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OF
THE SECOND
Indian Industrial Conference

HELD AT CALCUTTA

ON THE

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ERRATA.

FOR	READ	PAGE
Govindaraghava	Govindaraghava	8
Comparison	Comparison	46
Mathew	Matthew	49
Synonimous	Synonymous	52
Chatterm	Chatterton	79
Malhall	Mulhall	85
fo	of	94
E. D. Wacha	D. E. Wacha	136
mads	made	309
Sugare	Sugar	331
per	par	379
Raiffisian	Raiffeisen	346, 348
Subrhmania	Subrhmania	348
Gopalcharia	Gopalchariar	349
Irland	Ireland	353
Plumket	Plumkett	353
diltante	dilettante	388
every	very	389
primetive	primitive	390
President	President	393
conjuries	congeries	393
Government	Government	397
instancce	instance	400
guarntee	guarantee	400
Pestellozi	Pestalozzi	414
Khivraj	Khibraj	436
Seebharao	Subbarao	436

CONTENTS

A

- Accounts of the Industrial Conference, App. I., x—xi.
Advani, Rao Bahadur Hiranand Khemchand, 427.
Agricultural and Industrial Progress of India, 84—91; industrialism of the West, 84; room for expansion of population in India, *ib*; the economic drain, 85; agricultural industry in India, 85—87; State-aid and initiative necessary, 87; Dr. James quoted, 88; Technical schools in Western countries, 89—91.
Agricultural Industry, 69, 135—136.
Akbar, 320.
Alembic Chemical Works, App. I., liii.
Alison, Sir A., 92.
All India United Insurance Co., Ltd., App. I., 1—11.
American Economist, 105.
Amphill, Lord, 348.
Amrita Bazar Patrika, on Dharmagolas, 134—135.
Ananda Charlu, Rai Bahadur, P., 3, 427.
Aristotle, 44.
Armstrong, H. E., 265.
Arnold, Matthew, 49.
Association for the Advancement of Scientific and Industrial Education, App. I., xlii.
Atre, Trimbak Narayan, on Weights, Measures, and Coins, 367—383.

B

- Banerjee, J. N., on Plantain Fibre, 216—219; on Essential oils, 270.
Banerji, Surendra Nath, 422, 425, 427.
Banerji, Sir Gurudas, 392.
Bannerji, N. N., on the Jute Crop of India, 185—195.
Bastiat, F., 110.
Basu, Bhupendra Nath, 427.
Bebb, John, 105.
Bengalee, on Dharmagolas, 135, 142; mentioned, 136.
Bengal Luxmi Cotton Mills, App. I., xli, 8.
Bengal National Fund, App. I., xlv—xlvi.
Bengal Technical Institute, App. I., xlii—xlii, 56.
Bhagavat Gita, 409.
Bhargava, Ramnath, 56.
Bhashyam Iyengar, Sir V., 348.
Bombay Steam Navigation Co., App. I., li.
Bontemps, M., 300.
Bose, F. N., his speech, as Chairman of the Committee, 5—15; importance of the industrial problem, 5; enterprise in the Western Presidency, 6; petty industries, *ib*; lack of commercial and industrial activity in Bengal, 7; its superiority in other spheres, *ib*; the Swadeshi movement and its possibilities, 8; industrial war between the East and the West, 9; Mr Morley quoted, 10; benevolence of H. H. the Maharajah of Gaekwar, 11; the Technical Institute of Baroda, *ib*; attitude of Government

(b)

- towards technical education, 11—12; Industries in the Baroda State, 13; signs of an industrial awakening, 14—15; mentioned, 1, 16, 24, 83, 385.
- Brand, Mr., 275.
- British Fiscal Policy, 110—112.
- Buchanan, J., 109.

O

- Calcutta Pottery Works, App. I., xlviii.
- Calcutta Review, 253.
- Carnegie, A., on Protection, 94.
- Central Bank to Finance Co-operative Credit Societies, 130—134; its object, 131; difficulties of popularizing such institutions, 131—133; Joint-Stock Banks, 133; District and Central Banks, 133—134.
- Chamberlain, J., 97.
- Chand, Rai Bahadur N., 243.
- Chatterji, Haridas, on the Development of Indian Sugar Industry, coupled with Agriculture, 239—252.
- Chatterji, T. N., 172.
- Chatterton, A., on Chrome Tanning, 271—296; mentioned 23, 54, 79, 209, 404.
- Chaudhuri, B. P., on Industrial Survey, 405—406; mentioned 2, 426.
- Chaudhuri, J., 57.
- Chaudhuri, Rai Jotindra Nath, 426.
- Chaudhuri, Rai Parvati Sankar, on Dharmagolas or Co-operative Grain Banks, 134—155.
- Chiman Lal, Mr., 423.
- Chintamani, C. Y., 3, 55, 423, 424, 427, 428.
- Chitnavis, the Hon'ble G. M., 52.
- Chrome Tanning, 271—296; export trade of India in hides, 271; demand for leather, 271—272; tanning in the country, 272—274; experiments in chrome-tanning, 274—277; characteristics of chrome leather, 277—279; methods of chrome-tanning employed in Madras, 279; hides and skins, 279—281; processes preliminary to tanning, 281—283; pickling, 283—284; chrome tanning, 284—286, fat-liquoring, 286—288; sole leather, 288—289; dyed leathers, 289—291; seasoning, 291—292; blacks, 292—293; combination tannage, 293—294; cost of chrome tanning, 294—295; conclusion, 295—296.
- Churchill, Mr., 209, 212.
- Clay, H., 108.
- Cleveland, G., 109.
- Clibborn, Colonel, 403.
- Cobden, Richard, 96, 101.
- Collin, E. W., 408.
- Competition, Handloom, result of, App., XL, xcix, *et seq.*
- Co-operative Credit Societies, 118—130: indebtedness of the cultivator and the village artisans, 118—189; want of capital, 119; want of thrift, 120; usury in the villages, *ib*; *raison d'être* of Co-operative Credit Societies, 121; their objects, 121—122; State help, 123; granting of loans, 123—124; rate of interest, 124—125; reserve fund, 125—126; concessions by Government, 127—128; urban societies, 128—129; economic advantages of Credit Societies, 129—130. - R. M. Kelkar's paper on, 344—354

(c)

- Agricultural Societies Act, 344: poverty and ignorance of the agricultural classes, 345: Co-operative Societies in Bombay and Madras, 346—347: defects of the Act, 347: their detailed consideration, 348—352: need of popularising these institutions, 353—354.
- Cornell, Erza, 357.
- Cotton Cultivation in Bengal, 195—204: acreage under cotton, 195: inadequate supply in the province, 196: reasons for the same, 196—197; outturn of cotton in India, 198; American and Egyptian cotton, 198; efforts to improve Indian Cotton, 199; experimental cultivation of foreign varieties, *ib*; work of one of the American cotton planters, *ib.*, 200; cotton cultivation in Egypt 202; outturn of Indian, Egyptian and American cotton, 202; acclimatisation of Sea Island cotton in America, 203; soil and manure for the cotton plant, 204.
- Cotton Hand-Book for Bengal* (Medlicott), 196, 199.
- Cotton Industry, 22, 73.
- Cunningham, General, 297.
- Curzon, Lord. 79, 79. 344, 386, 407, 408.

D

- Daily News, Indian*, 110, 111.
- Das, S. R., 55.
- De, K. C., on Co-operative Credit Societies, 118—130; quoted, 140.
- Delegates, list of, App., X., lxxxix.
- Desai, Dewan Bahadur A. S., on suggestions to the Public, 409—411; mentioned, 2, 413; of the Central Provinces and Central India, 250; local markets and labour, 251; resultant profits, 251—252.
- Dhari, Alakh, on glass-making, 296—309.
- Dharmagolas or Co-operative Grain Banks; 134—155; present agricultural condition of India, 135—136; grain stores, 137; underlying principle of the scheme, 137—138; experimental Dharmagolas, 138—139; their organisation, 140—142; their special features, 142—143; their introduction into other parts of India, 144—145; rules for the establishment and maintenance of Dharmagolas, 145—155.
- Dos, Damodaro, on Suggestions to the Public, 415—416.
- Dudley, T., 105.
- Dutt, R. C., his speech on the election of the President, 53—59; First Industrial Conference, 53; its three-fold object, 53—56; industrial activity in the country, 56—58; the Swadeshi movement, 58—59; his Presidential address quoted, 91; on the appointment of Office-bearers, 422—427: mentioned, 1, 3, 34, 59, 60, 83, 432.

E

- Education, more literary than practical, 20, 36.
- Effect of Import Duties on Industrial Development, 91—103; policy of import duties, 91; Mr. Dutt quoted, *ib*; Alison quoted, 92; prosperity of England, 92—93; the fetish of Free Trade, 95; its blighting effects, 94; Carnegie on the policy of strict protection, *ib*; cause of the loss of industrial and commercial supremacy, 94—95; effect of tariff on the prices of articles, 96—101; evil of unrestricted foreign imports, 102—103; imposition of tariffs do not raise prices, 104—107, 108—109, 110—112, 113—117.
- Elgin, Lord, 397.
- Englishmen*, on Dharmagolas, 135.

(4)

F

- Facts for Fiscal Reformers, 113—117.
Fahian, 19.
Fahlberg, 232.
Fillmore, M., 109.
Finlow, R. S., 193.
Foreign Capital, 26, 63.
Forsyth, J., 256.
Free Trade, 93—94, 399.

G

- Gaekwar, H. H. the Maharajah, inaugurates an effective system of technical education, 13; patriot and reformer, 11; his inaugural address, 15—50; prologue, 16; duty of helping the industrial movement, 17; component parts in the machinery of progress, *ib*; industries of India in ancient times, 17—18; civilisation of the Greeks, 18; trade of the Romans with India, *ib*; Asiatic trade with Constantinople, *ib*; Chinese travellers as pilgrims to India, 18—19; how the English wrested a share of the Eastern trade in the 18th century, 19; England's commercial policy, 19—20; England as a free-trader, 20; triumph of machinery, the triumph of our age, 20—21; mill and hand-loom industries of India, 21—22, textile industries, 22; other industries requiring the use of steam, *ib*; silk industry, 23; other industries, *ib*; recent geological surveys, 23—24; Bengal coal-fields, 24; principal industries carried on mainly by steam, 24—25; our present situation, 25—26; industries dependent on European capital, 26—27; duel with Western nations with weapons of their own choosing, 27; threatened danger of extinction, 27—28; Swadeshism, a potent weapon of usefulness, 28; Indian cane-sugar industry, 28—29; tanning industry of Madras, 29—30; steps to minimise helplessness and enrich the industrial resources of the country, 30; serfdom to foreign capital and enterprise, 30—31; raw material sent abroad for finished products, 31—32; low state of our industries, 32—33; the educative effect of Conferences and Exhibitions, 33—34; last year's work of the Industrial Conference, 34—35; weak points in the Conference organisation, 35; important means to promote industries, 36; free compulsory education, *ib*; importance of technical education, 37; leading nations in Industrial enterprise, *ib*; industries in France, *ib*; technical schools of Austria and Italy, 38; schools of arts and crafts in London, *ib*; new Universities in England, *ib*; industrial education in America, *ib*; privately endowed institutes all over the United States, 39; Universities like Harvard, Yale, and Columbia, *ib*; triumph of Japan industries, *ib*; manual training and industrial education in schools, 40; education abroad, 41; scholar statesmen of Japan, 42; Mr. J. C. Ghose's scheme, *ib*; possibilities before India 43; lessons pertinent to India, 43—44; Greece: importance of commercial national life, 44—45; Rome: importance of independent industries, 45; co-operation, the crying need of the hour, 45—46; mechanical inventions in India, 46; four important movements of modern times, *ib*; development of capitalistic organisation of industry, 47; secularisation of social, political, and commercial affairs, 47—48; monopoly of caste prerogatives, 48; development of national spirit, *ib*; development of scientific methods, 48—49.

(c)

- India's failure in scientific lines, 49; evils of Western civilisation to be avoided, 50; mission of India, *ib*; vote of thanks to, *ib*; mentioned, 59, 60, 386, 428.
- Gamble, J. S., 312
- General Industrial Activity, App., xi-lxx.
- Ghatak, Jogodiswar, 179.
- Ghosh, H. H., on Rice Manufacture, 173-180.
- Ghose, J. C., his scheme of industrial education, 42-43; mentioned, 51, 56.
- Ghose, Sir Chandra Madhub, his appreciation of H. H. the Gackwar's speech, 51-52.
- Ghulam, H. C., 426.
- Gibbins, Mr., of productive area in India, 86.
- Gidhour, H. H. the Maharajah, 161.
- Gilbert, 204.
- Glass-Making, 296-309; composition of glass, 296; *obsidian* or native glass, *ib*; raw materials, 297-302; furnaces, crucibles, annealing ovens, 302-305; skilled labour and future prospects, 305-309.
- Gokhale, the Hon'ble G. K., 395.
- Gopalachariar, P., 349.
- Gore, George, 290.
- Gourlay, W., on the Rahatpur Dharmagola, 141, 143.
- Government and Industrial Development, app., xx-xxii.
- Govindaraghava Iyer, Dewan Bahadur L.A., on Provincial Committees, 417-418; mentioned, 2, 426.

H

- Hadi, S. M., 223, 249.
- Hamilton, Sir D. M., on the Indian cultivator, 119-120; agricultural finance, 142.
- Hand-loom Weaving in India, 204-215; four classes of cotton piece-goods consumed in the country, 205; their estimate in yards, 206; coarse classes woven on Indian hand-looms from Indian mill-yarn, *ib*; coarse-medium class, 206-207; medium class, 206-207; fine class, 207-208; speed of hand-looms, 208-209; effective speed, 209-213; introduction of, 213-214; Weaving schools, 214; object lessons, 214-215; pecuniary help, 215.
- Handloom competition, App. XI., xcix.
- Hanumanta Row, D. V., 55.
- Hardie, Keir, on wages and labour in India, 76-77.
- Harvey, W. L., 62.
- Haveli, E. B., 54.
- Herodotus, on Indian Cotton, 18.
- Hewett, Sir John, 62, 79, 398, 404, 407.
- Hicks-Beach, Sir Michael, 111.
- Hindu Patriot, on Dharmagolas, 135.
- History of Europe (Alison), 92.
- Holland, T. H., 54, 66, 71, 73, 362.
- Hooper, D., on Indian Essential Oils, 253-269.
- Houen Tsang, 19.
- Hyderabad Journal, on Dharmagolas, 136.

I

- Ibbetson, Sir Denzil, 173.

Indian Art Industries, Present State and Future Prospects of (the), 339—344; task of reviving the ancient arts and handicrafts, 340; causes of their decay, 340—341; means for the revival of the industries, 341—343; commercial prospects and future, 343—344.

Indian Banks, 66—68.

Indian Essential Oils, 253—269; study of ancient drugs highly interesting, 253; nature and composition of essential oils, 253; general methods of extracting the oils, 254; trade in Indian essential oils, 254—255; geranium or palma rosa oil, 255—259; lemon-grass oil; 259—262; citronella oil, 262; sandal wood perfume, 263—264; rose otto, 264; rose water, 264—265; turpentine oil, 265; Eucalyptus or blue gum oil, 265; camphor, 265—266; ajwain or ajowan oil, 266; winter-green oil, *ib*; dipterocarpus oil (gurjan balsam or wood oil), *ib*; essence of Champaca, 267; Keora essence, *ib*; Cassie pomade, 267—268; Patchouli oil, 268; raw materials for the manufacture of perfumes in India, 268—269.

Indian Industrial Association, App., xlvii—xlviii.

Indian Mirror, on Dharmagolas, 135.

Indian Patents, App. VIII., clii—clviii.

Indian Railways, 63—65.

Indian Review, 231.

Indian Sericulture, A Bird's-Eye View of, supp. 1—33; preliminary, supp., 1—2; classification, supp., 2—4; Mulberry silkworm, supp., 4; tusser silkworm, supp., 5—6; the Bengal tusser, supp., 6—9; rearing of the tusser silkworm, supp., 9—11; reeling of tusser, supp., 11—12; the mulberry, supp., 12; propagation of mulberry, supp., 13—14; cost of planting mulberry, supp., 14, outturn, supp., 15; the true mulberry, supp., 15—16; rearing of silkworms, supp., 16—21; rearing of mulberry cocoons, supp., 21—23; the silk fibre, supp., 23—25; introduction of the Bombay Mori cocoons, supp., 25—26; diseases of silkworms, supp., 26—33; rearing and spinning Eri silkworm, supp., 33.

Indian Stores, Ltd., 57.

Indian Stores Committee, 397.

Indian Sugar Development, 220—229; backward state of the sugar industry, 220; two sources from which sugar is manufactured, *ib*; method of preparing raw sugar, *ib*; reasons for the backward state of the industry, 221; apparatus used by Mr. Hadi, 223; raw sugar, 224; method of preparing sugar in Western countries, 224—225; establishment of steam plants, 227; Sugar Industry in India, 231—232; defects in the industry, 231; remedies suggested; 231—232; artificial sugar, 232—233; Development of Indian Sugar Industry, coupled with Agriculture, 239—252; date-sugar manufacture, 239—240; experiments on date trees in the Central Provinces, 240—242; operations in a date forest village in Malwa, 242—244; tentative scheme for the manufacture of sugar from date as well as from cane, 245; date jungles of Malwa, 245—246; initial difficulties for tapping the date trees and how they can be met, 246—248; establishment of general agricultural farms, 248—250; quality and quantity of the date juice of the Central Provinces and Central India, 250; local markets and labour, 251; resultant profits, 251—252.

Indian Textile Journal, 208.

Indian Trade Journal, 78.

(G)

Indian Woods for the Manufacture of Matches and Match-boxes, 309
—319: *Populus alba*, nearest approach to Aspen, 309: qualities of woods for matches and match-boxes, 310—312: Indian woods seemingly suitable for matches and match-boxes, 312—319.

Indigenous Industries in India, 354—363; mechanical engineering and its relation to the developments of industries in India, 354—355: cast iron, 355: steam engine, *ib*; British engineer of the 19th century, 356: training of engineers in England, *ib*; Massachusetts Institution of Technology, Boston, 356—357: Cornell University, 357: Sibley College, 357—358: Berlin Technical High School, 358: remarks on the courses of studies, *ib*; the future of iron in India, 358—360: Indian engineers of the 20th century, 360—361: the Swadeshi movement and Indian industries, 361—362: the mineral wealth of India, 362: Indian Exhibitions, 362—363: conclusion, 363.

Indore, H. H. the Maharajah of, 242.

Industrial Activity in India, App., xx—xxxii.

Industrial Activity in the Native States, App., xxxiii—xxxix.

Industrial Conference, Resolutions passed at the second session of (the), 1—3; Technical and Commercial Education, 1, 385—397; Indian Stores Committee, 1—2, 397—402; Industrial Survey, 2, 402—408: Suggestions to the Public, 9, 400—416: Provincial Committees, 2, 407—422: Appointment of Office Bearers, etc., 3, 422—430; work and organisation of the Conference, 34; its weak points, 35.

Industrial Conference Work, app. I., i—ix.

Industrial Education, its importance, 37; in America, 38—39; neglected by Government, 81.

Industrial Survey, 2, 79, 402—408.

J

James, Dr., 88.

Jefferson, Thomas, 108.

Johnson, Dr. 308.

Joint-Stock Companies, App. VI. I., lxxiv—lxxxii.

Jordan, A. E., on Indian Sugar Development, 220—230.

Joshi, G. V., 83, 385.

Jute Crop of India, 180—195; jute industry, 180—181; great asset of the Empire, 181; importance of jute in the sphere of commerce, *ib*; financial aspect of the jute trade, 182—183; causes of its degeneration, 183; botanical description, 183—184; area sown, 184—186: soil, 186; climate, *ib*; rotation, *ib*; preparation of the land 186—187; manuring, 187; selection of the seed, *ib*; sowing, 187—188; after-treatment, 188; harvesting, 189; retting, 189—190; separation and washing of the fibre, 190—191; cost of cultivation and outturn, 191; causes of injury, 191—192; fraudulent adulteration, 192—193; commercial divisions, races and marts, 193—195; use of the jute plant, 194; jute growing classes, 194—195; concluding remarks, 195.

K

Kanjilal, Rai Sahib U., on the Best Indian Woods for the Manufacture of Matches and Match-Boxes, 309—319.

(h)

- Kelkar, R. M. on Co-operative Credit Societies, 344—354.
Khan, Rakhai Das, 178.
Khibraj, S. D., a, 426.
Krishna, Sir Bhalachandra, his speech on the Indian Stores Committee, 397—399; mentioned, 426.
Krishnaswamy Iyer, V., his speech on Technical and Commercial Education, 385—388; mentioned, 1, 423, 426.
Krishnaswamy Rao, Dewan Bahadur, 55.

L

- Labour Question, 80.
Laissez-faire Policy, 69.
Lajpat Rai, Lala, 1, 385.
Laws, 204.
Lefroy, H. M., 75.
Lely, Sir F., 54, 345.
Lethadly, Principal, 38.
Liebig, Justus, 204.
Louisiana Planter, 235.
Luther, Martin, 47.

M

- Macaulay, Lord, 390.
Madholal, the Hon'ble Munshi, 53.
Maharatta, 344.
Mahomet Ali, Pasha, 202.
Malaviya; Madan Mohan, 422, 426, 429.
Malet, Sir E., 98.
Maller, Theodore C., on the Present State and Future Prospects of Indian Art Industries, 339—344.
Mann, Dr. Harold H., 426.
Mansukhram, Keshav Lal, 427.
Mannul of Indian Timbers (Gamble), 312.
Manual Training, 40.
Maud, Mr., 164.
Maxwell, Dr., 256.
McKinlay, W., 99, 109.
Mehta, Sir Pherozshah, 57.
Memorandum on the Development of Agriculture, etc., in Bengal, App. I., lxxi—lxxvii.
Mill, J. S., 102, 111, 112.
Mineral Industry, 71.
Mining and Geological Institute of India, App., xli.
Minto, Lord, 398.
Mitra, Ambicacharan, his speech on Technical and Commercial Education, 393—397; mentioned, 1.
Molesworth, Sir Guilford, on the Effect of Impart Duties on Industrial Development, 91—103.
Mookerji, D. N., on Cotton Cultivation in Bengal, 195—204.
Morley, John, 10, 77, 398.
Mourbhani, H. H. the Maharajah of, 52, 60.
Mudholkar, Rao Bahadur R. N., his speech on Industrial Survey, 402—405; mentioned, 2, 3, 16, 55, 61, 83, 407, 423, 424, 426, 427, 428, 432.
Mukerje N., 426.

Mukerji, Mrs. Hironmoyi Devi, on a Possible Source of Wealth, 335—339.
 Mukerji, N. G., on the Paddies of Bengal, 156—173; on Indian Sericulture, *supp.*, 1—33; mentioned, 54, 391, 403 and Introduction.
 Mukerji, Rajah Peary Mohan, 54.
 Mukerji, S. C., on Industrial Survey, 406—408; mentioned 2.
 Mulkraj, Mr., 56.

N

Naoroji, Dadabhai, 57, 391.
 Naranlal, Chunilal, 427.
 Natarajan, K., his speech on the Indian Stores Committee, 399—400; mentioned, 2.
 Natesan, G. A., 1, 397, 427.
 National Congress, 14—15; 33, 39.
 National Spinning and Weaving Co., *Ld.*, *App.*, xvii.
 Nicholson, Sir H., 347.
 Nisamuddin, Moulvie M., on the Indian Stores Committee, 401—402.
 Nursey, Mr., 234.

O

Oldham, C. A., 193.
 Osborne, George, 234.

P

Paddies of Bengal, 156—173 drought-resisting paddies, 156—162 flood-resisting paddies, 162; paddies withstanding submergence under water, 162—163; long stemmed paddies, 163; paddies grown on hillsides without terracing, 164; fine, white and fragrant autumn paddies, 164—165 winter paddies, 165; special nourishing paddies, 165—166; paddies having medicinal properties, 166—167; paddies suitable for making *khoi*, etc., 167—168; absorbent paddies for making *pitās*, 169; autumn paddies growing in winter, 169; winter paddies grown in saline lands, 170; curiosities, 170—171; wild paddies, 171; best paddies of Bengal, 171—172; conclusion, 171—173.
 Palit, T., 11, 56.
 Patel, Rao Bahadur R. B., on Hand-loom Weaving in India.
 Patel, S. B. 2, 402.
 Paton, Noel, 78.
 Pericles, 44.
 Perraju, K. on Agricultural and Industrial Progress of India, 84—91.
 Pestalozzi, J. H., 414.
 Pillai, Devasikhamani, on Indigenous Industries in India, 354—363.
 Phillot, Col., 264.
 Pioneer, on Dharmagolas, 136.
 Plantain Fibre, 216—219; commercial value of the fibre, 216; cost of extracting it, 216—217; outturn per bigha, 217—218; the extractor, 218; how to manipulate it, 219.
 Plato, 44.
 Playfair, Sir Lyon, *101*, *App. I.*, 104.
 Plowy, 297.
 Plunkett, Sir H., 258.

(6)

Possible Sources of Wealth (A), 335—339; women an economic factor in national life, 335; activity of the low class women, 336; work for middle class women, *ib*; what organisation can achieve, 336—338; small industries for women, 338—339.
Power and Guardian, on Dharmagulas, 136.
 Prain, Dr., 156.
 Price, Mr., 200.
Principles of Leather Manufacture (Procter), 275.
 Principles of Political Economy (Mill), 111, 112.
 Prizes for Model Hand-loom, App. VI, cxliii.
 Protective Tariffs and Prices, 104—107.
 Protective Tariffs and Trade, 108—109.

R

Raiffeisen, 346.
 Rajagopalachariar, P., 347.
 Rajaratna Mudliar, Dewan Bahadur, 347, 348.
 Ramanna, A., on Sandal Wood as Useful and Paying Industry, 363—367; on Provincial Committees, 421—422.
 Ramisubbiah, S. d. I. a., on Tobacco Culture and Cure, 319—334.
Rambler (Dr. Johnson), 308.
 Rangaswamy Iyengar A., 427.
 Rao Dr., 411.
 Raoji, Mr., 410.
 Redwood, Sir Boverton, 265.
 Report of the Assistant Secretary's Tour, App., vii—xix.
 Report of the Industrial Conference App., i—clvii; Industrial Conference Work, App., i—ix; accounts of the Conference, App., x—xi; Report of the Assistant Secretary's Tour, App., xii—xix; industrial activity in India App., vx—xxxii; Governments of Native States and industrial developments, app., xxxiii—xxxix; general industrial activity of the people, app., xl—lxx; Memorandum on the development of Agriculture, etc., in Bengal, app. I., lxxi—lxxvii; Technical Education in Bombay, App. II., viii—x; General Secretary's Circular Letter, No. I., App. III., xi—xv; Circular Letter, No. II., pp. IV., xvi—xix; Synopsis of the statements in reply to the Circular, No. II, App. V., xx—lxxii; Prizes for Model Hand-loom, App. VI., lxxiii; Joint-Stock Companies, App. VII., lxxiv—lxxx; Indian Patents, App. VIII., lxxvii—lxxxv.
 Rice Manufacture, 173—180; meaning of the manufacture of rice, 173; indigenous method of rice preparation, 174—175; cost of rice manufacture, 175; separation of refraction, 176; soaking process, *ib*; boiling operation, *ib*; drying process, 176—178; husking, 178—179; cleaning, 179; polishing, 179—180.
 Ripon, Lord, 397.
 Robertson, Prof., 72.
 Royle, J. F., 200.

S

Samaldas, Lalubhai, 55, 346, 426.
 Sandal Wood as Useful and Paying Industry, 363—367; its production, 364—365; details of manufacture, 365; oil, *ib*; saw-dust and clippings, 366; *sambrany*, and disinfectants, 366.

(k)

- Sanghvi, T. D., 427.
Sarma, B. N., 426.
Sarvadhikari, D. P., his speech on Technical and Commercial Education, 388—392.
Schulzen, Dr. 302.
Schulze, F. H., 178.
Sen, A. C., 1, 385.
Sen, Norendra Nath, 428, 430.
Sharfudin, the Hon'ble Mr., 408.
Silk Industry, 23.
Simpson, H., 54.
Sindad, Mr. 78.
Sircar, Dr. Nil Ratan, on Suggestions to the Public, 413—415; mentioned 1, 2.
Smith, Adam, 102, 110, 111, 112.
Smith, F., 193.
Statesman, 142, 174.
Subbarow, N., 426.
Subramani Iyer, G., 1, 55, 385.
Subramani Iyer Sir S., 348.
Sugar Industry, 28, 77: Indian Sugar Development, 220—229; Sugar Industry in India, 231—239; Development of Indian Sugar coupled with Agriculture, 239—252
Swadeshi Movement, its aim and object, 7—8; Anglo-Indian sympathy with, 10; its results in the Western Presidency, 21; affords relief to the people 26; the admonition it gives, 27; a weapon of usefulness, 28; a house-hold word, 68—69; meaning of the word, 82—83; a step in the right direction, 91; solves the problem of industrial development, 368—362.
Swadeshi Steam Navigation Company, 57, app.

T

- Tagore Weaving Institution, app., xlviii.
Tanning Industry, 29, 271—296.
Tata, J. N., 43, 57—82.
Tata Iron and Steel Company, 57, App., xlix—l.
Tata, R. J., 23, 411.
Taxation, incidence of, 96—97
Technical Education in Bombay, App. II., viii.
Technical and Commercial Education, 1, 385—397.
Thackersey, the Hon'ble V. D., his Presidential Address, 60—83; Government and the Conference, 61—63; foreign capital, 63—66; Indian Banks, 66—68; the Swadeshi movement, 68—69; agricultural industry, 69—71; mineral industry, 71—73; cotton industry, 73—77; Sugar industry, 77—78; other industries, 78—79; Industrial Survey, 79—80; Labour question, 80—81; education, 81—82; concluding remarks, 82—83; mentioned, 52, 53, 54—57, 385, 426, 428, 429.
Thiers, M., 104.
Times on Indian Jute, 181; mentioned, 136, 400.
Tobacco Culture and Cure, 319—334; economic value of tobacco, 319—320; indigenous both to Asia and America, 320; efforts to improve tobacco culture, 320; potato culture in Ireland, 321; good tobacco, 321—322; climate favourable to its growth, 322; its constituent parts, 322—323; best soil for its cultivation, 323—324;

(1)
preparing the soil, 324; prevention of pests, 325; preparing the nursery-beds, 325; seeds and watering the beds, 326; manure, 327; irrigation, *id*; weeding and hoeing, 327—328; curing, 328—334.

Tropical Life, 233, 234, 237.

U

Ukil, A. C., on Provincial Committees, 418—421: mentioned 2.
United Bengal Stores, App., xlviii.
Upper India Glass Works, App., lxvi.

V

Vaidya V. P., on suggestions to the Public, 411—413: mentioned, 2.
Vakil, Manilal, 427.
Vansittart, Mr., 98.
Vencoba Rao, H., on Sugar Industry in India.
Vas, J., on the Jayganga Dharmagola, 139.
Vasco-de-Gama, 19.
Vijjaraghavachary, C., 426.
Vikramaditya, 18.
Voetcker, Dr., 32.

W

Wacha, D. E., 1, 83, 136, 385.
Wallace, Mr., 208—209, 265.
Washington, George, 108.
Wealth of Nations (Adam Smith), 110.
Weights, Measures, and Coins, 367—383; different currencies in India 367; difficulties of exchange, 368—369; diversity of weight and measures, 369—370; their baleful effects, 370—375; particular instances, 373—376; practical suggestions to mitigate the evils, 380—482.
Williamson, A., on the incidence of taxation, 97.
Wycoff, Mr., 105.

NOTE:—In the above index, reference has been made to the "Report of Industrial Conference work" merely as "App." quoting the number of the page and reference to the several appendices (altogether 11) has been made as App. I, II, etc., with their separate page number. Mr. Mukerjee's paper on the "Birds eye view of the Silk Industry" is attached at the end of this volume as a supplement and has paging of its own.

P. R. C.

INTRODUCTION.

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"We are at a crisis in our national history. The time has come, when we must make arduous and united endeavours for securing our industrial independence, or we shall sink again perhaps for centuries to come. We must struggle and maintain our ancient position among the industrial nations of the earth, or we shall be betraying a sacred trust, and be false to our posterity."—*H. H. The Maharajah Gaekwar*; (P. 33.)

"There is no economic fallacy in that Swadeshi creed that aims at improving the indigenous arts. The genuine Swadeshi ought to secure the maximum of production at the minimum of cost. Patriotism demands that the greater cost and the slight discomfort of using indigenous goods should be carefully put up with at the outset. But remember that no such movement can be permanently successful unless it involves a determined effort to improve their quality and cheapen their cost, so as to compete successfully with foreign products. The most rigid economist will then have no flaw to find in your Swadeshi armour."—*H. H. The Maharajah Gaekwar*. (P. 28.)

The Second Indian Industrial Conference was held at Calcutta on the 29th and the 31st December, 1906.

The arrangements made for it were more elaborate than those for the first session at Benares, and in several respects it was even a greater success. A larger number of delegates representing more public bodies attended it and altogether a more notable gathering assembled at its opening by His Highness the Maharajah Gaekwar than was present the preceding year. It will be invidious to mention names where so many distinguished men gathered together, but exception should be made in the case of India's Grand Old Man. There is no name which excites the same feeling of love and reverence in the breast of every Indian as that of the venerable Dadabhai Naoroji. Whether as a man or as a patriot, his is an utmost sacred personality, and his presence at the Conference must be regarded as an event in itself for which its promoters cannot be too thankful. It will, it is hoped, not be

regarded as out of place if we express the deep sense of relief and thankfulness which all our countrymen feel at the recovery of Mr. Dadabhai Naoroji from his recent serious illness and at his return to India to spend what remains to him of earthly life in the dear and holy motherland to whose faithful and unselfish service he devoted all his powers and faculties. May Almighty God, the giver of all good, spare him to his country and countrymen for still several years, is the prayer of all who know him and who are interested in India's welfare.

The Conference was fortunate in the association with it of His Highness the Maharajah Gaekwar. To those who had read his notable utterance four years before at the Ahmedabad Industrial Exhibition and who knew what an ardent and informed apostle of progress he was, the memorable address the Gaekwar delivered at the Conference, did not come as a surprise. But before referring to the salient points in it, a few words must be said of the able speech of Mr. P. N. Bose, on whom, as Chairman of the Bengal Provincial Committee of the Conference,—under whose auspices the session was held—fell the duty of opening its proceedings. Mr. Bose was in the Geological Survey Department when in Government service, and has always evinced an active interest in the industrial movement. His publications—“*Hindu Civilisation under British Rule*” and “*Essays and Addresses on Indian Subjects*”—must be known to educated Indians. After retirement, he was for some time State Geologist to the Maharajah of Mayurbhanj and Honorary Principal of the Bengal Technical Institute. As H. H. the Gaekwar reminded the Conference, it was Mr. Bose “who discovered suitable iron ore for Mr. Tata's Scheme.” We should also like to mention that Mr. Bose is a son-in-law of our first President, Mr. R. C. Dutt.

Mr. Bose's speech (pp. 5—15) contains a good survey of the industrial position, and will amply repay perusal. His warning that the good old times when mere manual skill sufficed had gone by never to return and that we must move

with the times or perish, was by no means superfluous. Every Indian would associate himself with the words of appreciation, which Mr. Bose spoke, of those Englishmen "who, rising superior to circumstance, not only sympathise with us, but are also ready to work hand in hand with us" (p. 9). Mr. Bose spoke of the necessity of technical education and of the step recently taken in this direction, and wound up by a reference to the industrial awakening of India.

The inaugural address of His Highness, the Maharajah Gaekwar, (pp. 15—50) was in every sense a great performance. As the President, the Hon'ble Mr. Vithaldas Thackersey, said, he addressed to the Conference "words of ripe wisdom from his experience of many lands and his study of many systems," and all Indians will profit from laying to heart the many lessons conveyed by the Scholar-Statesman through this memorable utterance. Having warned his hearers that "our activities in all different departments of life, political, social and industrial, are so correlated that we shall never make any marked progress in one without making similar progress in all", His Highness rapidly surveyed the past history and the present situation of Indian industries. It is unnecessary to tarry over the past. Speaking of the present, the Maharajah Gaekwar struck a true note when he said that "the triumph of machinery is the triumph of our age." The most important of Indian manufacturing industries is the weaving industry, and India has made good progress in it, but much remains to be done.

"The Bombay Mills give daily employment to about 170,000 factory operatives, while so many as 30,000 more are maintained by the ginning presses. Some forty years ago, we had only 13 Cotton mills in all India. The number rose to 47 in 1876, to 95 in 1886, to 155 in 1895, and 303 in 1904: and to-day the number of our cotton mills is still larger. We had less than 4,000 power looms, forty years ago: the number was over 47,000 in 1904. We had less than 300,000 spindles, forty years ago: the number exceeded five millions in 1904. These are insignificant figures compared with the huge cotton industry of Lancashire; but they show that we have made steady progress, and that we may fairly hope to make

greater progress in the future, if we are true to our aims and our own interest. Our annual produce of yarn is nearly six hundred million pounds in weight and it is interesting to note that out of this total outturn, about 30 per cent. is used mostly by your handloom weavers."

"Thus though there is reason for congratulation in the rise of our textile industries, there is yet greater reason for continued toil and earnest endeavour. We are still at the very threshold of success. Our Cotton mills produced less than 600 million yards of cloth last year, against over 2,000 million yards which we imported from other countries. Here is scope for indefinite expansion. We exported cotton of the value of 213 millions to foreign countries and imported in return for this raw material, cotton manufactures of the value of 390 millions. We are thus producing only a fourth of the mill-made cloth which the nation requires. And we should not rest till we are able to manufacture practically the total supply needed by our countrymen" (pp. 20—22.)

Taking all the principal industries carried on mainly by steam, this is how we stand :—

"In some industries like cotton, we are only at the very threshold of success, and produce only about a fourth of what we ought to produce. In other industries like woollen and jute, we are indebted almost entirely to European capital and enterprise, we ourselves have scarcely made a beginning as yet. In a third class of industries like sugar and tanneries, we have actually lost ground within the last ten years. While in a fourth class of industries like iron, we are still almost wholly dependent on Europe, the produce of our own foundries scarcely supplying any appreciable proportion of the requirements of India. I repeat, therefore, what I have already said before :—There is ground for hope but not for joy or elation ; there are strong reasons for earnest and continued endeavour in the future to secure that success which we are bound to achieve if we are true to ourselves." (pp. 25—6).

While it is the fact there can be no industrial development under modern conditions without the use of machinery and steam and improved scientific appliances, it represents only a portion of the case as "the labourers who can possibly be employed in mills and factories, form only an insignificant proportion of the industrial population of India. A very much larger portion of that industrial population is engaged in indigenous industries carried on in village-homes and

bazars. "India is, and will always remain, a country of cottage industries." Said His Highness :—

"Where hundreds of thousands can work in mills and factories, millions and tens of millions work in their own huts; and the idea of greatly improving the condition of the labourers of India, merely by to mills and factories, is only possible for those who form their opinions six thousand miles away. No, gentlemen, any comprehensive plan of improving the condition of our industrial classes must seek to help the dwellers in cottages. It is the humble weavers in towns and villages, the poor braziers and copper-smiths working in their sheds, the resourceless potters and iron-smiths and carpenters who follow their ancestral vocations in their ancestral homes, who form the main portion of the industrial population, and who demand our sympathy and help. It is they (more than the agriculturists, or the mill and factory labourers) that are most impoverished in these days, and are the first victims to famines; and if your *Swadashi* movement has brought some relief to these obscure and unnoticed millions and tens of millions in India, as I have reason to believe it has done to a perceptible extent, if it has created a larger demand for their manufactures, widened the sphere of their labours, and brought some light to their dark and cheerless homes, then the movement, gentlemen, has my cordial sympathy. Help and encourage the large industries, but foster and help also the humbler industries in which tens of millions of village artisans are engaged, and the people of India, as well as those who are engaged in the work of administration, will bless your work" (pp. 26—27.)

India is called upon to compete with the advanced countries of the west under peculiarly unfavourable conditions due to our poverty and ignorance, and the danger of extinction with which our industries are threatened is imminent. If the calamity is to be averted, it can only be by Indians fighting their powerful, skilled and wealthy competitors with weapons of their own choosing.

"If the rush of the steam engine and the whiz of electricity combined with cheap and easy means of transport, have succeeded in dumping your bazaars with the cheap and attractive products of foreign marts, rise to the occasion and learn how to withstand this inroad with intelligent anticipation and skilful adaptation. Learn to force nature into a corner; accost her and bring out her inmost resources. Harness her powers, tackle her energies, and make of her a handmaid unto man.

Work nature to the relief of man's estate. Any competition between skill, capital and organized enterprise on the one hand, and ignorance, idleness, and poverty on the other, can only have one result. Learn to combine and co-operate; learn the value of time and the use of money, and the chances of a fairer fight will eventually requite all your efforts." (pp. 27-8.)

Indians do not know how to supply their own wants and have to depend upon foreign skill, foreign capital, and foreign enterprise.

"Our serfdom to foreign capital and to foreign enterprise can scarcely be more complete. Our railways are financed by capital from Europe, our mines are exploited by Savants from America; and even in our daily household needs, our dependence upon products of foreign marts continues from day to day. We are being fed and clothed, diverted and entertained, lighted and washed, warmed and comforted, carried and housed, by the foreign artisan." (pp. 30-1.)

Surely this ought not to continue much longer. Indians must make a determined effort to rehabilitate industrial India. In doing so, the right way to proceed would be to select, to begin with, those industries "for which there is a large demand in our home markets, and whose raw material we have, at present, been exporting in ship-loads for working them into finished products abroad."

His Highness the Gaekwar in discussing means to promote industries, naturally gives the first place to education. It is not likely that any one will differ from him when he says that "no ultimate solution of our problem will be reached until schools have been provided in every village, and education is taken to the very threshold of the people; until, in fact, education, at least in its primary grades, has been made free and compulsory throughout the land." The illustrious speaker's description of the systems of education in force in other countries (pp. 36-9) will no doubt be read with interest and profit. The Gaekwar's suggestions to introduce manual training and industrial education in the ordinary schools are opportune and, it is to be hoped, will go to some extent to shape the course of instruction that will be imparted

in at least private schools to start with. Here is an opportunity for those who take a commendably keen interest in national education. They may well set an example to the institutions which are controlled wholly or in part by Government. A not less important point is that "you must send youngmen to Europe, America and Japan for that complete industrial training which they cannot get and receive at home." In this connection His Highness made a generous acknowledgement of the splendid work of the Association for the Advancement of Industrial and Scientific Education of Indians, of which the Hon'ble Babu Jogendra Chandra Ghose, the worthy son of a worthy father, is the energetic Secretary.

The following passages culled from the address contain much food for reflection :—

"The nation that despises its humblest classes, that provides for them no opportunity to rise in the social scale and in self-esteem, is building its house upon the sand" (pp. 44.)

"Without a permanent and stable economic policy, no civilisation, however enlightened, can long endure. This is the message of ancient Greece to modern India. Be careful of large expenditures, either individually or collectively, which are unproductive. Bid her people forget their caste and tribal prejudices in the common effort to uplift the fortunes of India; bid them find expression for their religious enthusiasm in practical co-operation for the uplifting of humanity, the human spirit in the temple of God. Bid them be free men, economically, socially, and intellectually; and no power under heaven can long keep them in servitude" (pp. 44—5.)

"No permanently sound and stable development can occur unless we take pains to educate the masses of our people to a sense of their paramount importance and dignity in the social structure. I conceive it to be the prime duty of the well-to-do and enlightened amongst us to rouse to stimulate and to educate the lower classes. We should help them to help themselves. But ever let us beware of paternalism. Not charity but co-operation is the crying need of the hour" (p. 45.)

"Make industrial pursuits the property of the nation, instead of the exclusive possession of castes; let sons of Brahmans and of learned Moulvies learn the use of tools in their boyhood; let every graduate, who feels a call towards mechanical work, turn to that pursuit in life, instead of hankering after salaried posts; and I am convinced the national

genius will prove and assert itself in industries and inventions as well as in literature and thought" (p. 46.)

"We need to devote large sums to the founding of chairs of economics in our colleges, and to the training of our young men in the subtle problems of finance. Let the brightest of our young patriots be sent to Western Universities to master the principles of economic policy" (p. 47.)

"In so far as India's religious ideas tend to keep many of our brightest and best minds out of practical affairs, out of the scientific, political and commercial movements of the time, by so far do those religious philosophic systems stand in the way of her progress towards economic independence. Why have the people of India been tardy in grasping the scientific principles of Western industrial organizations? I shall not presume to answer the question at any length but content myself with suggesting that we must, as a people, look well to the religious and social foundations of our national life" (p. 48.)

"Break the monopoly of caste prerogatives and social privileges. They are self arrogated, and are no more inherent in any one caste than commercial predominance or political supremacy in any one nation. Learn the luxury of self-sacrifice; elevate your brethren of the humbler castes to your own level; and smooth all artificial angularities. Always appraise action more than talk and ever be ready to translate your word into deed" (p. 48.)

"It may be the mission of India, clinging fast to the philosophic simplicity of her ethical code, to solve the problems which have baffled the best minds of the West, to build up a sound economic policy along modern scientific lines, and at the same time preserve the simplicity, the dignity, the ethical and spiritual fervour of the people. I can conceive of no loftier mission for India than this, to teach philosophy to the West and learn its science; impart purity of life to Europe and attain to her loftier political ideal; inculcate spirituality to the American mind and imbibe the business ways of its merchant" (p. 50.)

His Highness had a few words to say of the organisation and working of the Conference. Having referred in generous terms to the work of the year, he proceeded :—

"Gentlemen, all this is a good outturn of a first year's work—but you should not be satisfied with this. A greater progress is expected from you in future years. The weak point in the conference organisation seems to me that the Central office is not in sufficient touch with the Provincial Committees, and is not able to render sufficient help to those Committees to develop the industries of the different provinces. Besides Provincial Committees, you require District and even Town Associations

for closer touch with the masses. India is a country of vast distances ; and it takes more than a day and a night to travel from Amraoti to some of the provinces. While the Central Office at Amraoti can do much to help the out-lying provinces, the provinces can do more to help themselves. By such harmonious co-operation towards a common object, I hope to see the work of the Industrial conference show a continued progress from year to year. A central organisation is needed to co-ordinate all the endeavours that are being made in all parts of India to promote home industries, and the Industrial Conference with its central establishment and Provincial Committees was not established a day too soon"

The Hon'ble Mr. Vithaldas Damodher Thackersey's Presidential Address (pp. 60—83) is hardly less remarkable than His Highness the Maharajah Gaekwar's. Mr. Vithaldas modestly said of himself that, while feeling he could not do much justice to the position, yet allowed kindly to be persuaded into accepting the Presidentship, "by the consideration that the Conference, being devoted to the advancement of industries and commerce, may be pleased to give indulgent hearing to one who is engaged in these activities, and who may, therefore, be expected to know the more practical aspects of some of the many problems which this Conference may help to solve." That this choice was most happy was amply proved by Mr. Vithaldas himself by the ability with which he guided the deliberations of the Conference and the valuable address he delivered as its President. As mill-owner and head of a large and flourishing business, Mr. Vithaldas is conversant at first hand with the practical side of the industrial problem ; while his election as President of the Bombay Mill Owner's Association, and lately as the representative of the Bombay Chamber of Commerce and the Millowner's Association on the Factory Commission, is proof of the great regard in which he is held by the business community. Besides, Mr. Vithaldas is President of the Bombay Corporation and a member of the Bombay Legislative Council. Altogether the choice of the members of the Conference for the high office of its President, could not fall on a worthier man.

No one, we venture to think, will rise from a perusal of the President's address without being profited by it. His observations are marked throughout by an informed common-sense and a grasp of what is practical, which are wanting in many of the utterances on industrial questions one comes across in these days. Mr. Vithaldas, it must be owned, has remarkably succeeded in avoiding the pit-falls of the doctrinaire on the one hand and the narrow-minded expert on the other. Again, on questions the most controversial, he has offered opinions which if not unreservedly acceptable are certainly deserving of being treated with respect by dispassionate men among Anglo-Indians, as well as Indians, as being both sober and sensible. Take the observations on the question of foreign capital as an instance in point. It is a mistake to think that because certain capital used in India is foreign, it therefore *must* do harm to the country. What really matters is that we ought not to pay too high a price for it. Says Mr. Vithaldas (p. 63):—

"Let us take the instance of Japan, an Asiatic people, who have risen to greatness on account of their practical genius, whose industrial conditions are similar in many respects to our own, and whom we are all naturally anxious now-a-days to emulate. All the great statesmen and patriots of Japan are eager to attract foreign capital to their country for the purpose of industrial development. It is because they feel that, notwithstanding their skill, enterprise and ability, they are greatly handicapped owing to want of capital. At the same time, when they speak of attracting foreign capital, they do not mean to allow all the profits of the industry to go out of the country. They will not pay more than a reasonable price for it. Their position as an independent State, of course, enables them to regulate the conditions under which foreign capital will be free to engage in the development of the country. But in our country, where the open door policy prevails to the fullest extent, and where already there is a very large amount of foreign capital invested, and, I admit, there is a very large field for it, it is necessary for us to form a general conception of the limits within which its application is beneficial."

As an instance of the right use of foreign capital, the President mentions the Indian Railways. He deals with the harm done by it in the following passage:—

"But when we turn to the petroleum industry in Burma, the gold mines of Mysore, the coal mines of Bengal, the tea and jute industries, the carrying trade by sea and the financing of our vast foreign trade by foreign banks, we come upon another and a less favourable aspect of the question of the investment of foreign capital. It is impossible to estimate accurately the amount of wealth that goes out of the country in this manner, though an approximate idea can be had of it from the excess of our exports over our imports, after omitting Government transactions. It must be remembered that so much of this amount as represents merely the interest or borrowed capital should not be regarded capital, should not be regarded in the light of a drain from the country. It is to such investments as these that we find cause for complaint. In such cases, I cannot but think that it would be to the permanent good of the country to allow petroleum to remain under-ground and the gold to rest in the bowels of the earth, until the gradual regeneration of the country, which must come about under British rule, enables her own industrialists to raise them and get the profits of the industries. The price paid is much too great for the advantages accruing from them to the country" (p. 65—6.)

At the same time one cannot get over the fact "that indigenous capital will not be quite enough for financing the enormous and ever-expanding trade of the country and for accelerating the progress of our material and industrial regeneration," and that "no country in the world can make much progress in industrial directions without plenty of capital." Mr. Vithaldas briefly states the problem of India as follows:—

"Our immense trades, our comparatively small capital, the fixed open-door policy of our Government, and the absence of power to control our financial policy, these are the main factors of the situation, and the question is how best we can under these conditions develop our industries. We cannot do without foreign capital; it will be extremely short-sighted to reject it on sentimental grounds. We must avail ourselves of it, but we ought to take care that we do not pay more for it than other nations" (pp. 66—7.)

The speaker is of opinion that Joint-Stock Banks started in India "offer the only means of bringing foreign capital into the country, at easy interest." These banks, if started with large enough capital, can "extend their operations to foreign exchanges, and thus take advantage of foreign capital as the other Exchange Banks are at present doing." We want such

banks in order that the present situation may be ameliorated. An eminently reasonable suggestion which Mr. Vithaldas makes in this connection is stated in the following passage :—

“ It may happen in many cases that although we may not be able to provide all the capital required for a new industry, we may yet be able to supply a portion of it, and so save some portion of the profits of the industry from leaving the country. But few foreign Companies ever give a chance to Indian capital. They like to do all the financing themselves and do not even place their shares in the Indian market. This is unfair, and I would suggest that the Legislature should make it obligatory on every industrial concern floated by foreign Companies that the same opportunities should be given to Indian capitalists, that the prospectus should be published simultaneously in both countries, that the time for applications for shares should be the same and that allotment must be made at the same rates and on the same principles. This is the least that our Government should do under the present circumstances” (p. 68.)

Speaking of agriculture, the President of the Conference made an appeal to the Zemindars of Bengal to devote their time and resources towards developing it. Said he :—

“ Gentlemen, if the Swadeshi spirit inspires these great landed magnates to introduce science and system into agriculture, so as to make it yield the highest profit of which it is capable, then, believe me, you will be in sight of large manufactures financed, controlled and worked by our own countrymen. It is a common fallacy to suppose that the arena of great achievements lies far afield of our every day lives. It is never so. Few people talk of the Swadeshi movement in connection with agriculture. But really that is the industry which most requires the application of the true Swadeshi spirit, for on it are based all our possibilities of manufacturing industries. If the mill industry flourishes in Western India, it is because the Guzrati is acknowledged on all hands to be the most efficient cultivator of cotton in India” (pp. 70—1.)

The Hon'ble Mr. Vithaldas next turned his attention to the mining industry and while at it, he urged that Government should establish an up-to-date Mining Collège in India, so as to “ make this country a great centre of mining instruction, training our own students to take charge of the higher posts in the Geological Department.” The speaker referred then to the necessity of utilising the bye-product of mineral industries to make several of these paye

In treating the subject of cotton industry, Mr. Vithaldas was as it were, at home in his field. His remarks display shrewd business acumen and practical sagacity, the characteristic of the whole address. He shares in full the enthusiasm and ambition of other Swadeshists, but does not labour under any illusions. He knows, and says, that success cannot attend the endeavours to do away with foreign cloth unless several conditions are satisfied which is not the case at present. And the movement for the 'boycott' of foreign commodities being directed principally against the imports of cotton goods, it would be well if his apposite observations are borne in mind. His first point is that "so long as cotton of superior staple is not produced here, it is hopeless to expect the manufacturer to improve the quality of his cloth" That he (the manufacturer) is doing his best is clear from the fact that the official returns show that every year finer qualities of cloth are manufactured to an increasing extent. When an adequate supply of long-stapled cotton is assured, then "the conditions of the Indian Cotton Industry will be revolutionised, and India will be able to supply a very large portion of her demand for superior kinds of cloth. Then will be the time for the realisation of the Swadeshi ideal in respect of our clothing. Until then, for superior varieties of cloth, we must depend on the foreign producer."

What the President rightly calls the all-important question of the supply of labour does not escape attention. And Mr. Vithaldas' remarks are worth quoting.

"True, we have a large population; but owing to illiteracy and the prejudices concomitant to it, every industry in the land feels the difficulty arising from not having an adequate supply of labour. In order to convert our vast population into an effective labour-force, we have first of all to instil into them the rudiments of knowledge, which will widen their mental out-look, fill them with new aspirations, and enable them to know what opportunities await them in the industrial world, and to take advantage of them for their own and their country's benefit. Plague has in many part of the country played sad havoc with the labour supply and,

speaking from the purely industrial and commercial point of view, I beg to express the earnest hope that Government may be pleased to create more centres of investigation, so that the discovery of a remedy may be accelerated" (p. 80.)

The last subject dwelt upon in this admirable speech is technical education. Mr. Vithaldas rightly characterised the present Government grant as "insignificant, considering the vast extent of the country and our large population." "Technical education on a large scale is one of our primary needs", while a wide spread of commercial education "which at present is practically neglected by the State," is not less important.

The remaining speech of the first day of the Conference waiting to be noticed is Mr. R. C. Dutt's, made while laying before it the annual report for 1906, which includes a comprehensive record of general industrial activity in the country during the year. Mr. Dutt, a master of lucid exposition as he is, clearly brought out the most salient features of the report, which is appended to the present publication.

As Mr. Dutt has said, one of the objects of the Industrial Conference is "to collect a body of expert opinions on the different industries of India in a series of papers which would be useful to all of us for reference and for guidance." (pp. 53—54.) In fulfilment of this object the organizers of the first Conference at Benares "invited gentlemen who had devoted their time and attention to the study of special subjects to favour [them] with their views and opinions, and [their] invitation met with a most cordial response." The series of papers which will be found in the first Report "are written by some of the ablest men in India,—Government servants and private gentlemen,—and" Mr. Dutt proceeds, "I know of no other handy and popular work, published in India, which contains within the same limits such valuable and practical suggestions relating to Agriculture and Agricultural Banks, Mining and Minerals, Cotton Cultivation and Mills and Handlooms, Industrial Education and Indian Indus-

tries." (p. 54). The same, we venture to think, may be said of the valuable and instructive papers contributed to the proceedings of the Second Indian Industrial Conference by highly qualified persons, which are embodied in this Report. Indeed, it might without impropriety be claimed to this Conference that there is no other Indian non-official body which collects and disseminates so much useful information on subjects of the utmost importance for the material advancement of India. And if the Conference has achieved no other result than bring together a body of such excellent literature, it has amply justified its existence. We trust the papers printed in the following pages will be read and re-read by educated Indians as a preliminary to their taking intelligently directed action for the working of the many industries, for which the conditions of India offer so fruitful a field. May not some enterprising Indians be found in the several provinces for translating the most important of these papers into the principal languages of the land.

Mr. K. Perraju, a leading citizen of Cocanada and sometime an elected member of the Madras Legislative Council, writes on "Agricultural and Industrial Progress of India" (pp. 88—91). Mr. Perraju is known in Southern India as a close and careful student of economic questions, and his paper is an informing one. He is of the opinion, which will not be dissented from, we think, by any one, that "Substantial State aid and initiative are absolutely necessary" for the improvement of Indian agriculture. Descending to particulars he says—

"Out of the Imperial funds, the State shall maintain agricultural schools, experimental farms, and demonstration and example plots in all the districts. Then the field of action may be sufficiently extensive for travelling professors and instructors to be supplied by the department of Agriculture for the diffusion of agricultural knowledge to the peasantry of the various parts of the country. The Department of Agriculture shall include Bureaux for (1) Agricultural education, (2) Veterinary education and veterinary services and police, including all measures for the preven-

tion of cattle disease: (3) Encouragement to agriculture, cattle-breeding, agricultural associations and shows; (4) Agricultural statistics as in England" (p. 87.)

The Government of India with its 260 district, consisting of an area exceeding one million square miles and a rural population of 210 millions, ought to set aside at least two millions sterling for a similar purpose" (p. 88.)

"The State must be determined to make all grades of education in India, pre-eminently agricultural and industrial, as perfect as they can be made. It is only great schools in India that can make the Indian nation great. If the State does not feel it to be its duty, the people must themselves undertake the task, for otherwise, there will be no foundation for a great self-reliant nation" (pp. 88—90.)

"The teaching of 'hands' is most essential in a country like India" (p. 89.)

"What is wanted here is a sufficiently large number of schools that turn out technically trained men, year after year, and the tuition ought to be the least costly, if not quite free" (p. 90.)

Sir Guilford Molesworth deals with "The effect of Import Duties on Industrial Development." (pp. 91—117.) While thinking that the Swadeshi movement is a step in the right direction, the writer fears that it will prove a failure unless it is backed up by a policy of fiscal reform. "It must necessarily be limited in action, confined as it will be to a comparatively small number of the educated and patriotic classes of India, but it cannot reach the masses and consequently can produce no practical results, unless combined with the policy of import duty" (p. 91). Accordingly, Sir Guilford suggests that the Conference should urge the Government of India "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," (p. 103). Apart from the suitability of the advice to the conditions of India, which, it is well known, has often been advocated by several Indian thinkers and public men, we believe, the general opinion would, as matters stand

at present be that to urge this step on the Government is as useful as to beat one's head against a stone wall.

The third and fourth papers are by Mr. K. C. De, I.C.S., Registrar of the Co-operative Credit Societies in Eastern Bengal and Assam, on his own subject of Co-operative Credit Societies and on the necessity of a central bank to finance them. (pp. 118—30 and 130—34). We need not say that Mr. De treats the subjects with a great deal of ability. We will quote one passage from his first paper :—

"Wherever these societies have worked with success, (a new world has been called into existence to redress the balance of the old.) I look forward with hope to the time when these societies will work wonders in elevating the social and the moral tone of the village communities in this province besides providing and organising the village finance. The time will come when the people of a village, who in the former times used to take scarcely any interest in anything outside their own threshold, who used to spend their scanty savings in extravagance, litigation or purchase of unnecessary articles of luxury, or to hoard them profitlessly, will learn how to save and employ the surplus funds for their own profit and for the benefit of their fellow-villagers. It will create (a new world—a world of brotherly love and mutual help where every one is the protector and assistor of his neighbour.) The principles underlying credit and trust will infuse a new spirit in the careless and thriftless villager and kindle in him the desire for standing well in the eyes of his neighbours. One may hope, that, as in other countries, under the influence of these societies, the idle man will become industrious, the spendthrift thrifty, the drunkard will reform his ways and become sober, and the illiterate will learn to read and write." (pp. 129—30).

Mr. De invites "the active co-operation of the intelligent and educated community to make Co-operative Credit Societies a common national institution in every village, a luxurious growth spreading into the remotest corners of the Empire." (p. 131.)

In his second paper Mr. De. convincingly argues that a large Provincial Bank is needed to finance the Co-operative Credit Societies of each province. (p. 134.)

Rai Parvati Sankar Chaudhuri, the public-spirited Zemin-dar who expounds the scheme of Dharmagolus or Co-opera-

tive Grain Banks in the next paper (pp. 134—55), is the pioneer of such institutions in Bengal. It is to be hoped that at least some among educated Indians, including the Zemindar class, will catch the spirit of unselfish enthusiasm as Rai Parvati Sankar, and that his hope that *Dharmagolas* will be established throughout the country will be even partly realised.

In commending, particularly to the agricultural classes, the next paper on 'The Paddies of Bengal' (pp. 156—73), we cannot but lament the sudden and premature death of its talented writer. In the late Mr. N. G. Mukerji, India has lost one of her most useful sons. Mr. Mukerji was a voluminous writer on agricultural and industrial subjects, and his treatises are uniformly noted for the care, labour and thought bestowed upon them by their always painstaking author. Mr. Mukerji was an ornament of the Bengal Agricultural Department, and it is a matter of melancholy satisfaction to his admiring and sorrowing countrymen that his worth and work were suitably acknowledged by the Government he had so faithfully served, in an obituary notice published in the *Calcutta Gazette*. It is only necessary to remember how few are the men who can be compared to the friend we mourn in point of knowledge and devotion to duty to realise the magnitude of the loss we have sustained. Mr. Mukerji's special subjects were Agriculture and Sericulture, and he wrote on both subjects for both the Benares and Calcutta Conferences. His treatment of the subjects is so full that it is not easy to summarise his papers. They must be read in their entirety and they will not be read without profit.

In his first paper he treats of fourteen varieties of paddies—(1) the draught-resisting paddies; (2) the two flood-resisting varieties (those which increase in height with the increase of flood, and those which can remain sunk in water in a tide state for a week or more); (3) paddies which can grow on hill-sides without terracing; (4) autumn paddies which contain white, fine and fragrant rice; (5) prolific paddies which are also fine and fragrant; (6) paddies with special

nourishing value; (7) paddies reputed to have medicinal properties; (8) paddies suitable for making *muri*, *khoi* (popcorn) and *cheera*; (9) absorbent paddies, *i.e.*, paddies suitable for making *pulao*; (10) autumn paddies that grow in water; (11) winter paddies that can be grown on sea-side places unprotected by embankment, *i.e.*, in highly saline land; (12) paddies containing two grains of rice in each, paddies with four to six grains in each spike-let instead of one or two paddy of which the whole plant is fragrant, black paddy the leaves of which also are black, and paddies containing rice which does not require boiling; (13) wild paddies, and (14) the best paddies of Bengal.

The paper on Sericulture (pp. 1-33 sup.) is equally a mine of information. It is as its name tells us, a bird's-eye view of Indian Sericulture. Great interest has been taken in the subject of Sericulture by the Governments of British India and the Native States as well as by private individuals within recent years, and considerable progress is to be seen in different local areas, which makes it incumbent on us to consider the question of a more general adoption of improved methods, and to get a clearer view of the situation as it stands at present. It is necessary to understand the subject and to remedy defects, if the cocoon-reaving industry is to be benefited. It is very necessary, therefore,—we quote Mr. Mukerji—that a succinct and clear account of Sericulture should be at hand which would obviate the necessity in the first instance of reading up various books and reports that have necessarily sprung up with the recent activities.

"When I call these activities 'recent' (wrote Mr. Mukerji), they are at least twenty years old, and more progress might have been achieved if the improvements had been introduced with sufficient knowledge of the subject. A rude shock is sometimes received, when a party, which has been rearing the Eri silkworms, finds out he ought never to have attempted the task in the particular climate, or where a man who has been trying to introduce the Japanese mulberry, finds out that the tree he has been using is not mulberry, at all, but a so-called 'paper mulberry' which silk worms never eat, or where a man who has been using the

microscope for years in eliminating Pebrine finds out that there is no Pebrine at all to eliminate, or when for years seed, which has been accepted as rigorously 'cellular' and free from disease, is found out to be really full of Pebrine. The history of the application of scientific methods in various parts of India, is replete with such examples of mistakes.

"I do not disparage by any means the literature that has grown up within recent years, and I may say, the bulk of it is from my own pen; but it is necessary to keep the main points in view with regard to the development of the mulberry, the *tusser* and the *eri* silk industries, and this is my plea for adding another 33 pages to the already existing literature on the subject" (p. 1-2 seep.)

It is only necessary to read these 33 pages to recognise the public service rendered by our late lamented friend by writing the paper. It is brimful of suggestions which we bring together in the 'Summary of Proposals' which accompanies this Introduction.

We now come to Mr. Henry H. Ghosh's paper on 'Rice Manufacture' (pp. 173-80). Mr. Ghosh rightly complains that so extensive an industry as rice manufacture is in India has so far received very little attention. According to the 'Agricultural Statistics of India', about 29 million tons of rice valued at £190 millions are annually prepared in this country, and "the preparation of rice is therefore the most valuable manufacturing industry in India. Mr. Ghosh says that the system of separating the agriculture and manufacture of a great produce has been adopted in India with regard to wheat, and thinks that there are sufficient grounds for introducing it in the case of paddy. In America, Burma and Siam it is worked as a manufacturing industry "which is the more correct system, as the processes relating thereto are quite distinct from the agricultural operations connected with paddy." (p. 173.) Mr. Ghosh in his paper describes, "in the briefest outline, a fairly efficient and economic system by which rice manufacturing may be initiated in this country. This system is very similar in most of its processes to either the Rangoon or the American system" and Mr. Ghosh adds that he "attained rather satisfactory results from it." He concludes that

“by the introduction of the Rangoon and American systems of manufacture, the price of the greatest staple food of our country will be reduced by about four annas on the maund and an enormous quantity of labour will be set free for more profitable industries.”

Mr. N. N. Banerji of the Bengal Agricultural Department writes on “The Jute crop of India.” (pp. 180—95.) The importance of jute in the sphere of commerce may be gauged from the fact that the exports of raw and manufactured jute constitute one-fifth of India's total exports. Not only has there been an increase in production, but the industry itself has developed enormously in this country; the number of looms at work having increased from 9,841 in 1896 to 23,884 in 1906, and the actual consumption of jute by the mills has doubled during the last ten years. In Mr. Banerji's opinion.

“There is still ample room for the extension of jute cultivation and there is decidedly a necessity for improving its quality. Complaints have been frequent of late regarding the deterioration of jute fibre, and it is for the cultivator to rise to the occasion and to remove this defect. Otherwise, the industry is likely to suffer in the near future. If the manufactures of Europe and America do not get better stuff than what is being sent to them at present, they will surely turn their eyes to other markets than ours. At present, the seller seems to be quite certain of a market for this fibre, even though it is of inferior quality and adulterated, but he should open his eyes to the fact that in Java, French, Indo-China and West Africa, continuous and in some cases successful efforts are being made to introduce the cultivation of jute”. (p. 182—3.)

Mr. Banerji gives some hints and suggestions “which will be of help to those already employed in jute cultivation in turning out better crops. They also provide sufficient instructions to those who may feel disposed to take up the growth of jute as a fresh industry.”

Of the varied uses of the jute plant Mr. Banerji tells us the following :—

“The jute plant is utilized in this country for many different purposes, besides being permanently used for the manufacture of its fibre. It is supposed to be a very good antidote to a noxious weed *bhadulia* which

is very destructive to the rice crop, and *vaiyats* often grow jute to eradicate this weed.

The leaves and tops of jute plants is a favourite pot-herb in the season, of every Bengali kitchen. The leaves also occupy an important place in Indian Pharmacopoeia. As a green manure crop, jute holds its own against other crops. The stems are used for fuel and for fencing, especially in betel leaf gardens. Jute also supplies sticks for country-made matches. The roots of the crop are valuable in the manufacture of paper. An oil for burning purposes can be extracted from it. Its cake also makes a useful though perhaps not a very nutritious food for live stock.

As a fibre, it is used for the manufacture of cordage, cloth and paper which under different conditions and circumstances assume very different names. As cordage, the manufacture ranges from the thinnest twist to the thickest ropes for hawsers. Gunny cloths of different thicknesses are largely made. The coarsest kind which is very loosely woven is commonly used for sails for country boats." (p. 194),

Mr. D. N. Mookerji, Assistant Director of Agriculture, Bengal, writes on "Cotton Cultivation in Bengal" (pp. 195—204.) The transcending importance of the subject need not be pointed out in these days of the Swadeshi movement. But "the cotton area in Bengal is steadily contracting. It used to be fairly common within the memory of men still living. But it has completely vanished from many districts within a few decades." According to Mr. Mookerjee, the reason why Bengal does not grow much cotton is on the surface, "It is because the soil and climate are suitable for more remunerative crops." And he "cannot see any sense in advising the ryot to take to cotton in place of jute." He contends that it is not necessary for our ryots to grow cotton in place of a more remunerative crop as it can be imported from the other provinces as used to be done before. He "could understand the present excitement over cotton cultivation, if the idea was to grow a better crop than is found in the country generally, with the object of regaining our lost markets".

"India has at present about 19 million acres under cotton, against 28 million acres in the United States. Yet while the latter produce 10 million bales of cotton per year, we produce only 3 million bales. Or in

other words, while the United States acreage exceeds ours by barely 50 per cent., her annual outturn exceeds ours by something like 250 per cent. The average yield of an acre in India is about a maund of 80 lbs., that in the United States is 200 lbs. What is more, American cotton is of superior quality and fetches a much higher price in the market." (p. 198.)

And the outturn of Egyptian cotton is on an average 500 lbs. per acre, and it is so superior to both Indian and American cotton "that there is practically no comparison between them." Mr. Mookerjee asks:—

"Now can we grow American cotton in Bengal? Can we grow Egyptian or Sea Island cotton? Can we improve the quality and yield of our indigenous cotton by breeding and selection? Can we by suitable manuring so increase the outturn and profits of cotton cultivation as to make it worth the attention of our raiyats, if not in the Eastern districts, at any rate in Chota-Nagpur and the adjoining districts?" (p. 198.)

There are difficulties in the way which rendered previous efforts infructuous, and "one may seem too bold to recommend their renewal; but the science of agriculture has advanced a very great deal since the days the American planters worked and failed.

"When their rule of thumb did not avail them, they were left completely helpless. But it ought not to be impossible now by selection and breeding to produce a plant to suit our conditions. We may take courage by the example of America herself in overcoming the difficulty with the acclimatization of Sea Island cotton, the finest cotton in the world. * * * Not only has Sea Island cotton been acclimatized in the United States but what is more, it has been so improved by careful selection as to be double the value of the original variety." (p. 203.)

Mr. Mookerjee's conclusion is hopeful:—

"We may, therefore, refuse to accept as final the failure of the parties. In our light, loamy soils, specially in the high lands, we possess a better equipment for the finer grades of cotton than the stiff clay commonly known as the black cotton soil of Central and Western India. Again, in the fine weather we enjoy from October, when the balls open and the cotton is picked, we enjoy the *Sine qua non* of cotton cultivation in the matter of weather. The unfavourable features of the climate previously mentioned, though serious, do not seem to be insurmountable." (p. 204.)

It is in the fitness of things that we pass from cotton

cultivation to hand-loom weaving. The writer is Rai Bahadur Raeji Bhai Patel, whose paper on the same subject read at the Benares Conference was so widely appreciated. The present paper (pp. 204—15) is as suggestive and as full of instruction as that. In his first paper Mr. Raoji Bhai tried to show that, if certain improvements be made in the handlooms and preparatory machines, the increased production would exceed the total imports of cotten piece goods into the country. He makes the idea clear by the following further calculation :—

“The production of hand-looms working in the country is estimated at 165 crore yards. The looms work at an average effective speed of twenty picks per minute, and if this can be increased to 50 picks, the increased production of the same number of looms would be 247½ crore yards. This increase more than equals the total cloth imports of the country. As this increase can be produced by the same number of men as now engaged on the looms, the price per yard will be cheaper than at present, and their ability to withstand foreign competition will so far be increased.” (p. 205.)

Of the four classes of cotton goods consumed in India—very coarse goods, coarse mediums, mediums and fine—the bulk of the very coarse classes is woven on Indian handlooms from Indian mill yarn; the main bulk of the coarse medium class is made up of imported shirtings and Indian mill-made shirtings, chadders, T-cloths etc.; competition in the third class is between the foreign looms and the Indian handlooms, both using foreign yarn, and the production of the fine class is restricted to handloom and foreign power looms. In respect of the third class Mr. Raoji Bhai thinks that “a cheap machine, cheap home labour and the production of stronger cloth on account of proper dressing of yarn, are in favour of the handloom workers, which the power-loom cannot work so fast on this yarn, as on the coarse medium”; while “the speed at which the power-loom can work on fine yarn being still further restricted, the hand-loom ought to be supreme in this class of work. “The enquiry into the details leads the writer to the conclusion that four factors have stood the greatest

friends of the Indian weaver: (1) his slow speed of work; (2) cheap machine and home labour; (3) light sizing and proper dressing of yarn, and (4) production for local consumption. "In any efforts to improve his lot these should not be lost sight of, and yet the speed of his work should be increased in order that he may live and successfully compete." Mr. Raoji Bhai thus summarises the results of his enquiry:—

"The sphere of hand loom influence being to some extent limited, an effort should be directed towards the increased production of very coarse, medium and fine counts weaving, and of mixed, coloured and check designs of all classes of goods, having the weaving of coarse medium class to the power-loom.

"2. For this work, cheap looms should be constructed with proper taking-up motion and allowing easy working at a steady 10 miles an hour shuttle velocity or 80 picks per minute on 45 cloth to 40's counts, without undue breakages.

3. "The best looms for Indian use would be those that can be adopted to general purposes of weaving and not such as can be used for only simple cloth or twill.

4. "This speed should be maintained with a full pirn of 6 inches, taking about 840 yards of 40s. or half that length of 10s. counts.

"5. Cheap beaming machines for properly beaming country dressed warps should be adopted.

"6. Proper pirn-winding machines to wind from conical pirns are necessary."

"7. All efforts at producing sizing and warping machines should be directed to preserving the use of the country system of sizing and dressing, and to accelerating the speed of work, sizing machines of the slasher type being entirely unsuited to handloom work."

The best looms and appliances should be fixed by experts after trial, and the next question will be how to introduce them to the weavers and extend their use as quickly as possible. The most practical ways that suggest themselves to Mr. Raoji Bhai are, (1) weaving schools with factories attached, (2) object lessons and monetary help. At least one school with a factory attached should be started in every district at an approximate cost of Rs. 2,000. "At least one large well-equipped institution in every province for training of teachers

and designers is also an absolute necessity." The specific recommendations of Mr. Raoji Bhai will be found in the "Summary of Proposals."

Mr. J. N. Banerjee writes a brief paper on Plantain Fibre (pp. 216—9). "It is opening a new source of agricultural wealth. There is no special expense to be incurred for fibre industry." Mr. Banerjee explains a means of extracting fibre, and says that "planters, Zemindars and especially the villagers who have plantains growing on their estates and in the gardens might with the aid of this machine, very easily and without much expense obtain all the fibre necessary to make cord and ropes for their own requirements."

Messrs. A. E. Jordan and H. Vençoba Rao write on the Sugar industry. (pp. 221—30 and 231—9). Mr. Jordan's points are that the countries exporting sugar to India do not make raw sugar at all, but manufacture the white sugar straight from the cane-juice and the beet-juice by the sulphurous-acid-gas process, and without the use of animal char (p. 221); that Mr. Hadi's process of sugar manufacture will have to be considerably improved for it to be commercially successful (p. 223); that the same up-to-date methods as have been found successful in other countries must be adopted in India also (p. 225); that the cane sugar factory in this country might be a combination of factory and refinery, making white sugar from the canes grown in its vicinity and yellow crystals from the *gur* made by the cultivators in outlying districts, so that the factory may work all the year round (p. 226); that small steam plants similar to those he has recommended for the sugar cane centres, but without the cane crushing mill where there is no cane cultivation, should be established in the centres of the date tree cultivation (p. 227): Mr. Jordan evidently does not hold the Government responsible for the large annual imports of foreign sugar, but he thinks blame attaches to it for not obtaining experts in the manufacture of sugar as well as experts in cultivation, for, to his mind, showing how the enormous wastage of sugar in the

country could be avoided and how greater profits could be obtained from the present crops, is of much more importance than showing the cultivators how to grow the cane and convert the sugar into a material only fit for the distillery. Says Mr. Jordan :—

“ In the Punjab and even in Calcutta, the boycotting of imported sugar has taken place, but the boycotting of sugar is only an expression of the people's impotency regarding sugar manufacture and no amount of boycotting will help the development of Indian sugar.

“ If there is any desire to develop what should be the foremost agricultural industry of the country, and to have the indigenous product take the place of imported one, then sugar must be made as elsewhere, in the most economical manner possible, and without employing any material that will make its consumption obnoxious to the people.” (p. 229.)

German *Savants* appear to Mr. Vencoba Rao to be the Viswamitras of the *Kali* age well versed in the art of duplicating nature.

“ Their ire seems to be particularly directed against us just as Viswamitra's was directed against Vasishtha. They invited artificial indigo to suppress our lac dye and other natural colours. * * German Scientific skill has been able to put up on the world market, at very cheap prices, a natural sugar which has become a formidable rival to cane-sugar.” (pp. 232—3.)

Mr. Vencoba Rao suggests that the Indian Industrial Conference should bring about a special conference of sugar-cane growers and sugar manufacturers in India at some centre where sugar manufacture is carried on a large scale ; preferably Allhabad.

“ We have an extensive home market which is expanding but which is being exploited not by us but by Germans and Austrians. The whole country should first be mapped on showing the zones of activity of foreign and native sugar and the prices of the respective sugars at several stations in these zones. The present areas of cane cultivation and other areas which possess facilities for cane cultivation should be similarly mapped out. So also the most convenient places for the establishment of big factories by virtue of their having canal, railway, river or sea communications with the other part of the country or the out side world.” (p. 235.)

Mr. Haridas Chatterji of Khandesa and Indore, writes at

some length on "Development of Indian Sugar Industry coupled with Agriculture." (pp. 239—52.) He goes into detail and writes with authority born of experience and practical knowledge on the value of the extensive date forests of wild and luxuriant growth "in some districts of the Central Provinces and parts of Central India. It will be remembered that Sir Daniel Hamilton had something to say of this in his paper on Indian Agriculture laid before the Benares Conference. It is Mr. Haridas Chatterji's opinion "that the industry of manufacture of sugar only, from date or cane or both, cannot possibly stand alone. It must be coupled with and be made a subsidiary adjunct to agriculture." (p. 244.) These date forests are a source of great potential wealth which enterprising Indians possessing the requisite capital and knowledge will do well to make the most of.

Mr. David Hooper the able and esteemed head of the Industrial Section of the Indian Museum, Calcutta, has a paper on Indian Essential Oils (pp. 253—69) full of the most interesting and useful information which cannot well be commended. It has to be read entirely: Mr. J. N. Banerjee (p. 270) calls attention to various kinds of grass which grow luxuriantly in some parts of Bengal "from which we can easily extract the essence of Lemon and Peppermint, at a trifling cost.

Mr. Alfred Chatterton's paper on Chrome Tanning (pp. 271—96) is of characteristic thoroughness and cannot but be appreciated by any one who reads it for the fund of information it contains. The leather industry at Cawnpore "has grown under the stimulus of demands from the Military Department and its flourishing condition is due not only to the expansion of military requirements but also to indents from other Government department which in the aggregate require considerable supplies of leather goods". (p. 272.) Here is an instance of what Government can do to push the industrial-movement. "In recent years, a considerable internal demand has grown up for cheap machine-made boots and shoes

and it is probable that the Swadeshi movement, especially in Bengal, has benefited local manufactures of such goods."

Excluding boots and shoes the value of which is not given separately, the trade returns show that from 25 to 30 lakhs of rupees worth of leather or leather goods are imported into India yearly.

"The bulk of this trade is probably in dressed skins for book-binding and upholstery work, in high class leather for belting and machinery and to some extent in fancy leather goods. It is hardly probable that the whole of this not inconsiderable import business could be captured by native manufacturers but there is absolutely no reason, except want of enterprise on the part of the manufacturers, why India should not produce dressed skin equal in quality to any made in Europe and America. The bulk of the leather consumed in the country is very poor stuff and the methods of tanning are so crude that vast quantities of fairly good hides are converted into most inferior leather. The inefficiency of the indigenous tannery is notorious, and in the aggregate, the annual waste of material amounts to a sum which can only be estimated in crores of rupees." (p. 272.)

Mr. Chatterton explains how this enormous waste is to be prevented and a valuable industry developed.

Mr. Alakh Dhari, Secretary, Upper India Glass-Works, Ambala City, writes on Glass-making. (pp.296—309.) "It will, perhaps, be news to many that the manufacture of glass is not a new industry in India, for we find Pliny and other historians of yore making mention of glass articles having been found in India." After dealing with the making of glass, Mr. Alakh Dhari says that ["our hope of success must rest on our training up of our own men, and for this purpose, they should go abroad every year." (p. 306.) Care must, however, be taken to send the right quality of men.

"There appears to be a tendency, at present, to send boys fresh from colleges. They usually get no commercial education before they go, and while their advanced literary (non-industrial) education enables them to learn the technical portion of the industries tolerably well, the business or commercial aspects of the same (viz., the adaptability to the Indian soil and resources, as well as to the tastes and conditions of our people) remain in a great part unstudied, and on their return home they can not turn their knowledge to full advantage. Many a concern has come to grief in

India, because its conduct happened to lay in the hands of intellects that were commercially inefficient and on principles that were economically unsound." (p. 307.)

Then we have Rai Saheb Upendranath Kanjilal's informing paper on "The Best Indian woods for the Manufacture of Matches and Match-boxes. (pp. 309-19.) If samples be required of woods that are not locally available, Mr. Kanjilal says that application should be made for them to the Imperial forest Economist, Imperial forest College and Research Institute, Dehra Dun, who can arrange to have them forwarded from the nearest source.

Mr. Sadhu Ramesubbiah of Mandalay writes on "Tobacco Culture and Cure"; (p. 319-35.) Mrs. Hironmoyi Devi Mukerji in the part women can take in industrial work "A Possible source of Wealth, (pp. 335-9) Mr. R. M. Kelkar on Co-operative Credit Societies (pp. 344-7) Mr. Devasahayam Pellai on the "*Development of Industries*" Mr. A. Ramanna of Mysore writes a very interesting and well informed paper on the sandalwood industry of that state and Mr. T. N. Atre in his admirable paper puts in a plea for standard weights, measures and coins (pp. ?-?).

Mr Theodore C. Maller of Amritsar has a useful contribution on "The present state and future Prospect of Indian Art Industries." (pp. 339-44.) Mr. Maller (S. C.) thinks that the primary cause of the delay of indigenous arts and handicrafts is undoubtedly the lack of interest shown by wealthy and intelligent Indians in home productions. "It is only the European who keeps alive the last remnants of these once flourishing industries. There is scarcely a European house in India that does not contain a collection of choice specimens of native work-manship, and it seems as if solely the Europeans appreciate the originality and beauty of native-made art wares. This is not as it should be. For centuries past, rich Indians have taken legitimate pride in the possession of Indian art treasures, and there is no reason why the wealthy natives of the country should not continue to patronise and

encourage the art industries of this country (p. 340). "The writer makes several shrewd observations and useful suggestions, and the paper repays perusal.

The Resolutions passed at the Conference deal with such important subjects as Technical and Commercial education, the purchase of stores by the Government, the industrial survey of India, and the steps that the people themselves can and ought to take for the development of indigenous industries. The proposals of the Conference are by no means ambitious; they are all within the range of practical politics, and their adoption by the Government as well as the people is only a question of time. Several excellent speeches were made in support of the Resolutions and we have no doubt the readers will peruse them with much benefit to themselves.

We desire to say a word in acknowledgment of the useful work done by Mr. M. Venkanna Pantulu, Teacher, Maharajah's College, Vizianagram, in preparing the excellent Index to this Report. It was pointed by several friends last year that an Index would add to the value of the Report by facilitating reference, and we have been able to carry out the suggestion in issuing the present publication only because of Mr. Venkanna Pantulu's co-operation.

Summary of Proposals.

A.—*Organization and Work of the Conference.*

1. The Central Office of the Conference must be more in touch with the Provincial Committees and render help to them to develop the industries of the several provinces. (*H. H. the Maharajah Gaekwar*, p. 35.) There should be a greater degree of co-operation between the Central Office and the Provincial Committees. (*Mr. R. C. Dutta*, p. 35.)
2. Besides Provincial Committees there should be district and even Town associations for closer touch with the masses. (*H. H. the Maharajah Gaekwar*, p. 35.)
3. The Conference should appoint an expert committee to thoroughly test the improved handlooms before the public on the lines suggested in his paper, and publish a report. (*Rai Bahadur Raoji Bhai Patel*, p. 213.)
4. The Indian Industrial Conference should bring about a special conference of sugar-cane growers and sugar manufacturers in India at some centre where sugar manufacture is carried on on a large scale; preferably at Allahabad. (*Mr. H. Venkoba Rao*, p. 233.)

B.—*Investigation.*

5. The Commercial Department should have its counterpart in each province, the duty of the provincial department being to devote its attention to the industrial and commercial possibilities of the province and keep in touch with its economic problems. (*Hon. Mr. Vithaldas D. Thackersey*, p. 79.)
6. An industrial survey of the country must be carried out by provincial agencies to be appointed by the Provincial Governments. (*Do.* p. 79.)

C.—*Education.*

7. Schools should be provided in every village an education taken to the very threshold of the people. (*H. H. the Maharajah Gaekwar*, p. 36.)

8. Education at least in its primary grades should be made free and compulsory throughout the country. (*H. H. the Maharajah Gaekwar*, p. 36.)

9. Introduce some Manual Training in the ordinary Schools. (*H. H. the Maharajah Gaekwar*, p. 40.) The teaching of 'hands' is most essential. (*Mr. K. Perraju*, p. 89.)

10. Technical schools must be established. (*H. H. the Maharajah Gaekwar*, p. 40.) Technical education being one of our primary needs, Government must be liberal towards it. (*Hon. Mr. Vithaldas D. Thackersey*, p. 81.) What is wanted is a sufficiently large number of schools that turn out technically trained men year after year, and the tuition ought to be the least costly if not quite free. (*Mr. K. Perraju*, p. 90.)

11. A wider spread of Commercial Education is essential. (*Mr. K. Perraju*, p. 81.)

12. We need to devote large sums to the founding of chairs of economics in our colleges, and to the training of our young men in the subtle problems of finance. Let the brightest of our young men be sent to Western Universities to master the principles of economic policy, (*H. H. the Maharajah Gaekwar*, p. 47.)

13. You must send your young men to Europe, America, and Japan for that complete industrial training which they cannot yet receive at home. (*H. H. the Maharajah Gaekwar*, p. 47.)

14. The Government should establish an up-to-date Mining College in India, and train our own students to take charge of the higher posts in the Geological Department, (*Hon. Mr. Vithaldas D. Thackersey*, p. 72.)

15. The State must make all grades of education in India, pre-eminently agricultural and industrial, as perfect as they can be made. (*Mr. K. Perraju* pp. 88—9.)

16. Evening School instruction like what is given in England should be introduced for the benefit of the working classes in India. (*Mr. K. Perraju* pp. 90—1.)

17. Weaving Schools with factories attached, where all preparatory processes and weaving in various branches suited to Indian conditions can be practically taught, should be started in every district. Both theory and practice should be taught and proper attention paid to designing, (*Rao Bahadur Raoji Bhai Petel*, p. 214.)

18. At least one large well-equipped institution in every province for training of teachers and designers (in weaving) is also an absolute necessity, (*Rao Bahadur Raoji Bhai Patel*, p. 214.)

19. Trained and well qualified men should be sent to foreign countries for learning glass-making. (*Mr. Alakh Dhari* pp. 306—7.)

D.—Capital.

20. Joint stock Banks should be started in India with large enough capital for extending their operations to foreign exchanges, and thus take advantage of foreign capital as the other exchange banks are at present doing. (*Hon. Mr. Vithaldas D. Thackersey*, p. 67.)

21. The Legislature should make it obligatory, on every industrial concern floated by foreign companies that the same opportunities should be given to Indian capitalists, that the prospectus should be published simultaneously in both countries, that the time for applications for shares should be the same, and that allotment must be made at the same rates and on the same principles. (*Hon. Mr. Vithaldas D. Thackersey*, p. 68.)

22. A large Provincial Bank must be started in every province to finance Co-operative Credit Societies. (*Mr. K. C. De*, p. 134.)

E.—Labour.

23. No limit should be put on the hours of adult male labour in factories. (*Hon. Mr. Vithaldas D. Thackersey*, p. 77.)

F.—Fiscal Policy.

24. The Government of India should 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. (*Sir Guilford Molesworth, p. 103.*)

G.—Agriculture.

25. The Zemindars of Bengal should devote their time and resources towards developing agriculture by introducing science and system into it, so as to make it yield the highest profit of which it is capable. (*Hon. Mr. Vithaldas D. Thackersey, p. 70.*)

26. Out of the Imperial funds, the State should maintain agricultural schools, experimental farms, and demonstration and example plots in all the districts. (*Mr. K. Perraju, p. 87.*)

27. Travelling professors and instructors should be supplied by the Department of Agriculture for the diffusion of agricultural knowledge to the peasantry of the various parts of the country. (*Mr. K. Perraju p. 87.*)

28. The Department of Agriculture should include bureaux of (1) agricultural education; (2) veterinary education and veterinary services and police, including all measures for the prevention of cattle disease; (3) encouragements to agriculture, cattle breeding, agricultural associations and shows; (4) agricultural statistics as in England. (*Do. p. 87.*)

29. The Government of India should set aside yearly at least two million pounds sterling for rendering aid to agriculture (*Do. p. 88.*)

30. The intelligent and educated community should actively assist in the formation of co-operative Credit Societies, (*Mr. K. C. De. p. 1300.*)

31. Dharmagolas (Co-operative Grain Banks) should be established throughout the country. (*Rai Parvati Sankar Chaudhuri*, p. 135.)

32. Impress upon cultivators, the fact that they simply waste seed by putting in half a dozen or a dozen plants at each spot, instead of one, while transplanting paddy. They ought to be very carefull in economising seed, (*Mr. N. G. Mukerji*, p. 172.)

33. The conditioning, husking and cleaning of paddy should be separated from its cultivation as in America, Burma and Siam, and as in the case of wheat in India, and the manufacture of rices should be treated as a distinct business. (*Mr. Henry H. Ghose*, p. 173.)

34. Jute does very well after pulse crops on uplands and this rotation is recommended; the growing of jute without any intervening crop is to be condemned. (*Mr. N. N. Banerji*, p. 126.)

34. Care should be taken to pulverise the land thoroughly, as a deep and fine tilth is most essential for the proper growth of the crop. At the final sowing, care should be taken that all weeds are up-rooted and removed. (*Mr. N. N. Banerji*, p. 287.)

35. Cowdung has been found to be the best and cheapest manure for the jute crop. Green manuring with Sun-hemp or some other leguminous crop is also strongly recommended. (*Mr. N. N. Banerji*, p. 187.)

36. The paramount importance of selecting the most vigorous and best developed plants for seed (for jutes) cannot be too strongly impressed upon agriculturists. (*Mr. N. N. Banerji*, p. 187.)

37. Attempt should be made to grow better cotton in Bengal as several favouring conditions exist and as the unfavourable features do not seem to be insurmountable (*Mr. D. N. Mookerji*, p. 204.)

38. To develop the plantain fibre industry as suggested by the writer is to open a new source of agricultural wealth. (*Mr. N. N. Banerjee*, p. 217.)

39. The quality of the sugar-cane grown should be improved. The percentage of sugar in the cane can be improved by the use of suitable manure. (*Hon. Mr. Vithaldas D. Thackersey*, p. 78.)

40. A scheme for the development of the agricultural industry in the date forest villages of the Central Provinces and Central India, to go on along with the development of the date sugar industry, outlined by *Mr. Haridas Chatterji*, pp. 250—2.

H. Manufacture Industries.

41. The manufacture of ammonium sulphate and other chemical industries is necessary to make several of the mineral industries paying, and other colliery owners should follow the example of the East Indian Railway Company and the Calcutta Gas Co. in making use of their bye-products. (*Hon. Mr. Vithaldas D. Thackersey*, p. 73.)

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42. Improved handlooms should be cheap, simple in construction, and capable of being easily repaired by the village carpenter, while at the same time, the out-put should be larger than that of the existing ones. (*Hon. Mr. Vithaldas D. Thackersey*, p. 75.)

43. The sphere of handloom influence being to some extent limited, all efforts should be directed towards the increased production of very coarse, medium and fine counts weaving, and of mixed, coloured and check-designs of all classes of goods, leaving the weaving of coarse-medium class to the power-loom. (*Rao Bahadur Raoji Bhai Patel*, p. 212.)

44. For this work, cheap looms should be constructed with proper taking-up motions and allowing easy working at a steady ten miles an hour shuttle, velocity or 80 picks per minute on 45" cloth to 40's. counts, without undue breakages. (*Rao Bahadur Raoji Bhai Patel*, p. 212.)

45. Cheap beaming machines for properly beaming country dressed warps should be adopted. (*Rao Bahadur Raoji Bhai Patel*, p. 213.)

46. Proper pirn-winding machines to wind firm conical pirns are necessary. (*Rao Bahadur Raoji Bhai Patel*, p. 213.)

47. All efforts at producing sizing and warping machines should be directed to preserving the use of the country system of sizing and dressing, and to accelerating the speed of work, sizing machines of the slasher type being entirely unsuited to handloom work. (*Rao Bahadur Raoji Bhai Patel*, p. 213.)

48. In every weaving centre, nay, in every village with a considerable number of weavers, men trained in weaving schools should be set up with improved appliances to weave the class of cloths that may be the speciality of the place. (*Rao Bahadur Raoji Bhai Patel* pp. 214—5.)

49. This can be done by every Swadesher with a small capital, not as a philanthropic work, but as a business. A few improved looms with a beaming machine can be set up either on his own account or lent to local weavers on condition that they would pay for them by instalments after perfectly satisfying themselves as to their usefulness. (*Do.*, p. 215.)

50. Local capitalists and associations can do a great deal in this direction. They can advance money for looms and improved appliances, for yarn, stores etc., and take the cloth produced for sale. In this way, while helping the weavers, they would help themselves in earning a very good interest on their capital. (*Do.* p. 215.)

51. The people of the united Provinces of Agra and Oudh should take early steps to organise the sugar industry on modern lines (by the introduction of modern machinery) as those provinces have the largest area of land under sugarcane. (*Hon Mr. Vithaldas D. Thackersey*, p. 78.)

52. Proprietors of sugar refineries should manufacture sugar instead of spirits. (*Mr. A. E. Jordan*, p. 222.)

53. As raw sugar cannot be made into white sugar without the employment of animal char, it should be converted into a high class yellow Sugar instead, which does not require the use of animal char, by using the most up-to-date machinery, whereby the maximum amount of sugar and the minimum of molasses will be obtained from it. (*Do.* pp. 223—4.)

54. Mr. Hadi's method of Sugar manufacture will have to be considerably improved to make it commercially successful, which can only be done by employing steam plant as in other countries. (*Do.* pp. 223 and 225.) The method of manufacture of Sugar in central factories, as is done in other countries, must be adopted in India as well. (*Mr. H. Venkoba Rao*, 235.)

55. Co-operation on the joint stock system is wanted in order to obtain the necessary capital to purchase the plant (*Mr. A. E. Jordan*. p. 225.)

56. In villages where the canes are crushed independently by the cultivators, small steam plants should be established to deal with from 50 to 100 acres per season at a cost of about Rs. 16,500, without a vacuum pan, which would cost another Rs. 5,500 say, to which the cultivators would send their canes, These would then be able to give more attention to improving the cultivation. (*Do.* pp. 225—6.)

57. The cane sugar factory in this country might be a combination of factory and refinery, making white sugar from the canes grown in its vicinity and yellow crystals from the ~~sug~~ made by the cultivators in outlying districts, and so would be able to work all the year round. (*Do.* p. 226.)

58. The date tree *gur* should also be made into a high class yellow Sugar, which does not require the use of animal char in its manufacture. (*Do.* p. 227.)

59. Small steam plants similar to those recommended for the Sugar cane centres, but without the cane crushing mill, where there is no cane cultivation, should be established in the centres of the date tree cultivation. (*Do.* p. 227.)

60. This must be done on the joint-stock system for, like the cane cultivators, the men who collect the juice have neither knowledge nor capital. (*Do.* p. 228.)

61. Government should obtain experts in the manufacture of sugar as well as experts in cultivation, to show the cultivators how the enormous wastage of sugar in the country could be avoided and how greater profits could be obtained from the present crops. (*Do.* p. 229.)

62. Indian capitalists and others interested in Indian industries should investigate where to establish factories, how to secure lands for planting canes, how to secure lands for planting canes and how to mass labour there on. The probable market for Indian sugar should be likewise investigated. The whole country should first be mapped out, shewing the zones of activity of foreign and native Sugar, and the prices of the respective sugar in these zones. The present areas of cane cultivation and other areas which possess facilities for cane cultivation should be similarly mapped out. So also the most convenient places for the establishment of big factories, by virtue of their having canals, railway, river or sea communications with the other parts of the country or the outside world. (*Mr. H. Vencoba Rao*, p. 235.)

63. To introduce and to develop the industry of date sugar manufacture in the Central Provinces and in Central India, the first essential condition is to impart the knowledge of the Bengal system of tapping the date trees. (*Mr. Haridas Chatterji*, p. 240.)

64. The industry of manufacture of sugar only from

date or cane or both, must be coupled with and be made a subsidiary adjunct to agriculture. (*Do.* p. 244.)

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65. Bengalis should develop the jute industry. (*Hon. Mr. Vithaldas D. Thackersey*, p. 78.)

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66. The silk industry may be introduced in several parts of the country. (*Do.* p. 78.)

67. One important step which can be taken for ameliorating the condition of the tussler silk-industry, which is going down on account of disease, is to use large and hard cocoons for seed, after extracting the chrysalids from the cocoons and keeping them exposed or buried in saw-dust. The use of genuine wild cocoons for seed is another step. (*Mr. N. G. Mukerji*, pp. 5—6 sup.)

68. One of the chief improvements that could be introduced into the Indian industry is the introduction of *M. taevigata* or some other similar superior variety of mulberry, suitable not only for rearing the poor Bengal cocoons, but also the superior *B. mori* cocoons. (*Do.* p. 12 sup.)

69. Keeping the worms thin and clean, and the room well ventilated and free from dust, is necessary *from the first*, as neglect in this matter results in the worms dying in large numbers. (*Do.* p. 18 sup.)

70. Cocoon-rearing is best done when the temperature is about 75° and fairly uniform. That is why the November bund or crop is the best crop and the March bund the next best. Using large mulberry leaves and taking these two good crops is better than using shrub mulberry and taking eight in different ones (even the two good crops being subject to infection when four or eight crops are attempted. (*Do.* pp. 19—21 Sup.)

71. As the demand for the *Khangen* silk shows an upward tendency and the demand for the Superior European silk shows a downward tendency, it is not worth while for our country reelers to follow the European system and produce a smaller quantity of superior fibre. Go in for quantity for *the present*. (*Do.* p. 24 Sup.)

72. A separate organization of having a grainage and hibernating station at Dalhousie may be tried. (*Do.* p. 26 Sup.)

73. It is essential to have a number of nurseries in each silk district and Bengal, where the system of microscopic selection will be rigorously followed and the cocoons obtained from selected eggs seed for seed purpose, or where a stock naturally free from pebrine is reared. (*Do.* p. 29 Sup.)

74. The paper industry should be started in Burma. (*Hon. Mr. Vithaldas D. Thackersey*, p. 78.)

75. Leather is another industry for which there is a large field in India. (*Do.* 79.)

76. The gradual extension of the chrome-process will do much to improve the methods of realising the real value of hides and skins. (*Mr. Alfred Chatterton*, p. 286.)

77. Manufacture essential oils from the raw materials described and mentioned by the writer. (*Mr. D. Hooper*, pp. 253—69.)

78. Extract the essence of lemon and peppermint at the trifling cost from the various kinds of grasses which grow luxuriantly in some parts of Bengal. (*Mr. J. N. Banerjee*, p. 270.)

79. If a match factory be established in Calcutta or its neighbourhood, trial should first be given to such local trees as *Simul*, *Amra*, *Genwa* for matches, and to *Badam* and *Pithali* for match-boxes; as, if these prove suitable, the expense of obtaining Firs and Poplars from the hills will be saved. (*Rai Saheb Upendaanath Kanjilal* p. 319.)

80. It is neither necessary nor advantageous that the same industries should be established in all parts of the country. This may not be possible in the first place. Even where it may be possible, it may be found that the production of wealth will be better assisted by leaving provinces to promote the industry for which they have special facilities. (*Hon. Mr. Vithaldas D. Thackersey*, p. 79.)

I.—Art Industries.

81. The export of quantities of badly finished articles is not the way to revive languishing art industries, but a certain means of extinguishing them entirely. (*Mr. Theodore C. Maller*, pp. 340—1.)

82. Indian art wares will have a sufficient market in this country, if steps are taken to develop the latent possibilities of native talent and if Indian gentlemen will make it a point of encouraging native handicrafts in preference to foreign art-ware. (*Do.* p. 341.)

83. The Schools of Arts should cultivate all the arts and handicrafts indigenous within their geographical province, they should freely supply designs and patterns to artisans and, last but not not the least, they should make it a point to give free advice to any craftsman who may be desirous of information or assistance. (*Do.* p. 341.)

84. With the active assistance of existing Schools of Arts, an all India Society for the Promotion of Indian Arts

could do a great deal in preserving and developing indigenous art industries. (*Do.* p. 342.)

85. An All India Arts Exposition should be held once in five years at provincial capitals, to enable the public to make themselves familiar with the productions of all the Indian art industries and to judge of the progress made after each period. (*Do.* p. 343.)

86. Government should give an annual subvention in aid of the above mentioned Society. (*Do.* p. 343.)

87. The production of Delhi and Agra embroideries; embroidered pashmina chudders; carved and inlaid furniture; printed cotton hangings; ornamental silver and metal work; rugs, carpets and ornamental floor coverings, among many other art industries, could be developed into a flourishing export trade, by simply introducing certain mechanical contrivances for giving a superior finish to the wares. (*Do.* pp. 343—4.)

88. In order to enable artisans to bear the cost of such imported tools and machinery, they must first be helped to produce and sell articles of artistic and commercial value. (*Do.* p. 334.)

89. The wealth of our country will be greatly increased if women could be trained in art industries, etc. (*Mrs. P. Mukerji*, p. 339.)

J.—Weights, Measures and Coins.

92. Standard weights, measures and coins should be introduced in British India and the Indian states. (*Mr. T. N. Atre*.)