning wheel, being a rustic machine with common material to be called Sarala Charaka.
4. Rama Dayal Fuller, of Aligarh, for improvements in oil lamps.
5. Lalit Chandra, of Assam, for improvements in lamps.
6. Khetramohon Dass, care of L. Deveria, Alipore, for the "Bengal" self-acting brick and the tile-making machine.
7. Pestonjee Cursetjee Mehta, of Bombay, for a new fuel briquette.
8. B. B. Chakravarti, of Benares, for an improved looking roofing tile called "Chakravarti" tile.
9. Akbar Ali, of Ludhiana, Punjab, for a loom with a single shaft for shedding, picking and beating up.
10. Rai Bishambar Nath, of Delhi, for a cheap country oil lamp.
11. Rai Bishambar Nath, of Delhi, for an improved portable stove and bed warmer.
12. Rai Bishambar Nath, of Delhi, for a cheap water-heater.
13. Ram Nath, of Delhi, for a new process (to be called the new Rama process) for reproducing copies of drawings.
14. Y. K. Davda, of Bombay, for improvements in lamp chimneys of mica.
15. Maneckshaw J. Chanjibhoy Mistry, of Bombay, for a detaching device for vehicles.
16. Madan Lall Kapoor, of Peshawar, for hand, treadle or power loom weaving machine.
17. Kander Nath Mondul and Hiralal Mondul, of Howrah, and Calcutta, for hand wheel Bomar Press for pressing of loose jute in one bundle of one and a half maund in weight.
18. Laljee Madhowjee, of Madeji Road Station, for improvements in clocks.
19. Lakhiswar Ghatak, of Shahapur, for an alloyed gold.
20. Chandra Mohan Roy, of Lucknow, for improved brick burning in a trench or over-ground kiln.

21. Kartar Singh, of Rawalpindi Cantonment, for muskicide or the signal rat exterminator.

DESIGNS REGISTERED.

1. Miss Nistarini Mitter, of Calcutta, for a pictorial flag showing a tiger, crescent, star, sun, moon, and the words "Bande Mataram" in Deb Nagri character.

2. M. S. Das, of Cuttack, for a tantalusor spirit stand of a snake design.

3. Gordhan Dass, Sarrafi, of Delhi, for a disc for necklaces bearing specified words on each side.

4. Jugal Kishore, of Delhi, for a disc for necklaces bearing specified words on each side.

5. Shadi Ram, jeweller, of Delhi, for a disc for necklaces bearing specified words on each side.



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