

**EVOLVING
A
NATIONAL TERMINOLOGY**



**COMMISSION FOR SCIENTIFIC & TECHNICAL TERMINOLOGY
MINISTRY OF EDUCATION
GOVERNMENT OF INDIA**

Evolving A National Terminology

A MONOGRAPH



**Standing Commission for Scientific and Technical Terminology
Ministry of Education,
Government of India,
New Delhi.
1968**

Terminology in Indian Languages

● For my part, I think that words from foreign languages which have become current coin in this country should be retained, partly because they are current coin, and partly because the more common words you have with the rest of the world, the better for scientific and technical subjects. Science and technology know no frontiers. Nobody talks or ought to talk about English science, French science, American science, Chinese science. Science is something bigger than the countries. There ought to be no such thing as Indian science. So also with technology. This great business of looking at these questions in a narrow nationalist way will ultimately lead to the narrowing of your science and the narrowing of your technology and your work itself. This business of evolving special terms which are known neither to the general public nor to anybody else in the wide world really means that you are isolating yourself from the general drift of knowledge and at the same time dissociating yourself from your own people who do not understand your technical terms and thus you convert yourself into something which nobody understands and nobody cares for.

● There is a certain advantage in adopting what is called the international terminology while dealing with scientific and technical terms, always subject to the proviso that we do not adopt it wholesale. Within the confines of India, whatever scientific and technical terms are adopted should be common, as far as possible. Let us leave out what the French and German languages do with regard to Latin, but in India at least we should try to develop a common technical and scientific phraseology for the languages of India. It will be a great nuisance and burden if we differed even here.

● We should be bold enough, I think, to lift bodily foreign technical words which have become current coin in many parts of the world, and to adopt them as Hindustani words. Indeed I should like them to be adopted in all the Indian languages.

● I am all in favour of scientific and technical subjects being taught through the medium of Hindi or our other regional languages. But I do hope that the scientific and technical terms that we use will be common in the various Indian languages and, wherever possible, should be similar words of international usage. Otherwise there will be confusion, and the burden on the minds of the students will be great.

—JAWAHARLAL NEHRU

Foreword

Evolution of terminology is a difficult task, though it is very easy to comment upon the terminology coined by others. Anatole France says that it is not possible to attempt at an exact translation from one language to another and this can also be applied to the evolution of terminology. Each language has its own idioms and the concept conveyed by one word of a language can hardly be completely conveyed by an exact word of another language. We have found in connection with our work in this Commission that our worst critics have turned into our admirers, once they have attended our terminological seminars and have seen working us at close quarters.

The need of a national common terminology was felt long ago by our leaders and educationists. As early as in 1877, when the first few universities in our country had just been established, an educationist from Bengal Raja Rajendar Lal Mitra considered the problem of preparation of terminology in our languages and prepared a scheme in this regard. So far as official circles are concerned, the Central Advisory Board for Education appointed its first committee under the Chairmanship of Sir Akbar Hydari in 1940. We had made rapid progress in this work since the attainment of independence. Pandit Jawaharlal Nehru was of the view that the scientific terms that we use "should be common in the various Indian languages, otherwise there would be confusion and it would be a great nuisance and burden if we differed even here." A number of Commissions and Committees appointed in the field of education have supported this view.

The national policy on education has been recently defined afresh. It envisages an energetic development of Indian languages and literature, otherwise the creative energies of our people would not be released. It has been declared that the regional languages would be adopted as media of education at university stage. If we use a common scientific and technical terminology in all our languages, it would go a long way in fostering a pan-Indian outlook in our universities, in helping the development of science and research and in promoting student and teacher mobility from one region to the other.

With this end in view, this Commission had adopted certain principles so that the terminology evolved by it may be readily acceptable throughout the country. It has been estimated that about 10% of terms have been retained and transliterated from English. About 80%

of terms evolved by us have been taken from Sanskrit. The remaining 10% terms are either Hindi words or hybrid formations of Sanskrit, English and Hindi. In the circumstances, the Indian languages can readily adopt about 80% to 90% terminology evolved by the Commission and the remaining terms may be adopted by them to suit their own idiom and genius. We have also taken some other steps to maintain an all-India character of our terminology. The Government appointed a good number of the members of the Commission and the staff from non-Hindi speaking areas ; all-India representation was given in the various Subject Expert Advisory Committees ; All India seminars were held for finalising terminology and professors and experts from various regions were coopted in these seminars ; a larger number of these seminars were organised in non-Hindi speaking areas and wherever possible terms prevalent in more than one regional language were adopted. We hope, our glossaries will be adopted by the various linguistic regions of the country.

—B. R. SAKSENA
Chairman

Commission for Scientific
and Technical Terminology
Government of India
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Appendix : A

Excerpts from the Proceedings of Fifth Meeting of Central Advisory Board on Education (May 1940)

Item No. 14

The question of adopting a uniform scientific terminology for regional languages has been engaging the attention of the Government of Bombay for some time past. They accordingly asked Mr. B.N. Seal, I.E.S., their Deputy Director of Public Instruction, to prepare a note on the subject and forwarded a copy of it with a request that the question should be taken up by the Central Advisory Board of Education in order that a common scientific terminology acceptable to the whole of India might be evolved. The matter was placed before the Board for its consideration. The note prepared by Mr. Seal had been previously circulated to its members. The main features of the scheme contained therein are given below :

- (i) that a common scientific terminology should be fixed for India as a whole ;
- (ii) that the question of an all India scientific terminology should, in the first instance, be referred to an authoritative all-India body ;
- (iii) that the main and common part of the scientific terminologies to be devised for the principal Indian languages should be borrowed extensively from the English terminology ;

(iv) that every Indian language should have the following three main divisions in its scientific terminology, viz :—

- (a) the main English terminology, which will practically be the common terminology for all India,
- (b) the terminology peculiar to the Indian language—a very small section, and
- (c) Sanskrit or Perso-Arabic terminology, comparatively small in number, adopted or coined, according as the language is Sanskritic or Dravidian or Urdu, Pushto or Sindhi ;

(v) that standard terminologies should be fixed for the various scientific and humanistic subjects such as Mathematics, Anatomy, Physiology, Economics, Scientific Philosophy, Modern Logic, etc ;

(vi) that as soon as the tables of scientific terminology are settled, text-books should be got written in the principal languages for all grades of education and that all other terminology should be discouraged ;

(vii) that it should be commended to

the provincial governments that they should set up small representative committees of experts in their areas to take up the work of fixing and standardising the terminology under IV (b) above ; and

(viii) that the Central Advisory Board of Education should set up permanent Board of Reference whose views must ultimately be accepted by all educational authorities and organisations.

While expressing itself in favour of uniformity in the matter of adopting scientific terminology for regional languages in India, the Board felt that the purpose in view could best be attained by following the English terminology. In order, however, that the question may be examined in detail the Board decided to appoint the committee of the following members, with power to co-opt :

(1) The Right Honourable Sir Akbar Hydari, LL.D., President of His

Exalted Highness the Nizam's Executive Council, Hyderabad State (Deccan) *Chairman* ;

(2) The Honourable Diwan Bahadur Sir K. Ramunni Menon ;

(3) Mr. S.C. Tripathi, I.E.S., Director of Public Instruction, Orissa ;

(4) Mr. W.H.F. Armstrong, I.E.S., Director of Public Instruction, Punjab ;

(5) Dr. Sir Zia-ud-Din Ahmad ;

(6) Pandit Amarnath Jha, Vice-Chancellor, Allahabad University ;

(7) Dr. U. M. Daudpota, M.A. Ph. D., Director of Public Instruction, Sind ;

(8) The Educational Commissioner with the Government of India.

The Committee's report when submitted will be examined by the Board.

Appendix : B

Excerpts from the Proceedings of Sixth Meeting of Central Advisory Board on Education (January, 1941)

Item VI

The Rt. Honourable Sir Akbar Hydari presented the report of the Scientific Terminology Committee, of which he was the Chairman. The Board adopted the recommendations of the Committee subject to the following modifications :—

- (a) No. II (ii) in the Main Conclusions and Recommendations should be deleted. The great majority of the members present were of opinion that the adoption of this recommendation would introduce an unnecessary complication since the legitimate aspirations of modern Indian languages in this respect could be satisfied under (iii) which, as the Chairman pointed out, did not preclude the adoption of new words
- (b) The two main groups into which Indian languages may be divided should be Sanskritic and Perso-Arabic instead of Hindustani and Dravidian as suggested by the Committee.
- (c) The words 'Mathematical propositions and questions' occurring in recommendation No. V and in para 12(a) in the report to be changed to 'Mathematical processes and formulae.'

formed and evolved in accordance with the traditions and genius of a people as distinct from neologisms invented, as it were for their own sake. Rajkumari Amrit Kaur recorded her dissent from the decision of the Board.

Appendix : C

Excerpts from the Proceedings of Seventh Meeting of Central Advisory Board of Education (January, 1942)

Item V

The Board considered the views of provincial governments local administrations, state governments and universities in India with regard to the recommendations of the Scientific Terminology Committee of the Central Advisory Board of Education as adopted at the last meeting of the Board and the action taken by them or by responsible agencies in their areas in connection therewith.

The Board expressed their satisfaction at the general agreement of the authorities consulted with the recommendations of the report, the only major point about which there was any substantial divergence of opinion being that of the main groups into which Indian languages should be divided. It was decided to appoint a Central Board of Reference as contemplated therein. This Reference Committee will have power to set up expert sub-committees as required and it is hoped that their guidance on general principles as well as their decisions on specific issues submitted to them will prove generally acceptable.

It was further agreed that all questions regarding the grouping of Indian langu-

ages according to their natural affinities as well as technical terms should come within the purview of this Board of Reference. It was decided that Reference Board should consist of a Chairman who should be a member of the Central Advisory Board, two scientists and two philologists.

Dr. Sir A. Fazlur Rahman, LL.D., B.A. (Oxon.), was appointed as a Chairman and the following, subject to their consenting to serve, were appointed as members :—

Dr. Abdul Haq., B. Litt., Ph. D. (Oxon.), (formerly Head of the Deptt. of Arabic, Osmania University), Secretary, Anjumane-Taraqqi-e-Urdu, Delhi.

Dr. Sir S. S. Bhatnagar. O.B.E., D. Sc., F. Inst. P. F.I.C., Director of Scientific and Industrial Research.

Prof. Suniti Kumar Chatterjee, M.A., D. Litt., Head of the Department of Comparative Philology, Calcutta University.

Sir C. V. Raman, M.A., D. Sc., Ph. D., LL. D., F.R.S., N.L., Head of the Deptt. of Physics, Indian Institute of Science, Bangalore.

Appendix : D

Excerpts from the Proceedings of Eighth Meeting of Central Advisory Board on Education (January, 1943)

Item III

The Board also recorded the observations of the members of the Reference Board on Scientific Terminology in regard to the issues raised in the Scientific Terminology Committee's Report on the subject of the grouping of the Indian languages. It was suggested that

'Punjabi' should be included either in the Hindi or in Urdu group and not in both. The Board expressed the hope that it would be possible for the Reference Board to go on with their work on the lines indicated in the report of the Scientific Terminology Committee as adopted by the Board at their meeting at Hyderabad in 1942.

Appendix : E

Excerpts from the Proceedings of Tenth Meeting of Central Advisory Board of Education (January, 1944)

Item VII

The Board considered a communication from the Chairman of the Central Board of Reference on uniform scientific terminology and endorsed the recommendation of the standing committee in connection therewith. They thought that the difference of opinion in regard to the grouping of Indian languages according to their natural affinities was

not so material as to delay further the work of preparing a uniform scientific terminology and that it was in any case a matter within the purview of the Central Board of Reference. They, therefore, decided that the Reference Board be requested to consider this matter and proceed with the preparation of a uniform scientific terminology in accordance with the principles set out by the Central Advisory Board.

Appendix : F

*Excerpts from the Proceedings of Fourteenth Meeting of Central
Advisory Board of Education (January, 1948)*

Item V

In regard to scientific terminologies the Board were of the opinion that where terms with a specific and unambiguous

connotation do not exist in a particular language, the terms generally used in international scientific literature should be incorporated in the Indian languages.

Appendix : G.

Extracts from Report of the University Education Commission (1948-49)

* * * *

43. For reasons which have been stated above the language spoken and understood by more than 120 millions of our countrymen, the midland tongue, the basic Khari Boli dialect, designated Hindi or Hindustani, has to fulfil this destiny. When Hindi assimilates terms in popular usage and adopts scientific and technical terms which are used internationally, it will grow richer and fuller than it is today and will not be distinguishable from Hindustani.

55. Measures for Developing Languages

[In order that the change from English should not be delayed, it is necessary that the Government of India and the Provincial Governments should immediately devise measures to develop the Federal and the regional languages. In the first place a Board consisting of scientists and linguistics should be ap-

pointed to prepare a scientific vocabulary of words which are common to all the Indian languages.]

This Board should have the assistance of paid scholars to carry out the policies laid down by them. The Board should also arrange for the preparation of books in different sciences, which should be rendered into all Indian languages. Government should provide adequate funds for these purposes.

* * * *

The discussion of the general question of loan words inevitably leads us to the special problem of technical terms, especially of natural sciences. This problem is common to all modern Provincial languages and if a common solution can be found for all of them not only will it mean great economy of effort but also a long step in the direction of bringing the provincial languages near each other,

Appendix : H

Excerpts from the Proceedings of Fifteenth meeting of Central Advisory Board on Education (January, 1949)

Medium of Instruction (p. 214)

“Before concluding, I will draw your attention to one other burning problem of the day. You recommended and the Government of India agreed that the medium of instruction in the primary stages must be the mother tongue. All provinces have accepted the principle, but I think, you will agree, that as yet only the general principle has been laid down. Difficulties have, however, been felt in working out the details and giving a practical shape to the principle. There is no problem where the mother tongue of the pupil is also the State language, but where this is not the case, doubts have arisen on several points. It has not been clearly laid down at what stage the State Language should be introduced as a second language. Nor is it clear when it should replace the mother tongue

as the medium of instruction in schools. These and allied questions should be examined in detail, and fair and practicable solutions found so that nobody may have any ground for grievance. The Government of India could have taken a decision themselves, but I feel that your advice in the matter will be invaluable, as you represent not only the provinces and the states but also the enlightened opinion of the country.

“I trust that you will give special attention to the problem during this session and define in a clear and unambiguous manner the detailed procedure for giving effect to an agreed principle. By doing so you will not only solve one of our most difficult educational problems but also render a real service to national unity.”

Appendix : I

Terms of reference—Board for Scientific and Technical Terminology

In the opinion of the Ministry of Education, the greatest danger of this kind of individual effort was that as time went on, it would be difficult to coordinate and harmonise all the different terminologies. Such a situation would be unfortunate from the point of view of education and it would also have important consequences on the solidarity and unity of the country. It was, therefore, imperative that a Board on an all India basis be set up immediately to consider the question of evolving a uniform scientific terminology for the country and of preparing text books especially on science subjects. Accordingly, a Board of Scientific and Technical Terminology was set up in 1950. The terms of reference of the Board were as follows.

1. To implement the resolution of the Central Advisory Board of

Education in regard to the adoption of international scientific and technical terms in Hindi and in the principal literary languages of India.

2. To lay down the principles according to which the international terms may be adopted to the genius of Indian languages.
3. To make arrangements for the collection of terms current in Indian languages and for coining suitable terms on the basis of Indian languages for branches of knowledge where use of foreign terms may not be suitable.
4. To determine and carry out the policy regarding preparation of standard books on scientific subjects.

Appendix : J

Excerpts from the Proceedings of Eighteenth Meeting of Central Advisory Board of Education (January, 1951)

Item II (b)

(b) & (c)

(b) The Board recommended that the Scientific Terminology Board, appointed recently by the Government of India, should have before it all the work that has been done already in different parts of the country by the state governments, universities and literary organisations.

(c) The Board recommended that

the following suggestions may be referred to the proposed Conference on Hindi :

- (i) Comparative vocabularies of basic and cognate Hindi words prevalent in different states may be compiled ; and
- (ii) an adequate number of periods should be devoted to the teaching of Hindi in secondary schools in non-Hindi speaking states.

Appendix : K

Extracts from the Official Language Commission Report 1956

Chapter V

5. So far as the sciences and speculations with which the intelligentsia in this country were familiar before the advent of the English are concerned, there is bound to be a good deal of material available in the regional languages as well as the Sanskrit texts, which would furnish terms and phrases readily usable towards expression of modern ideas and concepts developed in these fields. Thus, in the fields of Nyaya, Mimamsa, Vyakarana, Dharmashastra or religious or philosophical speculations, there ought to be a good deal of terminology available in these texts. (Fortunately, most of this terminology is identical amongst all the Indian languages, having all been commonly derived from the Sanskrit language and the Sanskrit texts.) Indeed, the problem of terminology is not presenting itself to the Indian languages for the first time. It must have occurred to every writer who wanted first to express himself in the regional languages breaking away from the previous tradition of all learned writings being written and studied in the Sanskrit language. At all such times the problem was solved by writers in the Indian regional languages drawing freely from the reservoir of Sanskrit, which is a particularly rich language in respect of prefixes, suffixes, prepositions, postpositions, etc. Largely

on account of availability of terminology in the Sanskrit language and literature, our languages have all along been 'borrowing,' rather than 'building up' languages. Indeed, as we will presently discuss in a little more detail, it is nothing derogatory for a language to borrow terms and expressions; and it is the most natural thing to do, when terms and expressions have to be brought in not merely as additional vocables but as words trailing a certain context of meaning associated by usage with them. Even when writing in English, for instance, on matters touching upon Indian philosophical systems or metaphysical speculation, terms like the following have to be used for adequate expression in the English language; 'Atman', 'Karma', 'Janma', 'Mukti', 'Indriya', 'Dharma', 'Bhakti', 'Nigraha' and so on.

* * *

All living languages are constantly absorbing words in this fashion. There is, therefore, no place for any doctrines of languages. Such new words and expressions, wherever they are necessary for stating an idea, may be freely provided the new term or expression lends itself to assimilation in the host language. Article 351 of the Constitution lays down, in respect of the Hindi language, that it has to be enriched by 'assimilating, without interfering with its genius, the forms, style and expressions used in

Hindustani and in the other languages of India specified in the Eighth Schedule and by drawing, wherever necessary or desirable, for its vocabulary, primarily on Sanskrit and secondarily on other languages'. This formula should be equally applicable in respect of all the Indian languages. The special position accorded to the Sanskrit language is only a recognition of its close relationship with the Indian regional languages and its past use for such purposes in those languages.

7. There is one important aspect of this matter of equipping the Indian languages with new terminologies, to which we would like to draw pointed attention. (In the course of our enquiry we came upon a practically universal consensus of opinion to the effect that, while evolving new terminology, identity should be aimed at, to the maximum possible extent, in such terminology, with reference to the Union language and all the regional languages. As we noticed above, even in the past, a substantial degree of identity has obtained amongst the Indian languages in respect of technical terms when dealing with the 'Shastras'.) For a successful solution of the problem of languages in India, in our view, it is imperative that the same principle of identity should be employed now to the maximum possible extent when building up these supplementary vocabularies for our languages.

9. * * *

If the evolving of terminologies is to be co-related as between the different languages, the work has to be done at a plane at which there will be representation of authorities interested in the new

terminologies from every linguistic group. Obviously, this means that the work has to be done under Central auspices.

11. * * *

We are not clear whether the extent to which co-ordination is necessary is fully appreciated. It is not only necessary that the scientific and technical terminologies for the Hindi language should be the same and that, to this end, the work undertaken in the Hindi speaking states and universities should be co-ordinated, but it is further necessary that the terminology being so evolved for the Hindi language should also, to the farthest possible extent, be co-ordinated with the terminologies extant in other languages or in the process of being evolved for them by the states, universities or other authorities interested in their development.

* * *

We are not aware as to the exact reasons underlying the lack of co-ordination. Apparently the enforcement of such co-ordination has not been found practicable even in respect of all Ministries of the Government of India. In the states the lack of co-ordination may have ensued from a measure of impatience on the part of the states wanting to switch over their administration to an Indian language in displacement of the English medium at a faster rate than could be accommodated within the lead available from the Centre. The dangers of bringing about practically a linguistic chaos if there is insufficient co-ordination ought to be obvious to everybody and, we have no doubt, must be widely realised amongst the authorities. If a sufficient lead is forthcoming from the Centre and if the lead is so devised that it could

accommodate the varying paces that different states want to adopt in their progress towards displacing English by an Indian language medium, then it ought to be possible to achieve a far

higher degree of co-ordination in the future than has been attained hitherto. We are convinced that this is essential and we feel it ought to be perfectly feasible.

Appendix : L

Extracts from the Report of Committee of Parliament on Official Language (1958)

21.

* * *

The number of scientific and technical terms already runs into lakhs. Thousands of new words are being coined every year. Our scientists and technologists are familiar with English terms. The task of translating the existing and future scientific and technical terms into all Indian languages is immense, and the risk that such translations may be artificial or inexact, and unfamiliar to present-day scientists and technologists has to be guarded against. Different terminologies in different Indian languages may cause confusion and will make the interchange of scientific and technical knowledge within the country difficult. It is obviously desirable that there should be uniformity in the use of scientific and technical terminology in all Indian languages. The Radhakrishnan Commission on University Education, which also considered this question has observed as follows :

“The discussion of the general question of loan words inevitably leads us to the special problem of technical terms, especially of natural sciences. This prob-

lem is common to all modern Provincial languages and if a common solution can be found for all of them not only will it mean great economy of effort but also a long step in the direction of bringing the provincial languages nearer each other.”

The Committee envisages that the scientific and technical terms used in Hindi and other Indian national languages will approximate closely to English or international terms for the terminology used by us should be such as would facilitate the development of science and technology in India and also enable us to keep in contact with the international world of science and technology. It is important that the evolution of scientific and technical terminology should proceed on the right lines from the beginning. It would be desirable, for this purpose, to have a Standing Commission consisting chiefly of scientists and technologists to coordinate and supervise the work done by various agencies in this field, review the work that has already been done and issue authoritative glossaries of scientific and technical terminology for use in all Indian languages.

PART II

56. The statement below gives the recommendations of the Official Language Commission in the order in which they are stated in their report and the opinions thereon of the Committee of Parliament on Official Language.

*S. No. Recommendations of the Official
Language Commission*

*Opinions of the Committee of
Parliament on Official
Language*

1. In adopting terminology, clarity, precision and simplicity should be primarily aimed at. Doctrinaire insistence on Language purism is deprecated.
2. Promising sources for adopting new terminology should be available in the indigenous terms current in the past, and the terms currently used in actual life amongst various categories of craftsmen, artisans, etc. These should be explored. In suitable cases, international terminology may be adopted or adapted to the genius of the Indian languages.
3. The maximum possible identity in evolving new terminology for all Indian languages should be aimed at.
4. Suitable arrangements should be made for evolving terminology and for coordinating such work as between different authorities with reference to the Union language as well as the other regional languages.
5. On a review of the work done so far there would seem to be room for greater acceleration in the work and need for achieving more effective coordination as between different terminological efforts.

These recommendations may be accepted.

Appendix : M

Excerpts from the Proceedings of Twenty-Fifth Meeting of Central Advisory Board of Education (February, 1958)

Item 3 (h)

Report on the Implementation of various schemes for Promotion of Hindi under the Second Five Year Plan during 1956-57:

(3.39) While appreciating the work

done to evolve a uniform scientific terminology, the Board suggested that the preparation of the glossaries should be completed as early as possible so that the present situation in which sometimes the same words conveyed different meanings in different parts of the country could be avoided.

Appendix : N

Excerpts from the Presidential Order dated the 27th April 1960, Government of India, Ministry of Home Affairs No. 2/8/60-OL Notification

The main recommendations of the Commission which the Committee has accepted are: (i) in preparing terminology clarity, precision and simplicity should be primarily aimed at ; (ii) international terminology may be adopted or adapted in suitable cases ; (iii) the maximum possible identity should be aimed at in evolving terminology for all Indian languages ; and (iv) suitable arrangements should be made for co-ordinating the efforts made at the Centre and in the States for evolving terminology in Hindi and other Indian languages. The Committee envisages further that in the field of science and technology, there should, as far as possible, be uniformity in all Indian languages and the terminology should approximate closely to English or international terms and has suggested that a Standing Commission consisting chiefly of scientists and technologists may be constituted to coordinate and supervise the work done by various agencies in this field and to issue authoritative glossaries for use in all Indian languages.

The Ministry of Education may take action :—

- (a) to review the work done so far and to evolve terminology in accordance with the general principles accepted by the Committee. In the field of science

and technology the terms in international use should be adopted with the minimum change, i.e., the base-words should be those at present in use in international terminology, although the derivatives may be Indianised to the extent necessary ;

- (b) to formulate proposals for making arrangements for coordination of the work of preparation of terminology ; and
- (c) to constitute a Standing Commission for the evolution of scientific and technical terminology as suggested by the Committee.

The Terms of Reference of the Commission for Scientific and Technical Terminology

The Standing Commission for Scientific and Technical Terminology was appointed by the Ministry of Education in October, 1961 in pursuance of the Presidential Order of April, 1960 and the following functions were entrusted to it :—

- (a) Review of the work done so far in the field of scientific and technical terminology in the light of the principles laid down in

the Presidential Order ;

- (b) Formulation of principles relating to co-ordination and evolution of scientific and technical terminology in Hindi and other languages ;
- (c) Co-ordination of the work done by different agencies in the States in the field of scientific and technical terminology, with the consent or at the instance of the State Governments concerned

and approval of glossaries for use in Hindi and other Indian languages as may be submitted to it by the concerned agencies ;

- (d) Preparation of standard scientific text-books using the new terminology evolved or approved by it; preparation of scientific and technical dictionaries and translation into Indian languages of scientific books in foreign languages.

Appendix : 6

Constitution of Central Advisory Board for Standing Commission for Scientific and Technical Terminology

It is essential that the Central Ministries concerned, the State Governments, the universities and other learned societies should be closely associated with the work that the Commission for Scientific and Technical Terminology is to undertake and also advise the Central Government in this regard. Such an association of the State Governments, the universities, and other appropriate bodies from the very beginning, will facilitate the task of the Commission in coordinating the evolution of a common terminology and ensuring the acceptance of the glossaries prepared or approved by it. It is, therefore, proposed to set up a high level Advisory Board to advise the Government of India in regard to the work entrusted to the Commission. Its composition will be as follows :—

- (i) A representative each from the Ministry of Education, amended vide Ministry of Education,

letter No. 22/2/60 H-I dated 15-7-64, Ministry of Information and Broadcasting, Ministry of Home Affairs and University Grants Commission and Atomic Energy Commission ;

- (ii) a representative of each of the State Governments ;
- (iii) ten members to be nominated by the Ministry of Education to represent universities, learned societies and other interests ; and
- (iv) the Chairman of the Commission for Scientific and Technical Terminology.

The Minister of Education will be the Chairman of this Board. It will meet at least once a year and its functions will be of an advisory character.

Appendix : P

Excerpts from the Minutes of the Seminar on Linguistics of Scientific Terminology

Linguistics of Scientific Terminology

A one week seminar was held on the linguistics of scientific terminology in New Delhi in August 1962, which examined the complex and manifold linguistic problems, existing linguistic principles and techniques of word formation and recommended the following ;

1. The transliteration of international terms into Devanagari script should aim at maximum approximation to the standard English pronunciation with such modifications as prevalent in the educated circles in India but it should not be made so complex as to necessitate the introduction of new signs and symbols in the present Devanagari characters. To represent some common sounds of other modern Indian languages more faithfully, the symbols for short ॠ and short ॡ as proposed by the Script Committee of the Central Hindi Directorate should be adopted.

2. To some extent, in the case of productive prefixes, rigidity may be maintained in equating Hindi prefixes with English prefixes while coining new terms, but in the case of unproductive prefixes any such equation is neither possible nor desirable.

3. As far as possible derivatives should be formed by using appropriate

suffixes according to a plan but after determining the exact grammatical form of the original terms.

4. While it was desirable to explore the existing resources of Hindi prefixes and suffixes, it is equally important to use the purely Hindi prefixes and suffixes in a very limited way, keeping in view the pan-Indian character of the terminology.

5. Word based on *Namadhatas* and certain other forms are not in conformity with the idioms and syntax of Hindi and it should be avoided in the interest of more natural and fluent writing.

6. The nominal form of international terms should be used in the masculine gender unless there were compelling reasons to the contrary.

7. Hybrid forms were normal and natural linguistic phenomena in scientific terminologies and they should be adopted keeping in view of the requirements of simplicity, utility and precision.

8. Rules of Sanskrit grammar must not be adopted rigidly and departure may be made where necessary for the life and growth of a developing language.

9. As far as possible, *sandhi* should be avoided in newly coined words and in most cases hyphen may be placed bet-

When two terms because this would enable the users to have a quicker grasp of the word-structure of new terms.

10. *Halanta* should be used as necessary for a correct rendering of terms. *Anuswara* is more desirable than *pancamavarna*.

11. It is desirable to employ the recently adopted Sanskrit based terms to represent various scientific concepts in all or most Indian languages for giving the terminology a pan-Indian character,

though special terms may be used simultaneously. Uniformity must be maintained in adopting international terms in all modern languages.

12. The pronunciation of proper names should be as far as possible as in the original language.

13. International numerals should be used and symbols of units, of weight and measures should be written in Roman script.

Appendix Q

Excerpts from the proceedings of the Commission for Scientific and Technical Terminology and the proceeding of the Central Advisory Board for Scientific and Technical Terminology and a note for the Education Minister's Conference

(i) Excerpts from the proceedings of the Eighteenth meeting of the Commission for Scientific and Technical Terminology (24th July, 1964)

For the adoption of the approved terminology in the regional languages other than Hindi, it was decided that instead of transliterating the terminology in Roman script, the versions of the terminology should be prepared and published in the scripts of the regional languages concerned with only such modifications as may be necessary to suit their genius. It was decided that versions of the science terminology in at least two languages should be published next year in their scripts.

It was further decided that in the matter of terminology, the Commission should function as an academy and in the interest of maintaining uniformity in the terminology, it should arrange to establish its own committees in the various States for the purpose of rendering the terminology in the various scripts of the modern Indian languages. It was recommended that the entire expenditure for this purpose should be met by the Union Government, though cooperation of the State Governments and the universities should be secured in this work.

(ii) Excerpts for the Minutes of the Third Meeting of the Central Advisory Board for Scientific and Technical Terminology

A paper on Item 4 of the Agenda for the Third Meeting of the Central Advisory Board for Scientific and Technical Terminology to be held on 10th October, 1964.

Item 4 :

To consider the steps necessary to accelerate the setting up of agencies/committees/departments for evolving and co-ordinating terminology in regional languages and for their functioning in co-operation with the Commission.

One of the tasks assigned to the

Commission in their terms of reference is :—

“Co-ordination of the work done by different agencies in the states in the field of scientific and technical terminology, with the consent or at the instance of the State Governments concerned and approval of glossaries for use in Hindi and other Indian languages as may be submitted to it by the concerned agencies.”

Subsequent to the constitution of the Commission the states were approached with the request to furnish information on terminology work done

by them. This material has been given due weight by the Commission in the performance of its task. It is seen that the terminology work done in most of the states is only upto higher secondary stage, though, however, in the states of H. P., Maharashtra, Gujarat, M. P. (Nagpur University) a larger volume of valuable work has been done, during the last 20 to 30 years. In fact, the work of scientific terminology dates far back; as was pointed out by the Chairman of the Commission in the last meeting of the Board, that the first book containing Scientific terms was published in the beginning of this century under the editorship of Babu Bhagwandas with the assistance of such great scientists as Dr. J.C. Bose, Dr. P. C. Ray and Dr. Jha. I am drawing attention to all this work done in different places over a long stretch of time, in order to emphasise the importance of co-ordinating the available material and evolution by the commission of a terminology common to the maximum extent possible for all the Indian languages. In this context, attention may be drawn to the directive in the Presidential Order of April, 1960 on the findings of the Parliamentary Committee on the Official Language Commission Report. The directive reads that the maximum possible identity should be aimed at in evolving terminology for all Indian languages. In fact, the same view was expressed in the report of the University Education Commission (1948-49) where it is stated that "a Board consisting of scientists and linguists be appointed to prepare a scientific vocabulary of words which will be common to all Indian languages. In order to achieve this objective the Commission has observed the following principles in the

evolution of terminology:—

- (i) International terms have been retained as such to be transliterated in the script of the various Indian languages ;
- (ii) In the case of conceptual terms, equivalents are chosen which are common to as many regional languages as possible ;
- (iii) Most important of all is that equivalents are based on Sanskrit roots ;
- (iv) Where a suitable acceptable language equivalent is not easily available, the English term itself is retained.

It has been estimated that the terms comprised by the above categories will constitute *not less than 80%* of the total and may be described as pan-Indian. In fact an analysis was made of 39,862 terms of the Science Glossary I, now under publication showing that as many as 73% of the terms are based on Sanskrit and that 20% are transliterated terms, thus, making a total of 93% of the terms in this glossary which could be described as pan-Indian. The consensus of opinion as seen from the minutes of the last meeting of this Board is that this 80% (or more) of the terms should be acceptable to all the states and be written in the script of the different languages only with such modifications as may be necessary to suit the grammar and genius of any particular language. It was only about the balance of 20% or less residual terminology that there was discussion and it was pointed out by one of the members that this will have to be worked out carefully in consultation with the states. I would re-

peat that at the last meeting of this Board, the conclusion that emerged was that 80% of what may be described as pan-Indian terminology should be accepted by all the states. As the primary aim of scientific terminology in Indian languages should be that it should lead to a substantial improvement in science education and in general accelerate the progress of science in the country, it is vital that there should be a common Indian scientific terminology, if not 100% common, as near common as possible.

In this connection it will be of interest to the Board to know that at a recent seminar on medical terminology held in this very place I found that more than 90% of the equivalents on medical terminology evolved by the Commission were understood and accepted by the medical teachers from non-Hindi areas such as Andhra Pradesh, Kerala and Karnataka. This was possible, as all the conceptual terms were nearly wholly based on Sanskrit roots.

I shall now outline the scheme necessary for the purpose of this co-ordination both in regard to 80% pan-Indian terms and 20% residual terms. The Science Glossary comprising Hindi equivalents approved and finalised by the Commission in the subjects of Mathematics, Physics, Chemistry, Geology, Zoology, Geography and Botany is now in your hands and sufficient copies of it will be made available to all the states. In the subjects of medical and engineering curricula the terminology is now in progress and parts of it as and when they are finalised by the Commission, will be made available. Their adaptation in the regional languages is now proposed to be carried out in the

following manner with your approval :—

- (1) The Commission will be incharge of the work in consultation with the State Governments. The work will be done at the capital of each State ;
- (2) The work may be done under the State Education Ministry or with its consent under a university. The latter is perhaps preferable for expeditious work.
- (3) A nucleus staff consisting of 1 Assistant Director, 1 Research Assistant, 2 Typists (One English and Hindi and the other English and Regional language), a Clerk and a Peon will be appointed in each State. If the work is to be under the State Education Ministry, this staff may be attached to the office of Director of Education or Public Instruction. If it is to be under the University, they may be attached to the office of the University. The Assistant Director and R.A. may either be directly recruited for a temporary period or may be seconded from the State Educational service. The post of Assistant Director may be in the rank of Reader and may be an M.A. or Ph. D. in Linguistics having in addition to proficiency in regional language knowledge of Hindi and Sanskrit, The Research Assistant will be an M.A. in modern Indian languages or an M. A. in regional language with adequate knowledge of Hindi, in the usual scale of pay assigned to the post.

The staff will attend to preparation of terms subject-wise, to be placed before the meetings of the Expert Advisory Committee (common to all science subjects) and thereafter consolidate the list of terms so revised. For the seven science subjects namely Mathematics, Physics, Chemistry Geology, Zoology, Geography and Botany, one Expert Advisory Com-

mittee shall be constituted by the Commission on the advice of the State Government or the university. The Committee shall consist of one university, collegiate teacher in each of the subjects named above and two Linguists in the regional language one of whom, in addition, should know Hindi and Sanskrit.

(iii) *Excerpts from the Minutes of the Fourth Meeting of the Central Advisory Board for Scientific and Technical Terminology (21st August, 1967)*

Subject—Co-ordination

While realising the need of coordination at different stages of terminology in one language and between the terminology in a particular regional language and the one prepared by Commission, Shri I. J. Patel (Vice-Chancellor, Sardar Patel University) stressed the need of settling quickly the case.....in which somewhat different terminology was used.

* * * *

Shri Hardwari Lal stressed the need of coordination between the work done by the Commission and various other agencies in the different parts. Shri Pabitra Mohan Pradhan, referring to the terminology prepared and under preparation in Oriya, raised the question whether the terms evolved in Oriya are to be used or the ones evolved by the Commission. The Chairman pointed out the need of coordination between the two terminologies. Professor Sher Singh also informed that after adaptation of the Commission's terminology in the regional languages, grants will be given for its publication.

* * * *

Shri V.K. Malhotra emphasized the need of coordination between the Hindi States in the matter of translation of

books. The Chairman assured that proper coordination will be done in respect of terminology and book production.

* * *

Dr. P.D. Shukla requested the Board to consider the important issue regarding adoption/adaptation of national terminology to suit the genius and grammar of the regional language concerned and the local needs. In this connection, Dr. Shukla pointed out two possible ways of working one; may be to set up a similar commission or committee in each state for coining new words taking into consideration the terminology prepared by the Commission; and the other way could be to have broad agreement that the national terminology be the same in all the Indian languages with some marginal adjustments to suit local conditions, and for this purpose the appointment of a small group of two-three experts in each State will do. Elucidating the latter proposal further, Dr. Shukla said that the international terminology and terms which had gained world-wide currency should be accepted as such and be only transliterated. Similarly, the remaining 60% terms, which are based on Sanskrit roots and which are common to most of the regional languages, should also be acceptable to everybody. The residual

10 to 15 per cent terms, which do not fit in with the genius and grammar of any particular language, may be replaced by words which have gained greater currency in the language region concerned. The latter proposition, Dr. Shukla said, was simpler involving a smaller amount of money.

* * * *

Shri Karpoori Thakur suggested preparation of a glossary in which equivalents of terms are given in the various Indian languages. According to him such a work would be needed by

(iv) A note presented by the Commission for Scientific and Technical Terminology to the State Education Ministers' Conference (June, 1966.)

Adoption/adaptation of the Terminology approved by the Commission for Scientific and Technical Terminology for use in the regional languages :

One of the recommendations of the Official Language Commission which was accepted by the Committee of the Members of Parliament was that the maximum possible identity should be aimed at in evolving terminology in all the Indian languages. The Committee also recommended that suitable arrangement should be made for coordinating the efforts made at the centre and in the States for evolving terminology in Hindi and other Indian languages. The Commission for Scientific and Technical Terminology which was set up under the Presidential Order dated the 27th April, 60 was *inter alia*, charged with the responsibility of coordination and supervision of work in the field of Technical Terminology and to issue authoritative glossaries for use in all Indian languages. Based on the principles enunciated in this behalf, the Commission decided to finalise the terminology in Hindi in the

scholars in the process of selecting and understanding terms in other languages. He was informed by Prof. Sher Singh that this may form a part of future programme of the Commission and that during the "process of exclusion" an all-acceptable equivalent may emerge out from the different equivalents in the various Indian languages. Only such terms which do not have a common national equivalent but have different ones in the various Indian languages may find place in such a dictionary.

first instance. Science Glossary I containing finalised terms in Hindi upto first degree standard, besides the "Administrative Glossary" and the "Glossary of Designational Terms" has been published. Time is, therefore, now opportune that the terminology so far finalised is adopted/adapted in all the other modern Indian languages and necessary steps taken in this behalf.

2. The question of evolution, coordination and standardisation of terminology was also considered in the meeting of the Central Advisory Board for Scientific and Technical Terminology, Members of which are Education Ministers of the various State Governments, Vice-Chancellors of some universities and other scholars. On the unanimous recommendation of the Board, the Commission for Scientific and Technical Terminology, at its Eighteenth Meeting resolved that "for the adoption of the approved terminology in regional languages other than Hindi it was decided that the versions of their terminology should be prepared and published in the scripts

of the regional languages concerned with only such minimum modifications as may be necessary to suit the genius of the regional languages.

3. It was further decided that in the matter of terminology, the Commission should function as an academy and in the interest of maintaining uniformity in terminology it should arrange to establish its own committees in the various States for the purpose of rendering the terminology in the various scripts of the modern Indian languages.

4. The main object in setting these centres in the respective linguistic regions is that the terminology must be accepted by these regions and that the various linguistic groups should have a feeling of participation in the work of terminology. It is with a view to achieving this object that the association and cooperation of the regions in the work is essential.

5. It was also recommended that the entire expenditure for this purpose would be met by the Union Government though cooperation of the State Governments and the universities should be secured in this work. On the basis of this resolution, a note was prepared by the Commission and placed before the Central Advisory Board at its third meeting held at Bangalore in October, 1964 which was approved by the Board.

6. Brief details of the general plan conceived by the Commission are :—

- (a) A terminological centre may be set up in the Capital of each State representing the territory of each of the regional languages.
- (b) Recurring and non-recurring expenditure should be met cent

per cent by the Union Government.

- (c) At each centre, the Commission will set up an Expert Advisory Committee common to all subjects, such Committee being set up in consultation with the State Governments concerned or a university to be nominated by the State. Each Committee would comprise of one university or collegiate teacher in each subject in which the Commission has finalised terminology in Hindi. The State Government or the university would recommend the names of suitable teachers for this purpose. Besides, there would be two linguistic experts of the regional language, one of whom would also be proficient in Hindi and Sanskrit.
- (d) There will be a nucleus whole time staff at the centre consisting of one Assistant Director, one Research Assistant with suitable qualifications, two typists (one English and Hindi and the other English and regional language), an L.D.C. and a peon.
- (e) Each state committee will meet periodically, review the terminology and get it prepared in the script of the regional language with minimum changes to suit the grammar and genius of the language concerned. The Committee is not expected to go into the merits of the chosen equivalents as finalised by the Commission because every care has already been taken in arriving at it. The terms after being initially

processed by the Commission with the assistance of its own staff, are discussed by an Expert Advisory Committee consisting of teachers and specialists in the subjects from different areas and linguists of repute. Each word is fully discussed both from the point of view of its scientific meanings as well as linguistics. The words so processed are again discussed and approved at periodical seminars whereafter they are scrutinised, coordinated and finalised by the Commission. Thus, it will be seen that the terminology evolved by the Commission is finalised after an intricate process and full consideration is given before the words are finally approved. Moreover, the Commission has constantly observed the following principles in the evolution of terminology :

- (i) International terms have been retained as such to be transliterated in the script of the various Indian languages ;
 - (ii) In the case of conceptual terms, equivalents are chosen which are common to as many regional languages as possible ;
 - (iii) Equivalents are based on Sanskrit roots ; and
 - (iv) Where a suitable acceptable language equivalent is not easily available, the English term itself is retained.
- (f) The Commission has estimated

that the terms *comprised* by the above categories constitute not less than 80 per cent of the total and may, therefore, be described as pan-Indian. Therefore, 80 per cent or more of the terms will be acceptable to all the states and be written in the script of the regional languages only with such morphological modifications as necessary to suit the grammar and the genius of the particular language. In regard to the remaining terminology approved by the Commission which may not be considered as pan-Indian, the Expert Advisory Committees would evolve new terms in the regional languages. Except in Tamil, the residual terminology of this category is likely to be as little as 10 per cent.

8. It is expected that the office accommodation would be made available by the respective State Governments or universities where the regional centre is located. After preparation of the glossaries in the regional script, it is proposed to entrust their publication to the State Governments concerned. The expenditure involved in this behalf will be entirely met by the Central Government.

9. It may be stated that the states are launching schemes to switch over to the regional languages as the medium of instruction. Further, the Government of India has also a proposal under consideration that regional languages be introduced as medium of examination for entry to public services. As a consequence, production of literature in the regional languages is likely to be on the increase to meet this need. In the absence of a standard terminology for

the regional language concerned the regions are likely to adopt their own course and use whatever terminology becomes available to them within the region. Further, the authors who may take up the work of writing or translating books may make their own choice in the matter of terminology. The result would be that not only different terminology will be used in different linguistic regions, but a particular region may go on using more than one set of terminologies. It is feared that the goal as envisaged in the Presidential Order dated the 27th April, 1960, viz. the maximum possible identity in evolving terminology for all Indian languages would not be

achieved. It may be further added that once a particular terminology, whether standard or not, is introduced in a particular language, it becomes a difficult task to replace it. It would, therefore, defeat our objective if the proposal is not carried out without the least delay.

10. This scheme was circulated to various State Governments with the approval of Deputy Education Minister and several State Governments viz. Punjab, Assam, Maharashtra and Mysore have expressed their eagerness to cooperate. The scheme could not be launched in 1966-67 due to financial stringency.

Appendix : R

Terms of Reference of the Official Language (Legislative) Commission.

The Official Language (Legislative) Commission will consist of a Chairman, a Vice-Chairman, fifteen Members and a Member-Secretary.

The functions of the Commission shall be :

- (i) to prepare and publish a standard legal terminology for use, as far as possible, in all official languages ;
- (ii) to prepare authoritative texts in Hindi of all Central Acts and Ordinances and Regulations promulgated by the President ;
- (iii) to prepare authoritative texts in Hindi of all rules, regulations and orders made by the Central

Government under any Central Act or any such Ordinance or Regulation ;

- (iv) to arrange for the translation of Central Acts, Ordinances and Regulations promulgated by the President in the respective official language of the states and for the translation of all Acts passed and Ordinances promulgated in any State into Hindi, if the texts of such Acts or Ordinances are in a language other than Hindi ; and
- (v) to perform such other duties as may be assigned to the Commission by the Government of India from time to time.

Appendix : S

Excerpts from the Proceedings of the Eighteenth Meeting of the Hindi Shiksha Samiti (28-29th April, 1966).

(i) Item 4

Setting up of regional centres at State headquarters for evolution of terminology in regional languages:

The Samiti considered in detail the paper circulated on the subject. The Samiti attached considerable importance to the work of evolution of terminology and strongly recommended that in view of the fact that a large number of universities had switched over to regional languages as the medium of instruction, it was necessary to speed up the work of

evolution of terminology and preparation of text books in regional languages based on that terminology. The Samiti also stressed the need for bringing about uniformity in terminology by adopting in regional languages, as far as possible the terminology evolved in Hindi and subject to such adjustments as may be necessary to meet the special needs of the regional language concerned and its local genius. The Samiti recommended that the centres proposed to be opened in the states should be book-oriented and maximum effort should be made towards early production of the required books.

(ii) *Extract from the speech delivered by Shri M.C. Chagla, Union Minister of Education.*

"I attach greater importance to what I have just mentioned, namely the preparation and translation of books in regional languages and in regional scripts. The reason for it is that as the years go by universities are switching over to the regional languages as media of instruction. There is already a suggestion that regional languages may be introduced in the State Public Service Commissions. *But before that happens, we should be ready with this common terminology—scientific and technical terminology; otherwise, we would be in a chaotic state of affairs. The whole object*

of setting up the Commission for Scientific and Technical Terminology is to have a common terminology and that object will frustrate unless we take steps to see that all the Indian languages all over the country adopt this common terminology. I would appeal to this body to give thought to this question. I see from the notes that have been put before me that there was an idea to have centres at various State levels, but that could not be carried out for want of resources. It may be examined whether it is not possible to ask the State Governments to undertake the necessary adaptation of

this work into regional languages or whether universities in different states cannot be asked to do this work. You think about it and see what can be done.

Without this work being undertaken, the linguistic unity of our country is threatened at least as far as scientific and technical terminology is concerned."

Appendix : T

Extracts from the Report of the Education Commission (1964-66).

11.58. The Medium of Education

The problem of teaching and evaluation in higher education is inextricably linked with the medium of education and examination. It was pointed out earlier that as a part of the development of education in our country, we have to move energetically in the direction of adopting the regional languages as media of education at the university stage, that careful preparation should be made for the purpose, that both manner and the time of transition would have to be left for decision to the university system. We shall now deal with some other aspects of the problem from the point of view of practical implementation :

(1) We would like to emphasise that the medium of classroom communication and examination should generally be the same. The present arrangement under which a large proportion of students, at the first degree stage and even later, use the regional language for purposes of examinations although the classroom instruction is given through the medium of English, is educationally unsatisfactory. If the student can be expected to express himself in the regional language in his examination, it should not normally be difficult for a teacher to do the same in the classroom.

* * * *
15.65. Vigorous action, however, is

required for the preparation of good text-books on technical subjects in regional languages and for the translation of foreign books and other teaching material. This could be undertaken in part under the scheme for the re-publication of standard works on engineering which the Ministry of Education has launched in collaboration with a number of foreign countries. University teachers and industrialists should be associated with this work. This can be begun at the national level in the production of model text-books for translation into regional languages.

The central organisation should work with State and regional organisations, for the selection of authors, preparation of material and publication. The books may be tried experimentally in a few selected institutions before their widespread adoption. In all regional languages, care should be taken to retain a common international terminology.

* * * * *

16.39. In this context a reference may be made to scientific and technical terminology in the Indian languages. Such a terminology is necessary for the writing of science material and text-books in these languages. The Ministry of Education appointed, about five years ago, a Standing Commission for Scientific and Technical Terminology. The Com-

mission works in close association with the universities and professional bodies concerned with scientific terminology. It has published standard glossaries in Hindi of scientific terms required at the school stage. In some science subjects glossaries have also been published for use at the first degree level.

The Commission has followed the sound and practical codes of adopting in Hindi and other regional languages the current English forms of international

terms e.g. names of units, chemical elements and compounds, as also mathematical signs and symbols. Scientific and technical terms which stand for concepts are translated into Hindi and other Indian languages, every attempt being made to have the same word in different languages.

What the Commission has recommended and done in relation to Indian languages is in accordance with the standard practice in almost all countries.

Annexure : 1

Excerpts from the National Policy on Education, (1968).

Development of Languages : (a) Regional languages.

The energetic development of Indian languages and literature is a *sine qua non* for educational and cultural development. Unless this is done, the creative energies of the people will not be released, standards of education will not improve, knowledge will not spread to the people, and the gulf between the intelligentsia and the masses will remain, if not widen further. The regional languages are already in use as media of education at the primary and secondary stages. Urgent steps should now be taken to adopt them as media of education at the university stage.

(b) *Three-Language Formula* : At the secondary stage, the State Governments should adopt, and vigorously implement the three-language formula which includes the study of a modern Indian language, preferably one of the southern languages, apart from Hindi and English in the Hindi-speaking states, and of Hindi along with the regional language and English in the non-Hindi speaking states. Suitable courses in Hindi and/or English should also be available in universities and colleges with a view to improving the proficiency of

students in these languages up to the prescribed university standards.

(c) *Hindi* : Every effort should be made to promote the development of Hindi. In developing Hindi as the link language, due care should be taken to ensure that it will serve, as provided for in Article 351 of the Constitution, as a medium of expression for all the elements of the composite culture of India. The establishment, in non-Hindi states, of colleges and other institutions of higher education which use Hindi as the medium of education should be encouraged.

(d) *Sanskrit* : Considering the special importance of Sanskrit to the growth and development of Indian languages and its unique contribution to the cultural unity of the country, facilities for its teaching at the school and university stages should be offered on a more liberal scale. Development of new methods and teaching the language should be encouraged, and the possibility explored of including the study of Sanskrit in those courses such as modern Indian languages,

ancient Indian history, Indology and Indian philosophy at the first and second degree stages where such knowledge is useful.

- (e) *International Languages* : Special emphasis needs to be laid on the study of English and other international languages. World

knowledge is growing at a tremendous pace, especially in science and technology. India must not only keep up this growth but should also make her own significant contribution to it. For this purpose, the study of English deserves to be specially strengthened.

Annexure : 2

Principles For Evolution of Terminology Approved By The Standing Commission For Scientific & Technical Terminology

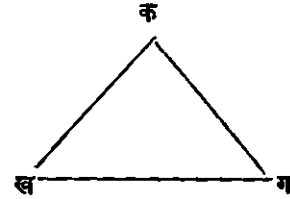
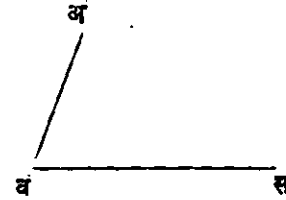
International terms should be adopted in their current English forms, as far as possible and transliterated in Hindi and other Indian languages according to their genius. The following should be taken as examples of international terms :—

- (a) Names of elements and compounds, e.g.—*Hydrogen, Carbon, Carbon dioxide*, etc. ;
- (b) Units of weights, measures and physical quantities, e.g. *dyne, calorie, amperes*, etc. ;
- (c) Terms based on proper names, e.g., *Fahrenheit scale (Fahrenheit), Voltmeter (Volta), Ampere (Ampere)*, etc. ;
- (d) Binomial nomenclature in such sciences as *Botany, Zoology, Geology*, etc ;
- (e) Constants, e.g., π , g , etc ;
- (f) Words like *Radio, Petrol, Radar, Electron, Proton, Neutron* etc., which have gained practically world-wide usage ;
- (g) Numerals, symbols, signs and formulae used in mathematics and other sciences e.g., *Sin, Cos, tan, log*, etc. (Letters used in mathematical operation should be in Roman or Greek alphabets)

2. The symbols will remain in the international form written in Roman script, but abbreviations may be written in Nagari and standardised form, specially for common weights and measures e.g., the symbol 'cm' for centimetre will be used as such in Hindi, but the abbreviation in Devanagari may be से० मी०.

This will apply to books for children and other popular works only but in standard works of science and technology, the international symbols only like *cm* should be used.

3. Letters of Indian scripts may be used in geometrical figures e.g.



but only letters of Roman and Greek alphabets should be used in trigonometrical relations e.g., *Sin A, Cos B* etc.

4. Conceptual terms have generally been translated.

5. In the selection of Hindi equivalents simplicity, precision of meaning and easy intelligibility should be borne in mind. Obscurantism and purism may be avoided.

6. The aim should be to achieve the maximum possible identity in all Indian languages by selecting terms :—

(a) common to as many of the regional language as possible ; and

(b) based on Sanskrit roots.

7. Indigenous terms, which have come into vogue in our languages for certain scientific words of common use such as तार for telegraph/telegram, महाद्वीप for continent, परमाणु for atom etc., will be retained.

8. Such loan words from English, Portuguese, French, etc., as have gained wide currency in Indian languages will be retained, e.g., *Engine, Machine, Lava, Metre, Litre, Prism, Torch* etc.

9. Transliteration of International terms into Devanagari Script—The transliteration of English terms should not be made so complex as to necessitate the introduction of new signs and symbols in the present Devanagari characters. The Devanagari rendering of English terms should aim at maximum approximation to the standard English pronunciation with such modifications as prevalent amongst the educated circle in India.

10. Gender—The International terms adopted in Hindi should be used in the masculine gender, unless there were compelling reasons to the contrary.

11. Hybrid-formation—Hybrid forms

in scientific terminologies e.g., आयनीकरण for ionization, वोल्टता for voltage, क्लय-स्टैण्ड for ringstand, साबुनीकारक for saponifier etc. are normal and natural linguistic phenomena and that such forms may be adopted in practice keeping in view the requirements of the scientific terminology, viz., *simplicity, utility and precision.*

12. Sandhi and Samasa in scientific terms—Complex forms of Sandhi may be avoided and in cases of compound words, hyphen may be placed in between the two terms, because this would enable the users to have a more easy and quicker grasp of the word structure of the new terms. As regard आदिवृद्धि in Sanskrit-based words; it would be desirable to use आदिवृद्धि in prevalent Sanskrit *tatsama* words e.g., व्यावहारिक, लक्षणिक etc. but may be avoided in newly coined words.

13. Halanta—Newly adopted terms should be correctly rendered with the use of 'hal' wherever necessary.

14. Use of Panchamvarna—The use of Anuswar may be preferred in place of Panchamvarna but in words like 'lens', 'patent', etc., the transliteration should be लैन्स, पेटेन्ट and not लेंस, पेटेंट.

● In order that the change from English should not be delayed, it is necessary that the Government of India and the Provincial Governments should immediately devise measures to develop the Federal and the regional languages. In the first place a board consisting of scientists and linguists should be appointed to prepare a scientific vocabulary of words which are common to all the Indian languages.

— *University Education Commission Report, 1948-49.*

● It is nothing derogatory for a language to borrow terms expressions ; and it is the most natural thing to do, when terms expressions have to be brought in not merely as additional vocabularies but words trailing a certain context of meaning associated by usage with

— *Official Language Commission Report,*

● The central organisation should work with State and regional organisations, for the selection of authors, preparation of material and publication. The books may be tried experimentally, in a few selected institutions, before their widespread adoption. In all regional languages, care should be taken to retain a common terminology.

— *Report of the Education Commission, 1964-66.*

● The Commission for Scientific and Technical Terminology followed the sound and practical codes of adopting in Hindi and regional languages the current English forms of international terms names of units, chemical elements and compounds, as also mathematical signs and symbols. Scientific and technical terms which stand for concepts are translated into Hindi and other Indian languages, every care being made to have the same word in different languages.

— *Report of the Education Commission, 1*