
Munich Personal RePEc Archive

Technological Slips between the Cup and the Lip: Unlearnt Lessons from Inter-War Colonial Madras

Tyabji, Nasir

Formerly with the Centre for Jawaharlal Nehru Studies, Jamia Millia Islamia

29 July 1995

Online at https://mpra.ub.uni-muenchen.de/49650/
MPRA Paper No. 49650, posted 09 Sep 2013 13:48 UTC

Economic & Political WEEKLY

Technological Slips between the Cup and the Lip: Unlearnt Lessons from Inter-War Colonial Madras
Author(s): Nasir Tyabji
Source: *Economic and Political Weekly*, Vol. 30, No. 30 (Jul. 29, 1995), pp. PE99-PE103
Published by: Economic and Political Weekly
Stable URL: http://www.jstor.org/stable/4403050
Accessed: 31/07/2013 09:15

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at
http://www.jstor.org/page/info/about/policies/terms.jsp

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Economic and Political Weekly is collaborating with JSTOR to digitize, preserve and extend access to *Economic and Political Weekly*.

http://www.jstor.org

This content downloaded from 122.176.10.186 on Wed, 31 Jul 2013 09:15:33 AM
All use subject to JSTOR Terms and Conditions

Technological Slips between the Cup and the Lip

Unlearnt Lessons from Inter-War Colonial Madras

Nasir Tyabji

The establishment of the Government Industrial Institute in Madras in 1919 coincided with the development of chemical engineering as a distinct discipline at the Massachusetts Institute of Technology. It would thus be unhistorical to expect that readymade chemical engineering expertise would have been available to the Industrial Institute. However, other problems at diverse levels, raised by the history of the Institute remain unresolved to this day: the provision of venture capital, infant technology protection, and plain incomprehension of the issues involved. The case of the Industrial Institute clearly forms the prehistory of more recent lunges at self-reliance.

I
Introduction

IT is well recognised that the technological base underlying German industrialisation in the late 19th century was provided by the chemical industry, in contrast to the leading role of textiles in English industrialisation, a century earlier [Schorsch 1980:401-42]. Recent scholarship has added to the understanding of the ways in which nation states which industrialised even later depended on the utilisation of successively more modern generations of technology, the case of electronics in Japan being the most dramatic.

Very recently, analytical work has enabled scholars to understand how American technology in the chemical industry managed to surpass German efforts in the field during the first two decades of this century [Landau and Rosenberg 1992:73-119]. Apart from the obvious disabilities that Germany faced after the first world war, two key issues have been identified. These are the development of the chemical engineering discipline, largely at the Massachusetts Institute of Technology in the US, and the switch from coal to petroleum as the basic feedstock, which decisively moved the raw material advantage in favour of the US.

It is the first issue that is relevant to the analysis of the situation in colonial Madras. Essentially, the point is that while expertise in applied chemistry is important in developing processes for industrial applications, the development of large scale plants for commercial use of chemical reactions requires specific technological knowledge. This is the core of chemical engineering. Although Germany had a distinguished tradition of applied chemical research in industrial establishments, the actual plants were designed and fabricated by mechanical engineers, in contrast to the situation in the US.

This factor does not appear to have been appreciated by the members of the 1916 Indian Industrial Commission (IIC). Although Alfred Chatterton, a distinguished technologist and the initiator of attempts to develop the chemical industry in Madras was a member, the distinction between applied chemistry and chemical technology, and the critical importance of the latter in generating commercially viable plant and equipment seems to have eluded IIC. The discussion which follows uses this hiatus as an explanatory device to organise the empirical details of the inter-war history of attempts to develop the chemical industry in Madras.

The historical importance of these rather patchy efforts lies, also, in the fact that, objectively, they contradicted the logic of imperial fiscal policy. As is well known, this logic discriminated in favour of the export trade in primary commodities, as opposed to the development of industrial production. In this paper, it is exemplified by the effects of the two Retrenchment Committees, which collectively sealed the fate of the initiatives described.

II
Experiments with Fluid Inks

The department of industries, and administrative support to industrialisation, had started in Madras in the early part of the century. After fairly substantial progress had been made in demonstrating the possibility of manufacture of a range of articles, the department was abruptly asked to close down its activities. This order, by the secretary of state for India, followed protest by British manufacturing interests on the grounds that the government was thus going beyond its natural functions.[1]

With the closure of the department of industries in 1910, the focus of attention moved to the department of fisheries under the honorary director, Frederick Nicholson.[2] It was here that examination of the possibilities of fish oil, and then of coconut oil took place, leading to the establishment of the Kerala Soap Institute in 1916 [Tyabji nd].

This Institute had, by the end of the decade, shown the technological and commercial possibilities of soap production from coconut oil on the west coast of the presidency. Hydrogenation of the oil started by the Tata Oil Mills (TOMCO) factory in Ernakulam represented a further stage in the industrial application of the edible oils of the presidency, and these two developments characterise the beginnings of chemical technology in southern India.

The Madras government was allowed to restart the industries department, under very specific conditions in 1914, and during the first world war an effort was made to encourage simple industrial activities, particularly for the war effort.[3] Even before the end of the decade, however, another institution had been set up, again at Frederick Nicholson's initiative, which showed every sign by the end of the 1920s of taking technology to the next stage. This was where both the mineral and oilseed base of the presidency would have been used, in combination, to produce ink for printing purposes, paints, and similar substances. Ultimately, the enterprise failed under the remorseless logic of retrenchment cut-backs in 1932, but in the process it managed to commercialise processes of manufacture of writing ink, and printers ink. The other experiments were aborted by the same pressure of expenditure squeezes.

When Nicholson asked, in 1919, for the services of a chemical assistant for what was then called the industrial laboratory, he had suggested that experiments could be undertaken in the manufacture of vinegar, inks, adhesives, speciality toilet soaps, and in the extraction of volatile oils and essences. These were characterised as experiments in the minor chemical industries suitable for the presidency, and the proposal was passed without any difficulty.

Even before the end of 1920, ink was successfully produced from material said to be easily available but unused for any industrial purpose till then. Some progress was also reported on the experimental manufacture of adhesives and vinegar. On the basis of these successes, the chemical assistant's post was extended for five years, i e, up to 1925.[4]

The technical development of the ink was, in fact, complete and the task lay now in

This content downloaded from 122.176.10.186 on Wed, 31 Jul 2013 09:15:33 AM
All use subject to JSTOR Terms and Conditions

demonstrating its successful commercial manufacture. Research on vinegar and adhesives was still in the experimental stage where, amongst other items, the use of casein for adhesives was being investigated. As Venkataraman Iyer, the chemical assistant, had been appointed for five years Nicholson's proposal for a block extension of the laboratory for the remaining four years was also agreed to, support for this coming from the minister for the development department.[5]

These measures should have added a degree of stability to the Institute's development work, but quite the opposite happened. In March 1922, Nicholson left for England and Venkataraman Iyer was placed in charge of the experiments. Although the Institute's activities were moved to Madras in October 1922, the possibilities of continued supervision of the work by a senior chemist were seriously reduced by the instructions of the first retrenchment committee, that the post of chemical advisor be abolished. Although the government continued the post up to the time the then incumbent retired in 1925, the career prospects for chemists in the government's service did not look promising. The retrenchment committee suggested that greater use should be made of the expertise of the Indian Institute of Science in Bangalore, a logical step in terms of the scale economies of experimental work, but raising a new set of problems, to be discussed later.

The retrenchment committee, in fact, argued that as the technical possibilities of the manufacture of writing ink were proven, the Institute, now renamed the Government Industrial Institute, should be closed. Fortunately, printer's ink had recently been granted tariff protection and the finance secretary's suggestion that the Institute should develop the manufacture of this more complex chemical provided an authoritative case for its continuance. Even otherwise, the commercial feasibility of manufacturing writing ink was still to be explored.[6]

In early 1924, this task was completed with the reported agreement of the superintendent of stationery, Madras, to buy the ink, and the submission of tenders to the Government of India's controller of stationery and stamps in Calcutta. There were also prospects of sales from the Madras and south Mahratta railways, district boards and municipalities. In addition, Taylor and Company of Madras, major importers of ink, were appointed sole agents.[7]

Although the government hoped that by giving this company the sole selling agency they would overcome the unwillingness of dealers, presumably associated with Taylor and Company, to stock the ink, this move did not succeed. Sales were not noticeably higher than in the years before the agency agreement and, as such sales as there were, were to government departments, the rationale for paying Taylor and Company a 5 per cent commission on even these orders was questioned by the audit organisation. It was explained by the director of industries that this payment should be treated as a necessary cost of entering the ink market when imported brands held dominant sway, but the continuing poor sales of ink except to the government itself did not lend much credence to the argument.[8]

Essentially, the problem lay in the fact that while the IIC had provided legitimacy to the role of government in pioneering industry, through the stages of technological and then commercial feasibility, the government had not committed themselves to the financial implications of these measures [Government of India 1918].[9] The philosophy underlying the formation of the retrenchment committee was, in fact, directly opposed to subventions and subsidies for developmental purposes, at least in the field of industry.

In general, 1925, was a turning point in terms of the prospects of the industrial enterprises run by the government. In that year, it was decided that with the provision of state aid to industry, government's efforts would be devoted to laboratory work while experimental production, let alone commercial organisation, would be left to private enterprise.[10] Such a policy also had implications for the continuance of Venkataraman Iyer, in his role as an applied chemist involved in laboratory work. For it was then a small step to argue that laboratory work itself could be more efficiently done at the Indian Institute of Science. What was missed out here was that the stage of demonstrating that a process developed in the laboratory could be scaled up to produce a commercial scale technology was not, and could not be, the responsibility of the Institute of Science. On the other hand, the state aid to industry act was also not designed to provide the sort of venture capital that financing the development of technology essentially represented.

More immediately, the challenge to the claims of the Industrial Institute to have produced a commercially viable ink technology came from the superintendent of stationery. This office refused to buy the special purpose registration ink, used on documents, on the grounds that it was available more cheaply from private sources. In that instance a determined effort by the minister for development succeeded in getting the order for the Institute on the grounds that its inks were of superior quality, not testible by normal government standards, and essential for documents of long term importance registered with the inspector-general of registrations.[11]

The director also argued that no quality standards were laid down beyond the minimum required to pass the test of the chemical examiner which was purely concerned with the composition of the ink, rather than its qualities as a writing medium and its permanency.[12] This, though a valid point if the ink factory's products were of higher quality, was not pressed further in the direction of the laying down of general standards. If the government industrial establishments were indeed to demonstrate the manufacture of products of exemplary quality, this is clearly a step that should have been initiated. In fact, there is little doubt that professionalism in industrial management was seriously lacking.[13]

However, the long-term indications were that there were attempts at dumping by private ink dealers so as to undercut systematically the ink factory's commercial prospects. These dealers appeared to be both Indians and Englishmen. Under these conditions, the government did not agree to sanction the extension of the institute and staff for more than one year at a time and for the remaining seven years of its existence, they worked on the basis of the uncertainty which was inevitable from then on. By the following year, i.e. 1926-27, doubts about the feasibility of extensions of the term of Institute had spread from the finance department to the secretary of the development department, himself. Interestingly, however, the Indian members of the legislative council on the advisory committee on industries and fisheries asserted themselves. A far-sighted proposal, emanating from the secretariat also suggested that the Institute should have a scheme of apprenticeships. Here was the realisation that in the short and medium term, greater political support could be obtained for a scheme of employment-related training, than for any effort at import substitution industrialisation by itself.[14]

The scheme for training apprentices began in July 1926, initially for holders of the SSLC with a background in Chemistry. Four apprentices were to be admitted for a two year course. When, after some dithering, advertisements were placed it was found that there were no applications. On investigation, it was found that the advertisements had appeared in the English press, which did not have the readership likely to be interested in training in a skilled manual trade. The minister for development suggested that fresh advertisements should be placed in the Indian language press and wished to vet the text himself. This development took place after an intervention in the legislative council.[15]

Unless the Institute was to show its long term utility by being successful in training apprentices, it had to demonstrate the commercial viability of ink manufacture and then be transferred to a private entrepreneur. Achieving commercial viability had become difficult with the uncompromisingly commercial orientation shown by the superintendent of stationery towards ink supplies. Of course, this was his job. It was certainly not his concern to take cognisance of the fragile financial status of the ink factory. But with the post 1925 policy on

This content downloaded from 122.176.10.186 on Wed, 31 Jul 2013 09:15:33 AM
All use subject to JSTOR Terms and Conditions

government industrial enterprise, it was not possible for anyone in authority to develop procedures to handle such situations. Recourse had to be taken to *ad hoc* solutions. This probably reflected itself in uncertainty about the prospects of the industry and the demand for apprenticeships.[16]

Proving commercial viability was an equally complex task. Securing regular and large orders from the superintendent of stationery was critical if the ink factory was to be seen to be successful by potential purchasers. This meant that not only was the ink to be of acceptable quality and price, but the tender had to be such as to be able to withstand dumping, as mentioned earlier. However, there were no provision by which a government institution could lower prices beneath those of costs of production so as to be able, temporarily, to withstand this pressure. Only if the office of the superintendent of stationery accepted its own role in pioneering an industry, and granted price preference, could this problem be overcome. Otherwise sales below cost would have been interpreted as conclusive evidence of the unprofitability of the venture.

In 1927, the question arose sharply. The director of industries pointed out that the Stationery department had changed its practice of the previous three years, and accepted a tender for blue-black registration ink from a private firm. In the case of blue-black ink powder, the same firm's offer had been accepted, again breaking the precedent of the previous three years. In registration grade ink for cheques, another private firm's tender had been accepted for two years running, whereas earlier the ink factory had supplied the stationery department.

After mediation by the secretariat, it was agreed that while the orders already placed could not be cancelled, supplies of two ink powders should be provided by the ink factory. However, later in the year the secretariat had again to intervene as agreement could not be reached on the rate at which these supplies were to be delivered.[17]

As the director of industries had claimed that the tenders that has underbid his own could not have been priced at the true cost of production, it is of some interest to examine the background material provided by the department to substantiate their charge. This was based on the sudden rise and decline of successful tenderers, which the department claimed was due to price cutting to a level where the viability of the unit was subsequently affected.

Clearly, the evidence cannot be used to demonstrate the practice of dumping, but what is of interest, is the erosion in the competitiveness of the tenders placed by the ink factory after 1926-27. What makes the problem more complex is the fact that the chief competitors appear to be four Indian ink manufacturers, Alayam Ink Factory in Coimbatore, Bengal Industrial Company of Calcutta, the Excelsior Oil and Technical Works of Poona, and the Premier Ink Works of Madras. Only one of the tenders which outbid the ink factory, by the Students and General Stores, Madras in 1928-29 would appear to be that of a wholesaler rather than a manufacturer. But even here, there is no information that this organisation sold British ink rather than ink made by petty Indian manufacturers. In other words, if the purpose of the ink factory was to demonstrate the technology of high quality ink production, by the mid 1920s, this job seemed no longer necessary [Government of India 1950].[18]

Detailed consideration of the prospects for the commercial success of the ink factory is necessary because the failure to continue to meet the requirements of the superintendent of stationery had serious consequences not only for the factory itself, but for proposals by the department of industries for the initiation of other experiments. The assertive phase of the legislative council continued up to the start of civil disobedience, and till then no decisive steps were taken. But there were problems in selling the assets of the ink factory, and this led to still further doubts about such experiments. Although the ink factory was continued on another yearly extension up to March 1929, the proposal to continue the superintendent (after 10 years of uncertain existence) was postponed to the following year: a step which, in retrospect, sealed his fate and that of the Institute. In the legislative council, too, there was impatience at the apparent listlessness in the Institute, and demands for information of new experiments to be undertaken.[19]

In the course of 1928-29, then, matters came to a head. If the superintendent of stationery was able to get ink of acceptable quality at rates cheaper than those supplied by the ink factory, clearly there was a failure to demonstrate the commercial viability of the process, it was argued. Negotiations for the sale began, though as the ink works were to continue as the basis for experiments in printers' ink and other chemical experiments, there was little to sell except stocks, work-in-progress and the recipes developed by the superintendent. The only potential buyer of the stocks was the superintendent of stationery, who refused to accept them at the valuation by the department of industries. Although the total capital invested in the ink factory was Rs 33,188 at the end of 1927-28, the stocks were valued at Rs 2,776. Thus when Rs 3,000 for the stocks and recipes were offered, they were accepted. This was not, as mentioned, a glorious end to the ink production endeavour, nor to the government's attempt to expand the base of chemical industries.[20] As an earlier director of industries was quoted as saying, the history of the fluid ink factory experiments themselves displayed the problems of marketing an easily manufactured product, in competition with small producers with low overheads.[21]

III
Printers' Ink Experiments

The manufacture of printers' ink involved processes entirely distinct to that of ordinary writing fluids. In many ways, it was a much more testing excercise, one worthy of the efforts of a Government Industrial Institute. Essentially, printers' ink consisted of carbon black, then imported from the US, which was incorporated in a varnish made from boiling linseed oil. The vapour was ignited until the required consistency was achieved. The test to check whether the vapour ignited was dangerous and it was this that qualified the entire process to be considered a complex one.

In the course of the year (1925-26) machinery for the manufacture of printers' ink was ordered from England. Although the superintendent of the government press was not happy with the samples provided to him, private presses in the city were. On a small scale the experiments could be said to be successful, and more machinery and the use of an old government factory building was requested as the work proceeded into its fourth year (1928-29).[22]

It was the vexed question of the conveyance allowance that focused attention on the Institute's rather slow progress. The question raised was of the necessity of the conveyance allowance, originally granted in order to help the superintendent to commute between the fluid ink and printers' ink factories. With the sale of the fluid ink factory, there seemed to be little justification for its continuance. The claim which was advanced for its necessity, although quite plausible in itself, seemed to carry little conviction in the politically tense period leading up to civil disobedience.

The claim was that the work required constant travel and interaction with small printing presses, the larger ones were busy and it was felt unwise to prejudice them with experimental samples. In the small presses, the machines had to be cleaned before and after the experiments, which meant extra trouble for the workmen. This, in turn, required frequent and often infructuous visits to small presses in outlying areas of the city. In addition, different printers varied in their opinion of the results depending on the machines and on the paper used.[23]

This was a good case of the problem of introduction of a new product on the market by an enterprise which was unable, unlike a private entrepreneur, to provide any long-term benefit to the buyer. This disadvantage had then to be overcome by repeated visits, entreaties and probably the promise of benefits to accrue once the superintendent

This content downloaded from 122.176.10.186 on Wed, 31 Jul 2013 09:15:33 AM
All use subject to JSTOR Terms and Conditions

of the ink factory was placed permanantly in a highly coveted government job. However, there was little sympathy for all this in the secretariat and the image of both the superintendent and of the experiments began rapidly to lose credibility.

It is difficult to avoid the feeling that the department of industries displayed a paralysis of will during this period. It put forward proposals without sufficient background work and when these were opposed, appeared to accept the outcome with little more than an expression of disgruntled feelings. It seemed to have been misled by the strong political support which began in 1927, into believing that it had only to advance a scheme for it to be accepted, even when the political situation had clearly changed by the end of the decade and its own ineffective supervision of the ink factory related experiments had substantially reduced its credibility.[24]

However, constraints of a structural form need also to be kept in mind. Some indication of these came in a report that the publication *Tamil Nadu* was prepared to place an order for printers' ink but found that the machinery dealer who also dealt in paper, ink, roller composition and so on refused to guarantee spare parts unless all supplies were bought from him. Here was an example of interlocking markets about which a government institution could do little. Another factor lay in the structure of tariffs-customs duty on lamp black was 15 per cent as opposed to 2•½ per cent on printers ink. Thirdly, it was stated that the consistency of the varnish, made from linseed oil by boiling, was altered by adding amongst other things, a mineral oil not made available locally through either Burmah Shell or the Vacuum Oil Company.[25]

All these factors led to a high cost of production which could be partially overcome, if lamp black itself was made in the country. So, somewhat belatedly, after five years of experiment, lamp black manufacture was instituted. This was obtained by the incomplete combustion of organic substances rich in carbon such as rosin, turpentine, and the roots and other resinous parts of trees. Significantly for Madras, fish and vegetable oils, either fresh or rancid, could also be used to make lamp black. In actual fact, ingenious experiments were initiated on its manufacture from 'dead' and crude oil using a specially devised furnace and collecting apparatus. The yield was about 20 per cent of the oil burnt, and the results seemed to be good enough both for rotary and higher quality printing ink. Coal, too, was also suggested as a suitable material to be tested. However, these experiments were made by a research engineer, specially recruited, whose performance was monitored at three-month intervals. The Government Industrial Institute, itself, and Venkataraman Iyer, its superintendent for 10 years and government employee for over 13 years had both to go on the recommendations of the Second retrenchment committee in the early 1930s. In July 1932, the Institute was to close and the printers' ink enterprise to be handed over to private hands.[26]

The financial stringency which led to the closure of the Institute, also led to the discontinuance of perhaps the most industrially important of the initiatives – the manufacture of white lead used both in white and coloured paints.[27]

In 1926, a proposal to manufacture paint had been dropped because linseed oil was said to be unavailable in the presidency. Although it was recognised that barytes and ochres were important raw materials in addition to linseed oil, the possibility of using the Kurnool barytes deposits was not investigated until five years later. In 1931, the director of industries discovered after a visit to Bangalore that Kurnool barytes were being used by the Bangalore Whitelead Syndicate in a process developed by the Indian Institute of Science during the war. Barytes were largely sent to Calcutta where the English firm Shalimar Paint Company had a plant. It was because this company kept the process a commercial secret that the Institute of Science had to rediscover it. In this case, strenuous argument led to the successful initiation of experiments which were to be discontinued within the same year on the grounds of financial stringency. A proposal to transfer both Venkataraman and the white lead experiments to the Kerala Soap Institute did not succeed. It was argued that the Indian Institute of Science should be increasingly used for such work.[28]

IV
Conclusions

In its 1918 Report, the IIC had legitimised the role of the government in pioneering industry, through the demonstration of the technological and then commercial feasibility of a prototype factory. However, it had not sufficiently noted the then current evolution of the specific discipline of chemical engineering and the impact that this was to have on industrial design and on the production of more cost-effective plants. Nor was it able to offer a solution to the evergreen problem of inducing large institutional buyers to accept an indigenous article, with all the attendant risks, when they had a long tradition of buying imported substitutes with well established trade names. The history of the government Industrial Institute, described in this paper, demonstrates the critical absence of a systematic approach to both these problems.

Concept

EDUCATION AND VALUES IN THE MAHABHARATA

N.L. Gupta

Hardbound Rs. 300

The present book utilises for the first time the vast material on various aspects of education and value-system available in the Mahabharata. The author has made deep study of the subject in all its aspects and dealt with various topics such as the aims of education, educational institutions, the teachers and students, the subjects of education, methods of teaching, examinations, etc. He has quoted profusely from the Mahabharata and other works in Sanskrit in support of his observations. He has given an exhaustive account of branches of learning then prevailing and the masters of learning as visualised in the Great Epic. It is a comprehensive and erudite work on the subject.

Dr. N. L. Gupta is presently working as Assistant Commissioner, Kendriya Vidyalaya Sangathan (Delhi Region), JNU Campus, New Delhi.

Publishers: Ph.: 5554042, 5504042

CONCEPT PUBLISHING COMPANY

A/15-16, Commercial Block, Mohan Garden,
New Delhi - 110059 (India)
Cable : CONPUBCO Fax : (011) 5598898

This content downloaded from 122.176.10.186 on Wed, 31 Jul 2013 09:15:33 AM
All use subject to JSTOR Terms and Conditions

It also shows that import duties, by modifying the price ratios between the raw materials necessary for the manufacture of an article, and its imported substitutes, can affect the economic viability of plant which may be intrinsically efficient. Finally, it shows that venture capital is a form of financial advance quite distinct to a loan, and that while individuals like Nicholson were for short periods able to operate with an advance in a decidedly venturesome way, eventually the government of Madras' financial conservatism prevented the consolidation of the Institute's contribution to technological knowledge. For all these reasons, the Government Industrial Institute in Madras, born in 1919, led a Soloman Grundy like existence until its death in 1932.

Notes

[Revised version of a paper presented at the conference of the Cambridge-Delhi-Leiden-Yogyakarta project on the Transfer of Science and Technology between Europe and Asia, Istanbul, October 1994. I am grateful to Ashok Parthasarathi and Ghayur Alam and Ravinder Kumar for their comments, and to the Indian Council of Historical Research for a travel grant which made my participation in the conference possible.]

1 The report of the Department of Industries for 1919-1920 in Rev (Spec) 4, January 3, 1921 contains the major landmarks in the fortunes of the department from the initial proposal in 1905, the expression of European opposition to it in 1908, its closure in 1910 and a legislative council resolution opposing this step in the same year, reconsideration of the question in 1912, and its re-establishment in 1914. For the history of the department's activities in the earlier period, see Sen (1972), Swaminathan (1988).

2 Frederick Nicholson played a critical role, not only in various industrial experiments in Madras, but also in the development of the agricultural co-operative credit system. For details see Bruce L Robert (1979). There is an interesting vignette of his role in the Madras of the 1920s in Slater (1936).

3 Revenue G O No 892 (Press) of March 21, 1914 for the orders to restart the department of industries. Revenue G O No 2802 (Press) of September 26, 1914 and No 3468 (Press) of November 30, 1914 for details of some industries in the presidency. Revenue (Special) G O No 374 (Ms) of September 13, 1918 for the steps taken to start industries for the war effort. (All references to Government Orders (GO) refer to records of the Government of Madras, kept in the Tamil Nadu Archives, Madras.)

4 Rev (Spec) 1243 June 24, 1919; Rev (Spec) 859 May 4, 1920, Rev (Spec) 2004 November 16, 1920.

5 Dev 1698 September 12, 1921; Dev 1751 September 17, 1921, Dev 1991 October 22, 1921

6 Dev 1082 August 16, 1922; Dev 168 January 30, 1924.

7 Dev 449 March 12, 1924; Dev 587 April 1, 1924; Dev 1784 October 20, 1924; Dev 2063 December 3, 1924.

8 Dev 2161 December 19, 1924.

9 The Industrial Commission's recommendations on pioneering and demonstration factories are on p 159 of its report.

10 Dev 1500 October 19, 1925; the ink factory was declared a commercial concern in the year 1924-1925, Dev 15 January 1, 1925. The audit report for the year is in Dev 1181 August 14, 1925. See also Dev 1409 September 25, 1925 for the bonus paid to the staff.

11 Fin 703 August 22, 1925.

12 Dev 1792 October 22, 1928.

13 It had, for instance, to be pointed out to the director of industries by the commercial audit that if the superintendent of the ink factory was involved both in commercial ink production, and in experimental work, his salary should not be entirely debited to the commercial accounts of the ink factory. As a rule of thumb, thereafter, half of the salary was set against the experiments and the other half for ink production. As this appeared to have been done entirely at the Directorate without any investigation of the actual situation, this may well have continued to raise artificially the costs of production of ink due to superintendence charges. Dev 1827 November 9, 1927.

However, mention may be made here of an attempt (unfortunately, rather rare) to handle one question, that of high overheads inevitable in a government concern, in an imaginative manner. This arose in connection with the problem of the preparation of raw material for ink production, and the cleansing of used jars for storing newly manufactured ink. If sequentially undertaken, these tasks would have taken up a substantial amount of the working time of the few lascars appointed for the purpose. This time could be saved if these tasks were undertaken at night, outside official working hours. However, in the absence of substantial overtime payment, the lascars would, for good reason, have been unwilling to work at night, and overtime payment was not an item that government easily accepted. A way out was found by appointing the lascars as night watchmen, by which means payment for their work at night was sanctioned. Unfortunately, this was not the major issue affecting the prospects of the industrial institute. Dev 412 March 20, 1925.

14 Dev 1434 October 3, 1925; Dev 1576 November 4, 1925.

15 Dev 1030 July 19, 1926; Dev 560 April 12, 1927.

16 Dev 741 May 20, 1927.

17 Fin 556 August 8, 1927; Fin 265 April 12, 1928.

18 Interestingly, Madras seems to have been in the forefront of ink manufacture, with Krishnaveni Inks having started manufacture as early as 1920, after 6 years of experiments on fountain pen ink. Between 1920 and 1930, several more firms were established.

19 Dev 2045 November 30, 1927; Dev 479 March 15, 1928; Dev 31 January 5, 1929.

20 Dev 2083 December 8, 1928; Dev 2145 December 19, 1928; Dev 210 February 2, 1929; Dev 829 May 9, 1929; Dev 2183 December 7, 1928.

21 Dev 82 January 15, 1930

22 Dev 484 March 29, 1926; Dev 623 April 23, 1926; Dev 618 March 31, 1928.

23 Dev 1668 October 4, 1929; Dev 1602 September 25, 1929.

24 Bagchi has referred to the general "paralysis of will" of the administration during the inter-war period [Bagchi 1972:47]. After the Lahore session of the Congress in December 1929, the party boycotted the legislative assembly and took no further interest in legislative debate on economic policy. The elections in September 1930 led to the formation of a minority Justice Party ministry with little power, and an opposition with even fewer members and even less authority [Krishnaswamy 1989:215-216].

25 Dev 2026 November 5, 1930.

26 Dev 583 March 26, 1929; Dev 1160 August 4, 1931; Dev 524 April 14, 1932; Dev 1145 August 23, 1932; Dev 54 January 14, 1933.

27 For this, lead bars were melted and made into threads which, when acted on by acetic acid, produced lead acetate. Mixture with litharge converted this to basic lead acetate after which white lead was obtained by carbonation. Removal of water and addition of linseed oil formed a white paste to which was added machine powdered barytes. Dev 106 January 25, 1932.

28 Dev 1435 October 7, 1926; Dev 740 May 19, 1931; Dev 524 March 14, 1932.

References

Bagchi, A K (1972): *Private Investment in India 1900-1939*, Cambridge University Press, Cambridge.

Government of India (1918): *Indian Industrial Commission 1916-1918: Report*, Calcutta.

-- (1950): *Report of the Indian Board on the Fountain Pen Ink Industry*, Ministry of Commerce, Delhi.

Krishnaswamy, S (1989): *The Role of Madras Legislature in the Freedom Struggle 1881-1947*, Indian Council of Historical Research, New Delhi.

Landau, Ralph and Nathan Rosenberg (1992): 'Successful Commercialisation in the Chemical Process Industries' in Nathan Rosenberg et al (eds), *Technology and the Wealth of Nations*, Stanford University Press, Stanford.

Robert, Bruce L (1979): 'Agricultural Credit Co-operatives in Madras 1893-1937: Rural Development and Agrarian Politics in Pre-Independence India', *Indian Economic and Social History Review*, XVI, 2.

Schorsch, Louis L (1980): 'Direct Producers and the Rise of the Factory System', *Science and Society*, XLIV.

Sen, S P (1972): *Studies in Economic Policy and Development in India*, (1848-1939), Progressive Publishers, Calcutta.

Slater, Gilbert (1936): *Southern India*, Allen and Unwin, London.

Swaminathan, Padmini (1988): 'State Intervention in Industrial Development: A Case Study of Madras Presidency', paper presented to the seminar on *South Indian Economy and Society c 1914 - c 1945*, Centre for Development Studies, Thiruvananthapuram, April.

Tyabji, Nasir (nd): *The Genesis of Chemical-Based Industrialisation: The Case of Oil Seeds in Madras up to the Depression*, (mimeo), Working Paper No 93, Madras Institute of Development Studies, Madras.

This content downloaded from 122.176.10.186 on Wed, 31 Jul 2013 09:15:33 AM
All use subject to JSTOR Terms and Conditions