CHAPTER – III
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Agriculture and Concept of Environment in Higher Education in India

It is not, however, with General Education, but with Agricultural Education particularly, that I am concerned. At the outset it must be borne in mind that, by the Government Resolution of 1889 on Technical Education, the Agricultural Departments have had put upon them specifically the duty of "taking positive measures for the education of the rural classes in the direction of agriculture."

- John Augustus Voelcker, 1893

From the point of view of agricultural development, we need not emphasise the importance of the part that the universities must play in educating those who will become the administrators, the technologists, and the research workers of the future.

- Royal Commission on Agriculture in India, 1928

We concern ourselves in this chapter with 'agriculture' and 'environment' as part of the curriculum of higher education in India. Yet, agricultural education cannot be taken out of its connection with general education. Given our conceptual framework, the British Raj was founded on the 'right of conquest', that is, on Politics of Power over Land and People of India. But 'its continuance depended more upon how much acquiescence and consent it was able to elicit from its subjects.' Education, as ever, was a great tool in eliciting compliance. Therefore, we approach the subject of education -general or agricultural- in the light of an effect analysis of the nature of education before and after 15 August 1947 for a better understanding of the correlation between education and agriculture, and of their correlation with environment in the twin contexts of colonial (pre-Republic) and post-colonial (Republic of) India. After all, education helped maintain the British rule in India for close to two hundred years; and, again, it is education which nourished the Republic of India, however haltingly.

We already know that during the period of our study, the great majority of the people in India consisted of persons whose main occupation was the cultivation of the land; that is, agriculture was a way of life for most people. These people-the cultivating classes- no doubt, therefore, formed the great majority of the population. This class was very

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2 Royal Commission on Agriculture in India, 1928, Abridged Report (Reprinted 1983), Agricole Publishing Academy, New Delhi, 544.
backward in education.* But although the Indian agriculturist was largely illiterate, he knew his profession very well. He was not able to read and write but he knew what crops were good for what soils and he was not inclined to waste his money and labour where he was not to get a proper return. By the experience that he and his forefathers had gained, he had become wiser and knew what crops were good for what climate. However, during the period of our investigation, the Indian agriculturist, along with his other Indian brethren was ‘educated’ enough to ask the colonial masters to ‘Quit India’. Therefore, to borrow Dr. J.A. Voelcker’s (1893) words:

It has been well said, and cannot be too often repeated, that “India is a country about which one cannot make a ‘general’ remark,” and, certainly, with regard to Indian agriculture, this is strictly true; therefore, if I am asked whether the agriculture of India is capable of improvement, I must answer both “Yes” and “No”. On one point there can be no question, viz., that the ideas generally entertained in England, and often given expression to even in India, that Indian agriculture is, as a whole, primitive and backward, and that little has been done to try and remedy it, are altogether erroneous. At his best the Indian raiyat or cultivator is quite as good as, and, in some respects, the superior of, the average British farmer,...Nor need our British farmers be surprised at what I say, for it must be remembered that the natives of India were cultivators of wheat centuries before we in England were. It is not likely, therefore, that their practice should be capable of much improvement...to take the ordinary acts of husbandry, nowhere would one find better instances of keeping land scrupulously clear from weeds, of ingenuity in device of water-raising appliances, of knowledge of soils and their capabilities, as well as of the exact time to sow and to reap, as one would in Indian agriculture, and this not at its best alone, but at its ordinary level.5

Even so, the Indian agriculturist had laboured under the limitations of politics of power over land and people, i.e., he was accustomed to rajaneeti for thousands of years, including, unfortunately, even in the Republic of India. As we have seen in the previous two chapters, with the British conquest of India, in historical terms, by the mid-19th century, Politics of Power over Land and People reached its pinnacle (perhaps more perfect than that may never be) in India’s history, in fact as well as in effect; the rajaneeti of Indian variety of rajatantra was overpowered, and finally subdued in 1857 by the

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* According to Mahatma Gandhi: “By education I mean an all-round drawing out of the best in child and man—body, mind and spirit. Literacy is not the end of education nor even the beginning. It is only one of the means whereby man and woman can be educated. Literacy in itself is no education.” (The Harijan, July 31, 1937) —quoted in C.J. Varkey, The Wardha Scheme of Education, Exposition and Examination, Humphrey Milford Oxford University Press, 1939, 17

4 Mr Govind V. Deshmukh, a Non-Muhammadan Member from Nagpur Division in the Legislative Assembly on 10th March 1943, LAD, 942.

5 John Augustus Voelcker, op.cit. 10-11.
British Colonial Politics of Power over Land and People. "The Raj was more than just the army or the bureaucracy; it represented a culture and a way of life substantially different from the way of life of those it had subordinated. How was this difference perceived at both ends? The colonial imperative was to make this difference more visible - more transparent - in order to show the 'utility' of one and the 'absurdity' of the other." 6

Certainly, this Raj 'Culture' and 'Way of Life', back home in Britain, was the product of the indigenous culture of politics of power over land and people. Therefore, the need arose to educate the natives in the language of the new rulers to be able to convey and teach all the other values of British Raj-tantra in order to establish T.B. Macaulay's 'imperishable empire' in India. One can teach only what one knows; so could Macaulay teach only what he knew: he was well versed in the Politics of Power over Land and People of British variety, including its language of communication. Education was an important tool in this project. It masked the intentions and controlled the results. It established Western hegemony in a way no army could have done. 7 For example, even before T.B. Macaulay was in India, in a letter dated the 8th September 1824, Lieutt. T.B. Jervis, employed on a Statistical Survey on South Konkan reported on the state and system of education in India, "and of the most effectual means to obviate their defects, from which it is inferred that a prudent interference for the general improvement and extension of instruction on the part of Government, would be not only the wisest plan of securing the affection of the people, but in the highest degree instrumental to the permanency of our authority, and the interests of every class of the community." 8

We have it from Arnold Toynbee that: 'the government of a widespread empire, embracing

6 Deepak Kumar, op.cit. 113.
* The title of one of the lessons in a school textbook was "Advantages bestowed over her subject races by Her Majesty Queen Victoria". - A. Rahman, 'Problems and Perspectives' in Deepak Kumar, ed, Science and Empire, Essays in Indian Context (1700-1947), Anamika Prakashan, 1991, 1.
* Bernard S. Cohn, 'Representing Authority in Victorian India' in his An Anthropologist among the Historians and Other Essays, OUP, 1987, 632-682.
7 Deepak Kumar, op.cit. 113-114.
* The surveyors were cautioned "against exciting any fears in the people that their freedom of choice in matters of education would be interfered with." "But it would be equally wrong to do anything to fortify them [i.e. the people of the Madras Presidency] in the absurd opinion that their own rude institutions of education are so perfect as not to admit of improvement." quoted in Dharampal, The Beautiful Tree, Indigenous Indian Education in the Eighteenth Century. Biblia Impex Private Limited, New Delhi, 1983, 78.
all, and perhaps more than all, the domain of an entire civilization, may find the traditional privileged minority inadequate or unsuitable for supplying the imperial government with the administrators that it needs; and then this government may deliberately call into existence a new class of educated people to fill or supplement the ranks of its administrative hierarchy. A wholly new "intelligentsia" may be called into existence by an imperial government that has become converted to an alien culture or has brought an alien culture in with it. This was one of the effects of the "reception" of western culture in Russia after the reign of Peter the Great, and of the introduction of Western culture into India by the British Raj.

Dr. J.A. Voelcker's *Report on the Improvement of Indian Agriculture* (1893) did not attempt any description of the crops or of the methods of agriculture pursued, and confined to matters in which it believed that improvement could be effected, but bemoaned: "There is very little doubt that the tendency of education in the past has been too much in a purely literary direction, and that it has been diverted from, rather than turned towards, the staple industry of the country, viz., agriculture." That, as a result, "it is found that the tendency of education at the present time is to draw the rising generation away from the land, and to give a purely literary training, which ends in a young man making his aim the obtaining of a post under Government, or the following of the profession of a "pleader" in the Courts." That "the young man, after receiving his education, seldom goes back to the farm, but soon sees that the best chance of utilizing his education is at the Bar, or else in Government employ; the student at an Agricultural College will rather take a Government appointment worth Rs. 50 a month than devote himself to the management of his farm, or superintend that of some one else; and, lastly, there is a general impression that everything pays better and is more dignified than farming. As a well-to-do landed proprietor at Madura expressed it to me, "the cleverest son is sent to the Law, the next into Government employ, the dullest one goes to Agriculture or else to Trade." Nevertheless, in view of the opinion of Dr. Voelcker, perhaps education in agriculture was not required in India, although agriculture gave

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10 Ibid.
11 John Augustus Voelcker, op.cit.
occupation, directly and indirectly, to the vast majority of the population of India; more over, the British were here not to improve agriculture but to extract revenue. With so much of revenue collection work to be done, where was the time to improve agriculture? In any case, in order to improve Indian agriculture, it was necessary to be thoroughly acquainted with it, and to learn what adaptation was needed to suit modern and more scientific methods and maxims to the Indian staples and climate.¹³

**Teaching British Politics of Power over Land and People**

The study of science and politics has never ceased to fascinate principally because science, for many, has donned numerous faces, from being conceived as a disembodied object of investigation to one that is infused with the ideological concerns of the time.¹⁴ No wonder then that a number of Indian scholars have engaged in incisive critiques of “modern western Science” and its complicity with colonial rule.¹⁵ It is a truism that science and its applications are potentially universal, and so are arts and morals, literature and laws potentially universal. For example, irrespective of Queen Victoria’s proclamation, Euclid was already, as elsewhere, *universal* in India. The need was to make loyalty to the ‘Royal Person’ of the English Crown, and the other related values *universal* in India: values of the ruled *ought* to be identical with those of the rulers for the convenience of the latter. Therefore, as Kalidasa (1ˢᵗ c.), so Shakespeare (b. 1564): separated widely in space and time, both were staunch supporters of *the* Politics of Power over Land and People i.e., of rajatani, though the one Indian, the other English in thought, expression, belief, faith, worship, and choice of characters for his plays. Therefore, not Euclid, not science, but *the* arts; not Kalidas but Shakespeare and Milton and Bentham and John Stuart Mill¹⁶ were fit and proper study-material for colonial India.

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¹² Ibid. 379.
¹³ Ibid. 12.
¹⁶ That this value was well imbibed by India is testified to by the motion of ‘Loyal Congratulations to His Majesty King George VI, Emperor of India, upon his accession, and an assurance of devotion to His Royal Person’ moved by Sir Nripendra Sircar (Leader of the House) on 25.1.1937 and so adopted by the Legislative Assembly, with Mr. President (The Honourable Sir Abdur Rahim, K.C.S.I., Kt.) in the Chair: “That this Assembly do convey to His Majesty King George VI, Emperor of India, loyal congratulations upon his accession and an assurance of devotion to His Royal Person.” LAD, 25.1.1937, 182.
¹⁷ Mill’s *History of British India* was to remain the hegemonic textbook of Indian history throughout the nineteenth century.
No wonder then that 'their texts were used at one time to supply religious values that could be introduced into the British control of India in no other way.' Therefore, knowledge of the English language was ticket to the professions. For example, even among relatively well-educated Tamil Brahmin males, only about 11 percent were (in 1911) literate in English. So, those who did speak and read it were, in obedience to the law of supply and demand, propelled onto the fast track. As a clerk, even a smattering of it got an 'extra few rupees' pay. It was the ticket of admission to the professions. Nevertheless, at the Educational Conference held at Wardha on 22 and 23 October 1937 under the presidency of Mahatma Gandhi, the Agenda stated that English, having been made the medium of instruction in all the higher branches of learning, had created a permanent bar between the highly educated few and the uneducated many. It had prevented knowledge from percolating to the masses. This excessive importance given to English had cast upon the educated classes a burden which had maimed them mentally for life and made them strangers in their own land. Absence of vocational training made the educated classes almost unfit for productive work and harmed them physically. That is, the contemporary system of education did not meet the requirements of the country in any shape or form. Thus T.B. Macaulay's 'imperishable empire' in India could be established by three means: (a) attributing cognitive authority to the bearers of Western culture in the colonies, (b) centralization of the function of production of knowledge in the imperial metropolis, as distinct from limited knowledge-transmission functions which were carried on in the schools and colleges in the colony, (c) the marginalisation, tantamount to de-legitimation, of knowledge systems and educational institutions

16 Gauri Viswanathan, op.cit. 169.
18 C.J. Varkey (Parliamentary Secretary to the Minister for Education, Government of Madras), The Wardha Scheme of Education, Exposition and Examination, op.cit, 4.
indigenous to the colony.\(^{19}\) Therefore, if the Sun was \textit{not} to set on the British Empire, the courses and facilities, policies and procedures, requirements and opportunities- some of the tools with which a given society in history educated its young- of the colonial educational process geared to that end. In colonial India education was an instrument of colonial hegemony.\(^{20}\) Therefore, the colonial model of the educational process was essentially about managing and disseminating knowledge rather than about its production. Universities set up by the colonial state in mid-19\(^{th}\) century laid down the syllabi, conducted examinations and regulated affiliated colleges. Research found expression outside colleges and universities, in the proceedings of learned societies. Universities were state apparatuses and their personnel, government servants.\(^{21}\)

Although, the primary function of the new institutions of education, created by the British, was to provide cheap labour for the middle and lower ranks of the colonial administrations, it has been argued that more important than the task of creating a semi-literate army of clerks was that of drawing the Indian intelligentsia into a relationship of sympathy with the colonial order. The basic objective of British educational policy in India, therefore, was to provide a new discourse which drew the intelligentsia into a collaborative relationship with the colonial State.\(^{22}\) However, Antonio Gramsci, writing on the relations of culture and power, held that cultural domination worked by consent and could (and often did) precede conquest by force. Power, operating concurrently at two clearly distinguishable levels, produced a situation where “the supremacy of a social group manifests itself in two ways, as ‘domination’ and as ‘intellectual and moral leadership’ ....It seems clear...that there can, and indeed must be hegemonic activity even before the rise to power, and that one should not count only on the material force which power gives in order to exercise an effective leadership.”\(^{23}\) No wonder then that the Congress Working Committee in its Resolution on ‘Purna Swarajya Independence Day’ adopted on January 26\(^{th}\), 1930 bemoaned: “Culturally, the system of education has torn us


\(^{20}\) Ibid.

\(^{21}\) ‘Reward Research, Rid The University Of The Raj’, \textit{The Economic Times}, Friday 17 June 2005, 14.

\(^{22}\) Ravinder Kumar, \textit{The Emergence of Modern India, Retrospect and Prospect}, IIAS, Shimla, 1990, 25-6.
from our moorings and our training has made us hug the very chains that bind us."²⁴

**Education to Exploit and Develop India’s Resources**

From the following extracts from Dr. J.A. Voelcker’s Report (1893), it may be surmised that towards the end of the 19th century, the neglect of agricultural education from the colonial point of view was acutely felt:

> The fault of our educational system is that nothing in the scheme of instruction sufficiently connects the knowledge to be acquired by the son with the cultivation of the paternal acres. (Sir Edward Buck’s Minute on Technical Education, 1886.)

> The education given has little or no connection with a lad’s after-life. There is nothing in it to teach him to farm, it does not teach him to observe or think about, or think new thoughts about his processes and products. (Mr. F.A. Nicholson on the Condition of Anantpur, 1887)

> There is need of something more than a purely literary curriculum...our graduates...have schemes by the score for reforming the Empire, but no idea of exploiting and developing its resources. (Sir A. Mackenzie’s Minute on Technical Education, 1890.)²⁵

The British Government in India was perhaps the largest estate holder in the world and its sole beneficiary. Even so it ignored any scientific instruction in agriculture for a very long time.²⁶ In 1839, a contemporary complained that ‘in Germany, in servile Russia, in bigoted Spain, in distracted Italy, we find schools and professorships of agriculture, but in British India depending wholly on the soil for its revenue, there is nothing of kind.’ The Court kept quiet about it; perhaps it was too obsessed with the acclimatization of foreign seeds to think of agricultural education and research.²⁷ Nevertheless, the story of the British colonial cotton policy that shaped British colonial agricultural policy is informative, interesting, and instructive, politically, economically, and ecologically. In India, the first proposal for a special Department of Agriculture originated with the Commission appointed after the great famine in Bengal and Orissa in 1866. The proposal was, however, considered premature and was dropped. It was revived in 1869 at the instance of the cotton trade, a trade which frequently exercised considerable influence in shaping the agricultural policy of the Government of India. In that year, the Secretary of

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²⁵ John Augustus Voelcker, op.cit. 379.

²⁶ Deepak Kumar, op.cit. 125.
State for India forwarded correspondence with the Manchester Cotton Supply Association for the consideration of the Government of India. The association urged that measures should be undertaken for the improvement of cotton, the crop in which it was primarily interested, and that a separate Department of Agriculture should be established in each province. The representation of the Association provided a stimulus to the serious consideration of the question of agricultural improvement. The Department of Revenue, Agriculture and Commerce of the Government of India commenced to function in June, 1871, and continued to do so until 1879 when financial stringency necessitated a re-shuffling of portfolios. It cannot be said that the department, while it lasted, exercised any real influence on the problems of agricultural development. It was in 1827 that the seed of coloured cotton was first introduced in India in the Madras Presidency. This coloured cotton-khaki was commonly known as Nankin cotton. It was of Chinese origin and it was from this cotton that the Chinese manufactured the beautiful Nankin cotton. It was popular on account of its cheapness and durability. At one time it was exported by China in large quantities but by the 19th century its export ceased. This cotton, a few years later, found another way of coming to India. From Tibet it reached the sub-Himalayan tracts of northern India. In 1838, the Agricultural Society of Meerut sent samples of cotton grown in their garden from the produce of Nankin seed to the Agricultural Society of Calcutta. The real encouragement to the cultivation of coloured cotton in India was given when an order was issued in July 1879, by the Commander-in-Chief directing that the summer uniform of all Native Infantry Regiments should be khaki in colour. It was felt that this colour was best suited for field service in the country. The problem, however, was that the cotton mills in India, so far, had failed in dyeing the yarn in khaki before the cloth was woven. As a result, a uniform shade of khaki colour could not always be obtained. The possibility of obtaining uniformity of colour induced the Commander-in-Chief to try the cultivation of coloured cotton in India. As a result, the military department took the

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27 Deepak Kumar, op.cit. 51.
28 Royal Commission on Agriculture in India, (1926), Abridged Report (Reprinted 1983), Agricole Publishing Academy, New Delhi, 15. -As for provincial expansion during this period, the only province in which a separate Department of Agriculture was established was the North-West (now the United) Provinces. This was due to the fact that the Lieutenant-Governor, Sir John Strachey, had been a Member of Lord Mayo's Government and believed that substantial development could only come from provincial departments of agriculture and not from a government secretariat.
initiative and eventually the seeds of Nankin cotton were distributed to all Presidencies by the Department of Revenue and Agriculture of the Government of India. This cotton was grown on a very small scale, mostly as a botanical curiosity in the Madras Presidency. It was extensively grown in Bengal. Experiments were made in the Saharanpur Gardens and in the Kanpur district as well and cloth too was manufactured from it. It was successfully grown in Punjab. In Bombay Presidency, it was tried at the Ganeshkind Botanical Garden and at the Model farms at Bhadgaon and at Hyderabad in Sind. It was tried in the Central Provinces as well. Thus almost all local governments responded favourably. An attempt was also made to seek a superior variety of coloured cotton. The seed of the best variety of cotton was procured from Oman as it was found that a superior variety of cotton was cultivated in certain parts of Arabia. This seed was also distributed to the provinces with a suggestion that proper care should be taken so as to avoid its hybridization with other varieties of cotton. Cultivation of the naturally coloured cotton was not easy though, as there was no private demand for this cloth. The demand was only from the Indian Army and perhaps also from the Frontier Police. It was, therefore, necessary to comply with the Army’s main requirements like uniformity in shade, no change in the shade on wearing, durability of cloth and a reasonable price. It was observed that the product of the same plant was not always of the same shade. For instance, some bolls were pure white, some bolls born coloured, on the same plant. This, however, was not only in case of experiments in India; it was observed in China as well. Sometimes, the Nankin cotton easily hybridized with the ordinary white variety cotton. In this case the coloured cotton used to become lighter in shade. This was observed in the cultivation at the Nagpur Central Jail. It was suggested that this could be checked by careful selection of seeds. Though the uniformity in shade was confirmed in case of Colonel Angelo’s experiments, it was found in some cases, that the same plant produced more than one shade of cotton. To shorten the story, the Director of Agriculture suggested that these experiments be discontinued, as the staple was ‘short, irregular and wasty’ though having yellowish brown colour. It was also adversely affecting the production of varieties of white cotton by getting hybridized with them. The experiment came to an end when in 1887, the Government of India informed that the cloth produced from Nankin cotton was declared unsuitable for army purposes and that the Government
of India could no longer guarantee a demand for the cotton. The experiment had to be discontinued as there was no demand from common people for this cotton.\(^{29}\)
The moral of this long story, besides indicating the kind of occupation the British were engaged in India all this time, along with acclimatizing there own selves, is that, it also only proved the truism that there is a circular interaction between agriculture and environment; and between culture and environment.\(^{29}\)

Under the Government of India Act, 1919: ‘With the exception of forests, elsewhere than in Bombay and Burma, and irrigation, the administration of all the departments which are closely connected with rural welfare, agriculture, veterinary, co-operation, local self-government, medical, public health and sanitation and education, has been transferred in all the major provinces, now known as “Governors’ Provinces”, to the Governor acting with a Minister.’\(^{30}\) It also met the needs of decentralisation within the colonial context.

Almost two months before the constitution of the Royal Commission on Agriculture, the Thirteenth Science Congress was held during 31 January-5 February 1926 at Bombay. Albert Howard, the General President, almost set the agenda for the Commission in his Presidential Address. Accepting ‘that some of the greatest developments in agriculture, even at the present day, have been brought about by empirical means, central to his address were two things: one, the influence of science on practice of agriculture and, second, the lessons which agriculture ‘has taught and is still teaching the scientific investigator.’ The application of Science to Agriculture was a comparatively modern development. Since 1834, when Boussingault laid the foundations of Agricultural Chemistry, an increased and increasing amount of attention was devoted to agriculture by men of Science. Admiring the ‘care and skill which have enabled the cultivator to grow a semi-aquatic crop like rice on the steep hillsides of India and Ceylon’, Howard said: “In this development, Science has played no part and even now has not completed the preliminary analysis of the factors involved in the growth of the chief cereal of the tropics.” The discovery of the right use of irrigation water was one of the chief tasks

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\(^{29}\) It is perhaps purely coincidental that eventually the khaki cotton gave the most visible livery of British imperial might as the khadi cotton that of the Indian freedom struggle; in one there was the use of natural environment for politics of power, in the other for politics of rights.

\(^{30}\) *Royal Commission on Agriculture in India*, 1928, op.cit. 35.
before the Agricultural Department in India. For the canal to pay its way and to bring in the greatest revenue, the water had to be distributed so that the most expensive crops like cotton and sugarcane could be grown. When, however, carefully examined, the growth of the same crop under canal irrigation and under normal rainfall, interesting differences were detected. The irrigated crop as a rule did not appear to be quite at home; the standard of cultivation under a canal tended to deteriorate; patches of alkali land often appeared and grew in size and there was a tendency for the villages to become malarious. In some places, as for example on the Nira canal in Bombay, the wheel of life was brought to a stand-still altogether by the land becoming a wilderness of alkali on which nothing could grow. There were indications that the food value of the same cereal depended on the conditions under which it was grown. In short, agricultural experience was also wanted to determine the amount of water which a crop required and its distribution through the period of its development in order to produce its maximum yield. The problems which centred round irrigation and disease during the period of our study were typical of those which even now await solution by the man of Science. Since then men who could integrate and who could apply several Sciences to an art like agriculture were constantly needed for all kinds of applied work. To advance Pure Science the specialist was also essential. How far could these two different classes be trained together and at what point must they begin to follow different roads? This was a matter of organisation of teaching in the universities. David Ludden suggests: “Though many old texts from India contain knowledge about farms and farming, they do not depict agriculture as a distinctive subject of study”, and that “colonialism created agriculture as a subject of study, an object of observation, analysis, and manipulation by the social classes whose written legacy dominates the historical record.” Therefore, from the consideration of the general educational system of India, we now turn to that of higher agricultural education. The Royal Commission on Agriculture (1928) suggested:

It is essential that India should become self-contained in the matter of higher agricultural training at an early date. The interests of agricultural development in the country generally require that

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32 Royal Commission on Agriculture in India, 1928, op. cit, 351.
provision should be made for post-graduate study in all branches of agricultural science. There can be no question that, in existing conditions, the only institution in India, in which facilities for such study can be provided is Pusa. In any event, financial considerations and the difficulty of recruiting the requisite staff makes it undesirable, in our view, that there should, at present, be more than one institute specializing in post-graduate training in agriculture in this country.  

The whole of our period of study was dominated, where agriculture was concerned, by the Royal Commission on Agriculture in India Report (1928) by “Our Right Trusty and Entirely-beloved Cousin Victor Alexander John, Marques of Linlithgow, Officer of Our Most Excellent Order of the British Empire” as commanded on ‘the twenty-third day of April 1926, in the sixteenth year of Our Reign’ “By His Majesty George the Fifth, by the Grace of God, of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas King, Defender of the Faith, Emperor of India”. This was a new discourse, but under the auspices of British Colonial Politics of Power over Land and People about which the best tribute was paid way back in 1852-53 by Tipu Sultan’s minister: “We are not afraid of what we do see of the British power, but of what we do not see.”

What was seen was declared by the King in the following four commandments of “do’s” and “don’ts”:

Whereas We have it expedient that a Commission should issue generally to examine and report on the present conditions of agricultural and rural economy in British India, and to make recommendations for the improvement of agriculture and to promote the welfare and prosperity of the rural population; in particular investigate:

(a) the measures now being taken for the promotion of agricultural and veterinary research, experiment, demonstration and education; for the compilation of agricultural statistics; for introduction of new or better crops and for improvement in agricultural practice, dairy farming and breeding of stock;

(b) the existing methods of transport and marketing of agricultural produce and stock;

(c) the methods by which agricultural operations are financed and credit afforded to agriculturists;

(d) the main factors affecting the rural prosperity and welfare of the agricultural population; and to make recommendations subject to the limitations that it will not be within the scope of the Commission’s duties to make recommendations regarding the existing systems of land ownership and tenancy or of assessment of land revenue and irrigation charges, or the existing division of functions between the

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15 Royal Commission on Agriculture in India, 1928, op. cit, 59.
17 Gauri Viswanathan, op. cit, xi.
Government of India and local Governments; but the Commission shall be at liberty to suggest means whereby the activities of the Governments in India may best be coordinated and to indicate directions in which the Government of India may usefully supplement the activities of the local Governments....

Agricultural Science in University Curriculum

The Commission did not find as satisfactory, the position of the Indian universities in regard to agricultural research. The Madras, Bombay, Nagpur and Lahore universities had faculties of agriculture. The Calcutta and Benares universities had a Chair of Agriculture each. But at no Indian university steps were taken to bring agricultural research into close relationship with the other branches of science taught at the universities. Agricultural research was regarded as entirely a matter for the government agricultural colleges. "We look forward to a state of affairs in which the universities will not only initiate agricultural research but will also undertake schemes of research, the importance of which is brought to their notice by the agricultural departments...It is with a view to facilitating advance in this direction that we have provided for the representation of universities on the Council of Agricultural Research and on the provincial committees which will work in co-operation with it. We have also suggested that the Council of Agricultural Research should be in a position to make grants for research work in connection with agriculture carried out at the universities." Of the five older universities, those of Calcutta, Madras and Bombay dated from 1857, while the Punjab University was founded in 1882 and the Allahabad University in 1887. These five universities were all of the examining type, the teaching being carried on in the constituent colleges, sometimes several hundred miles apart but bound together by a legally constituted central organisation. It was found that these loose agglomerations of teaching units did not make for efficiency and the tendency now was to develop residential university life in India. The older universities were now also developing a teaching side, though the instruction given was mainly of a post-graduate character. The Allahabad University was reconstructed in 1921 as a residential university with an external side, and, on July 1st, 1927; the latter was transferred to the newly constituted

38 Royal Commission on Agriculture in India, 1928, op. cit., i-ii.
39 op. cit., 60.
animal husbandry and veterinary science, agricultural economics, farm management, soil management and field experimentation, farm machinery, dairying, horticulture, genetics and plant breeding, dairy chemistry and animal nutrition, agriculture extension, etc. Yet by 1938, three of the 18 universities, those of Bombay (founded 1857), Nagpur (1923), and Punjab (1882), and nine universities out of the 22 by 1948, those of Agra (1927), Allahabad (1887), Andhra (1931), Banaras (1916), Bombay (1857), Calcutta (1857), Madras (1857), and Mysore (1933; the University of Mysore was the first University to be founded in the Indian States), and Nagpur (1923) taught agricultural science. During the period of our study, the Agricultural Institute at Barrackpore started work in 1939, with seven students. The two years’ certificate course of study included dairy, poultry and industrial training. Fishery was included the following year in its curriculum. The Institute became a casualty of the Second World War when the Army commandeered its premises. It maintained a skeleton existence in hired premises. After the war, as the problem of feeding the ever-growing population of the country became more and more acute, Calcutta University revived the idea of starting a college of agriculture. In 1947, it decided to enlarge the old course by introducing I.Sc. and B.Sc. courses in Agriculture. A research section opened from 1948 with funds from the Khaira Endowment under the Khaira Professor of Agriculture. A Chair of Agricultural Chemistry was also set up with donation of Rupees two lakhs made by Professor Nilratan Dhar, a distinguished alumnus of the University. In 1949, the young Raja of Jhargram (Midnapore) at the request of the Vice-Chancellor Pramathanath Banerjee, made a bequest of Rupees 1 lakh and 450 bighas of land for an agricultural college at Jhargram. The building was raised and in 1951, and the Jhargram Agricultural College promoted to the degree standard with a two years’ B.Sc. course. However, the University could not meet its financial requirements, and in 1953, the college was made over to the Government of West Bengal with the teaching of Agriculture retained only up to the I.Sc. standard with teaching of B.Sc. in Agriculture taken over by the Government Agricultural College at Tollygunge.

Reforming University Education in the Republic of India

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41 Handbook of Indian Universities, Inter-University Board India, Association of Indian Universities, 1938, 1948 & 1958.
44 Ibid.
45 Hundred Years of the University of Calcutta, A History of the University issued in commemoration of the centenary celebrations, University of Calcutta, 1957, 373.
The idea of establishing agricultural universities was contained in the report of the First Education Commission\textsuperscript{47} headed by Dr. S. Radhakrishnan which was also recommended by the Indo-U.S. teams;\textsuperscript{48} the U.P. Agricultural University established at the Terai State Farm, Pant Nagar, was the first Agricultural University in the country and was approved and developed as a Second (1955-60) Five Year Plan project\textsuperscript{49} in 1960. However, the reform of university education was one of the earliest problems to attract the attention of the Government of free India. This was due partly to the basic significance of the subject to the development of the country and partly to the fact that no comprehensive survey of university education had been held in India after 1917-19. The report of the Commission was a very comprehensive document that had far-reaching influence on the reconstruction of university education in independent India. The Government of India amended the Acts of Incorporation of the Central Universities in keeping with the recommendations of this Commission. Thus, the Visva-Bharati at Shantiniketan, established by poet Rabindranath Tagore 'to study the mind of man in the realisation of different aspects of truth from diverse points of view,' was constituted as a Central University in 1951.\textsuperscript{50} Thus, the development of the new system of higher education in free India was owing to the awakening created by the University Education Commission in 1948 for a new system of higher education for agriculture and rural needs.\textsuperscript{51} The concept of an agricultural university was based on the promise that research, teaching and extension activities should be fully integrated and geared towards the solution of the farmers' problems.\textsuperscript{52} With the transfer of politics of power on 15 August 1947, the academic problem in India assumed new shapes:

\begin{quote}
We have now a wider conception of the duties and responsibilities of universities. They have to provide leadership in politics and
\end{quote}

\textsuperscript{47} "to report on Indian University Education and suggest improvements and extensions that may be desirable to suit present and future requirements of the country", \textit{The Report of the University Education Commission (December 1948-August 1949)}, Volume I, Government of India Press, Simla, 1950, 1.

\textsuperscript{48} \textit{Progress Report of Committee on Agricultural Universities}, March 1962, Government of India, Ministry of Food and Agriculture, Department of Education (ICAR), New Delhi, 22.


\textsuperscript{51} N.S. Randhawa, ‘Agricultural Research and Education for Productive Agriculture' in \textit{40 Years of Agricultural Research and Education in India}, ibid., 17.
administration, the professions, industry and commerce. They have to meet the increasing demand for every type of higher education, literary and scientific, technical and professional. They must enable the country to attain, in as short a time as possible, freedom from want, disease and ignorance, by the application and development of scientific and technical knowledge. India is rich in natural resources and her people have intelligence and energy and are throbbing with renewed life and vigour. It is for the universities to create knowledge and train minds who would bring together the two, material resources and human energies. If our living standards are to be raised, a radical change of spirit is essential.\textsuperscript{52}

Thus, the weak system of higher education in India did not go unnoticed after Independence. The dawn of independence underlined the need of developing the resources of the country. A new educational plan and re-organization of the scientific studies became the paramount necessity. Jawaharlal Nehru dilated upon this in his address to the Calcutta University Convocation in 1946. He exhorted the University authorities to think of educating the human material for free India, of the kind of social structure which will have to be raised, of feeding, clothing and housing every citizen and of training the future citizens for the new order.\textsuperscript{5} In 1949, India became a sovereign republic having a constitution with adult suffrage as its basis. About seventeen crores of men and women got the vote of whom about only 10 per cent. were literate. The supreme task was to educate the masses of the country. A radical re-orientation of the educational pattern became the crying need of the hour.\textsuperscript{53} Therefore, the first decades of independent India unfold the story of the main educational developments as one of substantial advance. The total number of recognised educational institutions in the country rose from 2,18,171 in 1946-47 to 4,13,656 in 1958-59. The total enrolment in recognised educational institutions rose from 1,82,46,784 (boys 1,39,48,999 and girls 42,97,785) in 1946-47 to 4,14,26,749 (boys 2,96,11,798 and girls 1,18,14,951) in 1958-59. The total expenditure in education rose from Rs. 576.6 million in 1946-47 to Rs. 2,600 million in 1958-59. This tremendous increase, perhaps, had no precedent in the educational history of this country, nor perhaps had many parallels outside. The expansion was probably most rapid in higher education. The number of universities increased from 19 in 1946-47 to 46 by 1960-61. In 1946-47, there were 297 arts and science colleges, 199 intermediate


\textsuperscript{53} Hundred Years of the University of Calcutta, A History of the University issued in commemoration of the centenary celebrations. University of Calcutta, 1957, 406-18.
colleges and 140 professional and technical colleges. By 1960-61, there were 462 university departments, 228 constituent colleges, 1,316 affiliated colleges and 83 recognised research institutions. There were 15 Boards of Secondary and Intermediate Education to which 988 intermediate colleges were affiliated. In addition, there were 581 institutions of higher education that were not affiliated to any university. The increase in the number of students was equally impressive. Enrolment in arts and science colleges increased from 212,000 in 1946-47 to 840,000 in 1960-61. Enrolment in colleges of professional and special education increased from 44,000 in 1946-47 to 275,000 in 1960-61. Equally great expansion took place in agricultural, veterinary and medical education. In 1947, there were only 38 institutions for degree courses in engineering and technology (with admission capacity of 2,940 students) and only 53 institutions for diploma courses (with admission capacity of 2,670 students). By 1960-61, the number of institutions offering degree courses increased to 100 and their admission capacity to 13,860. The number of institutions offering diploma courses during the same period increased to 196 and their admission capacity to 25,570. Measures to improve the quality of higher education were also taken. The Radhakrishnan Commission “would suggest that the problems of training and the curriculum in our agricultural colleges should be made the subject of special study and periodical review.” This could be fruitfully guided among other things by (1) a comparative study of the methods of education and the curricula in the countries which have shown significant progress in agriculture; (2) by an analysis of the occupations of the agricultural graduates and former students of our own agricultural colleges; (3) by a discussion of the specific objectives of agricultural education and their relative importance; (4) by an analysis of the element of the basic sciences essential to an understanding of the technical courses; (5) by an analysis of the requirements of the agricultural industries in the country; and (6) by an enquiry into the causes of failure in agricultural vocation. The Radhakrishnan Commission, surveying the precariously insufficient agriculture and extremely inadequate education in agriculture made 14 recommendations, including that agricultural education be recognized as a major national issue; that, since in a democratic country sound agricultural policy must rest on the

understanding and participation of those engaged in agriculture, the study of agriculture in primary, secondary and higher education be given high priority in national economic planning; that the Indian Council of Agricultural Research continue to be supported and developed as a clearing house and co-ordinating agency for all advanced agricultural research centres, as a source of publications, and as a source for publicizing the valuable results of research by visual education, radio, bulletins, library loans, microfilm service, and by other means; etc. 55 In addition, the question of reorganisation of agricultural education at the University stage was under the consideration of the free Government of India and the idea of suitable Agricultural Universities in different parts of the country actively canvassed in this connection. The establishment of Rural (Agricultural) Universities, as originally suggested by the University Education Commission under the Chairmanship of Dr. S. Radhakrishnan, visualised a Rural University as a “Ring of small, resident under-graduate Colleges with specialised and University facilities in the centre”. The First Joint Indo-American Team on Agricultural Education set up by the Ministry of Food and Agriculture in 1954 further clarified this recommendation and made practical suggestions for its implementation. The Team recommended as a first step, the setting up of a nucleus comprising a College of Agriculture, and a College of Veterinary Science to which, in due course, could be added a College of Home Science and a College of Agricultural Engineering and Technology. The University would use the villages in its neighbourhood for research and experiments and provide a comprehensive type of education with special emphasis on Agriculture and allied subjects. A blueprint of such University, prepared by Mr. H.W. Hannah, Dean of the University of Illinois in order to give a concrete shape to this idea, was circulated to all the State Governments with Department of Agriculture’s letter No. F-4-22/56–Edn. III dated the 1st November 1956. A proposal for setting up of an Agricultural University at Rudrapur on the lines of the blueprint prepared by Dean H.W. Hannah received from the Government of U.P. in September 1956 and some other States in the country showed their desire to go ahead with the idea. After discussion with the Planning Commission, it was, however, decided that:

Only one such University should be set up during the Second Five

Year Plan as an experimental measure and its progress watched before proceeding with the establishment of similar other Universities.

As the only concrete scheme was that submitted by the U.P. Government, the State Government might be assisted to set up an Agricultural University at Rudrapur.56

Curriculum to fit needs of Individuals

The Radhakrishnan Commission in its report expressed its concern over the inadequate number of faculty and researchers, the overall quality of teaching and research, and the lack of social relevance in higher education and the lack of autonomy given to the universities. The Commission specifically addressed the lack of higher education for rural people and advocated the creation of rural universities to meet the needs. They recommended for the university a common core of liberal education as for other universities, though the methods used in teaching and learning may be different. The common core was to include substantial introduction to the physical, natural and social sciences and humanities. And to advanced and specialized subjects, the Commission recommended that no field of human concern was to be foreign to the rural universities. The curriculum was to be made to fit the needs of individuals and not the studies made to an arbitrary curriculum. For implementing this bold concept and departure from the then existing system the United States Land-Grant-University was discussed as a possible model for the rural university. However, no action followed to implement the recommendations of the University Education Commission to set up rural universities. The absence of a department or agency at the centre responsible either for co-ordinating agricultural education in the country or assisting agricultural and veterinary colleges to equip themselves adequately for high standard of teaching was keenly felt. The Agricultural Education Committee of the Central Advisory Board of Education suggested that the ICAR might set up a council of agricultural education (including animal husbandry and dairy) for this purpose. Accordingly, the setting up of the Indian Council of Agricultural Education was notified on 27 February 1952. The functions of the council were to be purely advisory and to co-ordinate so that a uniform standard of agricultural education might be achieved in the country and that model syllabi for adoption in the various teaching institutions was to be prepared. This was approved in a conference

56 Appendix – I, Letter to the State Governments, etc. from Shri V. Shankar, Special Secretary, Government of India, No.20 (22)/60-Edn.II, dated 22.8.1961, to Progress Report of Committee on Agricultural Universities, March 1962, 27.
convened by ICAR of the State Ministers of Agriculture, Vice-Chancellors and Deans of the faculty of agriculture at New Delhi on 3-4 November 1951. In 1952, the Grow More Food Enquiry Committee came to the conclusion that the lesson to be derived from failure of programmes of increasing food production was that all aspects of rural life were inter-related and that no lasting results could be achieved if aspects of it were dealt with in isolation. These views and recommendations led Government of India to set up a national extension service and a new unit development administration known as the Community Development Block. This period also brought about the first linkage between Indian and the United States Land-Grant-Universities through programme supported by USAID. The Universities of Illinois, Ohio State, Missouri, Kansas State and Tennessee entered into a technical assistance agreement in 1955 to assist agricultural and veterinary education in the country. For this purpose India was divided into five regions for operational convenience. This programme mainly helped in the training of some Indian nationals in some specialized subjects including post-graduate degrees in the collaborating U.S. universities, provision of equipment and books and journals. However, confusion abounded as neither Americans nor Indians were quite sure as to what their roles were in this collaboration. The Ministry of Agriculture and its attached office of the Indian Council of agricultural research oversaw this arrangement. In 1955, in an agreement between the Government of India and the USAID, a joint Indo-American Committee was constituted to examine the entire field of agricultural education and research and to recommend improvements. An Indian delegation spent 3 months in the United States studying the Land-Grant-Universities and their role in agriculture in that country, while an American Team examined the situation in India. The Joint Team urged that agricultural universities similar to those in the USA i.e., Land-Grant-Universities be established. This was the first effective step recommended for the implementation of the ‘rural university’ concept made in 1948 by the University Education Commission. However, the name adopted later was agricultural university and not rural university owing to lack of agreement between the Ministry of Education and the Ministry of Agriculture. The Government of India, accepting the project submitted by the state Government of Uttar Pradesh, and with the approval of the Planning Commission, decided to establish, as a completely new venture on a state farm of 16, 000 acres in a
forest reclaimed area of tarai, one such university as an experimental measure in Uttar Pradesh under the provision made in the Second Five-Year Plan (1955-60). During our period of study, however, the various post-war development plans of the Centre and of the Provinces and States involved a large demand for Agricultural graduates. The requirements of the Centre alone came to about 500 graduates. Despite the expansion of facilities for training in the then existing colleges in the larger Provinces, the increases barely met their own requirements. The smaller provinces, the Centrally Administered Areas and the Indian States experienced difficulty in arranging for the proper training of agricultural graduates to meet their own needs. The Governing Body of the ICAR recommended in 1944 that suitable steps be taken to meet the situation. Enquiries from areas that had no colleges then revealed that their requirements came to over 200 students a year. It was, therefore, decided to set up an Agricultural College at Delhi with aid from the Central Government. There were about 26 students from the centrally administered areas studying in the college then. It was also proposed to conduct a farmer's training course of six months in the college. The College was not meant for research work. In 1947, there were only 29 agricultural colleges with less than 5,000 pupils in them. Even in these, the courses had little reference to the practical needs of Indian agriculture. There were hardly any institutions for teaching dairy or poultry farming, horticulture or veterinary science. Therefore, perhaps, Mahatma Gandhi had bemoaned almost a decade earlier in the Harijan of 31.7.1937:

> I have a painful experience of some agricultural graduates. Their knowledge is superficial. They lack practical experience. But if they had their apprenticeship on farms which are self-sustained and answer the requirements of the country, they would not have to gain experience after getting their degrees and at the expense of their employers.

Thus under the existing system of agricultural education in India, at Independence, Education, Research and Extension were completely divorced from each other and the training imparted to the agricultural graduates was mostly theoretical. The Land Grant

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* Thus, the first Agriculture University was enacted in Uttar Pradesh in 1958. Following which the Govind Ballabh Pant University of Agriculture and Technology, Pantnagar was established in 1960.

57 Reply by Shri Jairamdas Doulatram to Q. No. 660 Re. Representations by students of Central College of Agriculture, Delhi by Shri R. R. Diwakar, Constituent Assembly of India (Legislative) Debates, 10.3.1948, 1792-93.

Universities in U.S.A. which had an integrated system of teaching, research and extension had made a very substantial contribution towards the development of agriculture in that country and provided a pattern which was considered for adoption at suitable centres in India with advantage. That necessitated, however, the reorientation of the existing system of education and research in the country. As far back as 1930, the Mahatma perspicaciously said that Indian agriculture would continue to stagnate unless brain and brawn are married in the countryside. He made his remarks because of the very low social prestige attached to rural professions with the consequent migration of the educated persons to town and to city. Agriculture in those days was regarded as a profession mainly of the illiterate. The only exceptions related to plantation and commercial crops where the interests of industry and foreign trade were involved, as indicated in the previous two chapters. The Mahatma also said that the most serious form of brain drain is the migration of both brains and financial resources from the villages to the cities. Thus, higher education in agriculture had a low status at the time of Independence. In 1948, there were only 17 state agricultural colleges and 4 veterinary colleges, producing about 2,000 graduates per year and facilities for only 160 students for training in post-graduate work. In 1949-50, the number of agricultural institutions in India, of both College and School standard, were 15 and 39 with enrolment strength of 4,538 and 1,882 respectively; by 1953, there were 19 recognised Agricultural Colleges with 4,529 enrolments as per 1950-51 records, and 35 recognised Agricultural Schools with 1,854 enrolments accorded during 1950-51 in the States in India, and by 1958-59, the number was 29 and 102 with the enrolment strength of 10,871 and 7,411 respectively. In the field of Veterinary Science, in 1949-50, the number of institutions of

60 Appendix – I, Letter to the State Governments, etc. from Shri V. Shankar, Special Secretary, Government of India, No.20 (22)/60-Edn.II, dated 22.8.1961, to Progress Report of Committee on Agricultural Universities, March 1962, 27.
61 M.S. Swaminathan, ‘Achievements in Agricultural Research and Education’ in 40 Years of Agricultural Research and Education in India, op. cit, 1.
College standard was 10 with 1,486 enrolments; by 1958-59, the number of veterinary institutions of College and School standards was 17 and 10 with enrolments of 5,137 and 1,093 respectively. However, in the Radhakrishnan Commission's scheme of agricultural education, it was to be kept in mind that agriculture was an occupation to be practised. The practical aspect of agricultural training was not to become secondary. In order to make the training real laboratory work was not enough. Field trips and travel courses were to be arranged so as to give students opportunity to visit various commercial enterprises throughout the country. Visits to farms, groves, processing plants, markets, fertilizer factories, and cattle shows could be of great use. The training schemes of the Central Government already in force by early 1948 or about to be brought into force were as follows:

**College of Agriculture, Delhi** - To meet the immediate needs of candidates drawn from the Centrally Administered Areas and from those provinces and States that had no Agriculture College of their own, the Central Government set up at Delhi (Karol Bag) a College of Agriculture as an *ad hoc* measure.

**Indian Agricultural Research Institute** - The arrangements for post-graduate training at the IARI, Delhi were extended so as to accommodate 100 students per year as against 24 of the pre-war period.

**Botanical Survey of India** - A two-year course for the training of students in Botany and allied subjects was started under the Botanical Survey of India, Calcutta.

**Institute of Fruit Technology** - During this period, the Central Government had under consideration a proposal to set up an Institute of Fruit Technology for the post-graduate training of students in fruit preservation, horticulture, etc. The Indian Council of Agricultural Research was already conducting a small training class at Delhi.

**Central Drilling School, Roorkee, U.P.** - The Central Drilling School set up near Roorkee by the Central Government was meant to train engineering graduates, etc. in the drilling of tube-wells by modern mechanical equipment for irrigation purposes.

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64 Annexure No. 10 Vide Answer to Q. No. 162 Re. Statistics of Recognised Agricultural Colleges in States in India, and Annexure No. 11 Vide Answer to Q. No. 163(a) and (b) Re. Statistics of recognised Agricultural Schools in States in India, Appendix II to HOPD, Third Session, 1953, 94-95.

Training in Fisheries and Zoology - The Central Government set up Inland and Marine Fisheries Research Stations at Calcutta and Madras contemplating to train graduates in Inland and Marine Fisheries and Zoology.

Training in Veterinary Science and Animal Husbandry - These subjects were already taught at IVRI, Izaatnagar to students nominated by the Provinces and States. It was proposed to extend the training facilities at the institute as early as possible.

Training in Dairy Farming - There were limited facilities for the training of students at the Dairy Research Institute of the Central Government at Bangalore. To meet the growing requirements of the country, Government considered schemes for setting up a Central Research Institute and College and Centres for training of technicians.67

Precursors of Modern Environmental and Ecological Studies

During the period of this study, the now pervasive term “environment” was never employed, though nature and the place of humans within the natural world were conceptualised and contextualised. Writers sometimes referred, as in Europe, to the “environs” of a town or village. The term “ecology” was similarly not used in scientific literature in India before the 1900s. What we in the late twentieth and early twenty-first centuries have come to identify and integrate as “the environment” coalesced in India, and elsewhere, around rather different visual, experiential and conceptual nodes – around “climate” (in a broader and generally more determined sense than we would recognise today) and its neo-Hippocratic linkages with health and disease; around ideas of natural history and “nature”; around agriculture and “improvement”; and, not least, around ideas of landscape and scenery.68

Therefore, it is interesting to note that of the subjects for the Entrance Examination for admission to the University of Calcutta (founded 24 January 1857) were: (1) Languages, including English and one of the following: Greek, Latin, Arabic, Persian, Hebrew, Sanskrit, Bengali, Oriya, Hindi, Urdu and Burmese; (2) History and Geography, including outlines of General History, outline of Indian History, a general knowledge of

Geography and a knowledge of the Geography of India; (3) Mathematics and Natural Philosophy, including Arithmetic, Algebra, Geometry and elementary knowledge of Mechanics; (4) Natural History which included general knowledge of the habits and characteristics of vertebrated animals and general economy of vegetation and simple or elementary organs of plants. Nevertheless, it is speculative as to why the Senate at its meeting on 10 July 1858 adopted certain changes in the courses of studies for the Entrance Examination. The provision for oral examination in the Languages was omitted, and Natural History was deleted from the course. Mechanics too was omitted from the paper on Mathematics and Natural Philosophy. Though, when the University decided to hold in January 1874, the first examination in the new Science course (known as B course) for the degree of B.A., four papers were - Chemistry, Physical Geography, and two optional subjects in Physical Science.69 The Panjab University, the fourth in India, was established in 1882. The territorial limits of the University were defined as including the Panjab, NWFP, British Baluchistan and Kashmir. The University was for a long time an examining body of candidates sent up for its examinations from the affiliated Colleges. But since 1919, several measures were taken to introduce teaching under the control and direct operation of the University. By 1938, the University taught Bachelor of Science (Agriculture): First Examination –The course extended over two academical years subsequent to Matriculation or any other recognized equivalent examination and a candidate was required to study and be examined in the following subjects: 1. Agriculture (300 marks), 2. Physics and Chemistry (150 marks), 3. Botany and Anatomy and Physiology of Domestic Animals (150 marks), 4. Mathematics with Land Surveying (100 marks), and 5. English (100 marks). In subjects 1, 2, and 3, there were two papers and a practical examination in each. In subjects 4 and 5, there were only two papers. Final Examination –The examination consisted of 2 parts, and was open to any student who (1) had been enrolled during the academic year preceding the examination for Part I, and 2 academic years preceding the examination for Part II, in a college affiliated to the University in the Faculty of Agriculture, (2) in the case of Part I had passed not less than one academic year previously the First Examination in Agriculture or the B.Sc. of the Panjab University having taken Physics, Chemistry and Biology in the Intermediate

69 *Hundred Years of the University of Calcutta*, University of Calcutta, 1957, 63-87.
Science Examination and in the case of Part II had passed not less than one academic year previously the Part I examination, and (3) had attained a sufficient standard of merit in examinations held by the College in the qualifying subjects, i.e., Agricultural Engineering and Elementary Veterinary Science. The following were the subjects for study and examination: 1. English (2 papers; 150 marks), 2. any two of the following to be taken as principal subjects: Agriculture and Economics 93 papers and practical in Agriculture; 400 marks), Chemistry and Agricultural Chemistry (2 papers and practical; 300 marks), Botany and Applies Botany (2 papers and practical; 300 marks), Agricultural Zoology – Entomology (2 papers and practical; 300 marks) and two subsidiary subjects (one paper and practical in each; 150 marks). Master of Science (Agriculture) –The examination was open to any candidate who had passed not less than 2 years previously the B.Sc. in Agriculture or the general B.Sc. Examination with Honours in Chemistry, Botany or Zoology or the M.Sc. Examination with the necessary qualifications of the Panjab University. A candidate was required to present a thesis being the result of an original research in some science applied to Agriculture, and which had been conducted under the direction of a teacher approved by the Board of Studies in Agriculture and further to undergo a written, oral and practical examination on the special branch of the subject chosen for research. The following were the subjects permitted for the Degree: 1. Crop Husbandry, 2. Dairying (including Animal Breeding and Animal Feeding), 3. Agricultural Economics, 4. Genetics and Biometry, 5. Mycology and Agricultural Mycology, 6. Plant Physiology, 7. Horticulture (including Fruit Preservation), 8. Chemistry and Agricultural Chemistry, 9. Zoology and Agricultural Zoology, 10. Bacteriology and Agricultural Bacteriology. A perusal of the Handbook of Indian Universities (1938) shows that Indian universities like Agra, founded 1st July 1927, were already giving courses on geography, botany, zoology, agriculture, agricultural chemistry, botany with plant pathology, botany with plant breeding, botany with horticulture, zoology with entomology and parasitology, zoology with animal breeding, rural economics, with practical examination in each subject; the Aligarh Muslim University, founded 1920, offered courses on geography, botany, zoology, while the University of Allahabad offered courses on botany, zoology, agriculture including

70 Handbook of Indian Universities, 1938, Inter-University Board, India.
agricultural engineering and veterinary hygiene, agricultural chemistry, agricultural botany, agricultural zoology, economic and commercial geography. By 1948, the University taught *Bachelor of Science (Agriculture)* — The course of study extended over a period of two academic years. Candidates were required to study (1) Agriculture (including Agricultural Engineering and Veterinary Hygiene), (2) Agricultural Chemistry, (3) Agricultural Botany, and (4) Agricultural Zoology. *Bachelor of Science (Agricultural Engineering)* — The course of study extended over a period of two academic years. Candidates were required to study (1) Advanced shop work, Engineering Drawing, and Structural Design, Agricultural structures. (2) Materials of construction and strength of materials, mechanics and statics, Agricultural machinery, Principles of Electric machinery. (3) Farm management, soil and water conservation, including surveying, Machine Design. *Master of Science (M.Sc.)* — The course of study extended over two years after graduation and the examination consisted of two parts — the Previous and the Final— held at the end of the first and the second year respectively. Candidates were to offer one of the following subjects: (a) Mathematics, (b) Physics, (c) Chemistry, (d) Zoology, and (e) Botany (f) Agricultural Botany (g) Agricultural Zoology. At the Previous examination, there were three papers and a practical examination in Physics, Botany and Chemistry, four papers and a practical examination in Zoology, and four papers in Mathematics. In Mathematics, the examination consisted of the B.Sc. Examination papers in the branch of Mathematics in which the (Honours) candidates was not proceeding for the M.Sc. Degree. At the Final Examination, five papers were set in Mathematics, four papers in Zoology, and two papers in Physics, Botany and Chemistry, with a practical examination in each subject except Mathematics.71 Andhra University, founded 1st July 1931, taught geography, botany, zoology, geology, economic geography and agriculture. And, besides many other subjects, Bombay University offered courses on Agriculture for the Intermediate Examination, Bachelor's and Master's of Agriculture: (i) *Intermediate Examination:* - The course of study extended over two academic years after passing the Matriculation Examination except in the case of Bachelors of Science of this University with Chemistry and Botany, who were exempted from this Examination. Candidates were examined in (1) Agriculture (including Geology) (two papers and a

71 Handbook of Indian Universities, Vol. I, Inter-University Board, India, 1948.
practical examination), (2) Chemistry (two papers and a practical examination), (3) Botany (one paper and a practical examination), and (4) Mathematics and Elementary Physics (one paper and a practical examination). (ii) Bachelor of Agriculture: - The course extended over two years subsequent to passing the Intermediate Examination in Agriculture, or subsequent to passing the B.Sc. Examination of this University with Chemistry and Botany. Candidates were examined in the following subjects: (1) Agriculture (four papers and two practical examinations), (2) Chemistry of Agriculture (one paper and a practical examination), (3) Agricultural Botany and Horticulture (one paper and a practical examination), (4) Plant Pathology (one paper and a practical examination), (5) Agricultural Engineering (one paper and a practical examination), and one of the following special subjects (one paper and a practical examination):- (a) Intensive Study of Certain Crops, (b) Advanced Plant Breeding, (c) Advanced Agricultural Chemistry, (d) Advanced Animal Husbandry and Dairying, (e) Advanced Agricultural Economics, (f) Advanced Horticulture, and (g) Advanced Plant Pathology. (iii) Master of Agriculture: - Each candidate for this Degree was to be a Graduate or a Licentiate in Agriculture of this University of not less than 3 year’s standing and was to have been engaged in the practice of Agriculture or Work of research in connection with Agriculture for a period of at least 3 years after receiving the Degree of Bachelor or Licentiate in Agriculture. Each candidate was to submit a report of work or research of an original character in the Agricultural field subsequent to his graduation and was, if the examiners so desire, to submit himself to an oral examination.72 Published in 1901, a three-volume textbook on Indian agriculture was ‘arranged to meet the requirements of the Syllabus of the Bombay University for the Degree in Agriculture.’ The contents of Volume I on Soils, Manures, and Implements, for example, show scientific awareness of world standard. On agricultural implements, it maintained that indigenous implements were generally suitable to the conditions of Indian agriculture. “The best of the indigenous kinds – the most effective at work – might with advantage be more widely known in the country and the same might be said of other indigenous implements, but there is certainly no need to go out of the country for the ordinary tillage implements

72 Ibid.
which are required. University of Gorakhpur (founded June 1956) taught agricultural science, as one of the many courses offered, which included crop and cropping scheme, internal morphology - study of the form of animals and plants, crop systematic and physiology, soils plant chemistry, fertilizers and manures, agricultural entomology, plant pathology including bacteriology, animal husbandry and veterinary science, agricultural economics, farm management, soil management and field experimentation, farm machinery, dairying, horticulture, genetics and plant breeding, dairy chemistry and animal nutrition, and agriculture extension.

All these subjects of study, perhaps, were the precursors of the more modern environmental and ecological studies, in the same sense, as the first telephone was the precursor of modern communications networks. Although, when India began its planned development, nobody had heard of the word 'environment', nevertheless, after the attainment of political independence on 15th August 1947 began an age of ecological innocence, when the urge to industrialize and catch up with the developed world relegated environmental concerns to the background. In any case, the issue of environment and development did not receive any significant recognition in the Indian planning process until 1968. The Fourth Five Year Plan (1969-74) observed that planning for harmonious development was possible only when based on comprehensive appraisal of environmental issues. It was necessary therefore, to introduce the environmental aspects into our planning and development. However, all this is much beyond our present brief that covers only the period 1937-57.

**Education Impacts Environment**

No society can ever exist without economic activity. It must carry on the production process even with a view to maintaining the bare physical existence of its members. To be able to produce, that is to transform elements of nature into forms suitable for meeting the needs of men, it must gather an understanding of Nature i.e. it must achieve scientific knowledge. It is in the process of social practice of man for biological existence that

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74 *Handbook of Indian Universities, 1958*, Inter-University Board, India.
mechanics, physics, chemistry, agronomy and other sciences developed. Men, associated in big or small groups, applied this scientific knowledge and evolved technology i.e. such means of production as the plough and the tools of the handicraft industry, and such modern means of production as machinery driven by steam, electricity and even by atomic energy.79 There is always some element of scientific knowledge in every society. For, society to exist must produce and production presupposes technology and scientific knowledge, however, meagre. Otherwise, no societies can survive.79 All knowledge is historically conditioned, thus subject to the limitations imposed by desa-kali-patra, space-time-people. Though growing, it is finite at a given moment, and its depth and extent depend upon the level of social development, which a people have reached.80

79 Ibid, 137.
80 Ibid, 136.