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Recent Trends In Federal Finance¹

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RAPID adjustments are now taking place in the financial organizations of all federations. The original distribution of functions and of sources of revenue between the general and regional governments was largely a matter of historical accident and has to be continuously adapted to changing social and economic conditions. Upto the present century, the sphere of government had been limited. Federal and State governments had limited functions and utilised sources of revenue which were fairly separate. The scope of Government now has everywhere expanded and the original division of functions and resources has been characterized as belonging to the "horse and buggy period". With expansion of functions, general governments began to encroach upon the tax 'preserves' of the regional governments and the regional governments in turn have been faced with a growing maladjustment between resources and functions.

In all federations the tendency has been for the general government to expand its powers at the expense of the States and in no sphere is this more manifest than in the field of finance. Some of the more important factors responsible for this development may be noted. In the first place, war and preparation for war have been obvious reasons for the expansion of the economic power of the general governments. Seligman has pointed out that war has been the root cause of the growth of the economic power of the federal

¹ A course of three lectures delivered at the Annamalai University.

governments. War leads to central control over resources, which is seldom relinquished at the termination of war. This may be illustrated by reference to the first and second world wars. In Switzerland by the Constitution of 1848 only customs duties were allotted to the Federal Government. To meet the increased expenditure on account of the outbreak of the war in 1914, constitutional amendments were passed authorizing the Federal Government to enter the field of direct taxation. By the constitutional amendments of 1915 and 1919, taxation of incomes, property and profits was resorted to by the Federal Government. By another amendment in 1917, a tax on securities and insurance premiums was imposed by the Federal Government. In 1938 to meet increased defence expenditure, an amendment to the constitution authorized federal taxes on war profits, income and capital and a tax on beer. In Australia before the first world war, the Commonwealth Government had not entered the income-tax field. Under the strain of war, an estate duty was imposed in 1914 and an income-tax in 1915. The States which had entered the income-tax field earlier than the Commonwealth Government began to compete with the latter. In 1941 there were in existence 11 separate State taxes on income levied by the six States. The increased expenditure consequent on the second world war made the Commonwealth Government to propose to the States that they should vacate the income-tax field in return for grants from the Commonwealth. When the States rejected the proposal, the Commonwealth Government passed four Acts, the first of which imposed a uniform Commonwealth income-tax at rates high enough to bring in as much revenue as the former Commonwealth and State taxes combined; the second Act made provision for payment of grants to any State which did not collect income-tax; equal to the average amount of its own income-tax collections during the first two financial years of the war; the third Act gave priority to the Commonwealth over payments due to the States by way of income-tax; and the fourth entitled the Commonwealth to take over the State income-tax organisation. Four States, Victoria, Queensland, South Australia and Western Australia challenged the validity of the Commonwealth's legislation; but the High Court of Australia in 1942 upheld its validity. The judgment of the High Court is regarded as of the greatest significance as "it has had and will continue to have a far-reaching effect on Commonwealth-State financial relations". It has been maintained that the Commonwealth Government could not have raised the funds required during 1942-46 if it had not obtained a monopoly of income-

1. Federal Financial Relations in Canada and Australia - Report prepared for the Government of Tasmania by K. J. Pitso, p. 21.

taxation. Though the financial justification for the continuance of 'uniform taxation' was weakened with the termination of the war, Commonwealth monopoly of income-tax has continued, the States being reimbursed for the loss of revenue by grants in accordance with the States Grants (Tax Reimbursement) Act, 1946.

In Canada, the Dominion Government entered the income-tax field in 1917, but had to compete with the provinces which also levied income-tax. As a result of the recommendations of the Royal Commission on Dominion-Provincial Relations (1941), the Provinces were induced in 1942 to vacate the field of income-tax and corporation tax for the duration of the war and twelve months thereafter. As compensation the Provinces were offered either the revenue they actually collected from this source in 1940 or the net cost of servicing their debt in the same year, less the revenue derived from succession duties, plus a special grant based on fiscal need. The Dominion Government during the war also imposed a gasoline tax and a liquor tax, at the same time guaranteeing to pay to the Provinces the amounts by which in any year their revenues under these heads fell below the amounts derived from Gasoline Tax in 1940 and from liquor sources in 1942. The war-time taxation agreement was replaced in 1947 by the Dominion-Provincial Taxation Agreements entered into with the Provinces, excluding Ontario and Quebec. By these agreements the provinces agreed to give up the three fields of direct progressive taxation, namely, personal income taxation, corporation taxation and succession duties for a period of five years. In return for these tax concessions, the Provinces have been offered two options; under the first option they may take a subsidy of 12.75 per capita of the 1942 population of the Province plus 50% of the Provincial tax receipts from income and corporation taxes in 1940, plus Statutory Subsidies. Under the second option, they may take 15.00 per capita of the 1942 population plus Statutory Subsidies. These payments are subject to adjustment of changes in population and national income, but will not fall below an established fixed minimum. Thus the scheme of uniform taxation adopted in Australia in the case of income-tax has come to be adopted by Canada as well, except in the case of the two Provinces Ontario and Quebec. There is however one important difference between the Canadian and Australian schemes. The Canadian scheme has been voluntary, each Province being free to decide whether it would enter into an agreement with the Dominion; the Australian States were not similarly free to choose.

The tendency towards unification or centralisation by finance is noticeable in the United States as well. Before the entry of the United

States into the war of 1914-18, the Federal Government depended mainly upon customs and excise for its revenue. True, the 16th Amendment in 1913 had authorized the levy of a tax on incomes. With the entry of the United States into the war in 1917, increased rates of income-tax, war profits tax and excess profits tax came to be levied by the Federal Government. The participation of the United States in the second world war has led to still further raising of personal and corporate income-taxes; personal incomes were made subject to surtax and to a special victory tax; corporation incomes were made subject to surtax and excess profits tax. A Committee on Inter-Governmental Fiscal Relations was appointed in 1943 which recommended the developing, in consultation with the States, rules of uniform income-tax procedure with a view to the adoption ultimately of a single administration of a relatively uniform State and Federal income-tax.

Thus under the stress of two global wars, the general governments of the federations have been forced to enter the field of direct taxation. In Australia and in Canada, the regional governments have been excluded from this field in return for the payment of grants. When the war came to an end, the general governments did not withdraw from this field and a system of uniform taxation has been evolved in Australia and in Canada with a view to establishing a more equitable system of taxation by reducing duplication of direct taxation.

The depression of the 'thirties has also been a catalytic agent in the expansion of functions of the general governments in federations. With growing unemployment during the depression, relief became necessary but only the federal government had the fiscal power and national outlook required for handling the welfare and relief measures which had to be adopted. In Canada it became evident that the Provinces were not in a position to sustain the burden of unemployment relief and Dominion grants and loans became essential. In 1935 the Dominion Government passed the Employment and Social Insurance Act providing for a nation-wide scheme of unemployment insurance. This Act was declared ultra vires by the Privy Council. To overcome this constitutional difficulty, the British North America Act was amended in 1940 to include unemployment insurance as a Dominion responsibility. A new bill setting up a contributory scheme was passed in 1940. At the Dominion-Provincial Conference in August 1945, the Dominion Government announced that it was prepared to "accept responsibility for ensuring that there shall be provided a reasonable minimum payment for the maintenance of employable unemployed persons". When the provinces rejected the Dominion Govern-

ment's reconstruction proposals of August 1945, this offer had to be withdrawn. In Australia also the States at first attempted to deal with unemployment relief during the depression of the 'thirties. But the burden on the States proved to be heavy and the Commonwealth had to step in by way of grants. "The States had to sacrifice in independence what they received in financial assistance." In 1944 the Commonwealth Unemployment and Sickness Benefits Act was passed by which the Commonwealth has now assumed responsibility for granting relief payments to persons willing to work but are unable to find employment. A similar process is discernible in the United States. When unemployment became critical in 1931, State and local governments made large payments for direct relief of the unemployed. But the marked increase in relief expenditures coupled with severe decline in state and local revenues threatened their financial stability. Only the federal government had the financial strength to provide relief and relief measures were enacted by the Federal government. The traditional division of governmental responsibilities came to be ignored. In 1933 the Federal Emergency Relief Administration was set up to deal with the problem of relief. The Federal Government at first experimented with grants in aid of public works and of relief. To care for employables, a new federal agency, the Works Programme Administration, had to be created. It was to provide work relief not through the method of grants but by a federal scheme. In 1935 a distinction was made between employables and unemployables; provision for the latter was to be a State-local task while the provision for employables was to be a federal responsibility. The Federal Emergency Administration of Public Works which aimed at promoting recovery from the depression, not only undertook the construction of federal works but also sought to stimulate state and local action through grants and loans. Thus under the emergency of the depression, the Federal Government came to take the initiative in combating unemployment and in stimulating recovery.

Full employment has now become the objective of general governments in most of the federations. In Canada, in the Preamble to the Taxation Agreements, 1947, it has been laid down that one of the purposes of the Agreement is to enable the Dominion Government, with the co-operation of the Provincial Governments, "to carry out fiscal and other national policies intended to maintain high levels of employment and production". In the United States, the Employment Act of 1946 declared that it is the continuing policy and responsibility of the federal government to promote maximum employment, production and purchasing

power. In Australia the Commonwealth White Paper on Full Employment stresses the importance of co-operation between the Commonwealth and State Governments for the implementation of measures for full employment. Thus general governments in all federation are assuming the responsibility for maintaining the level economic activity.

An even more potent agency than war and economic depression in increasing the powers of the general government has been the development of social services. Social services like unemployment insurance, sickness insurance, invalidity, old age, widows' and orphans pensions, etc., require uniformity in standards and have to be based on uniform principles. They therefore demand regulation by the federal government or the co-operation of all the regional governments for their uniform regulation. The regional governments however lack the financial resources and administrative ability to handle the new services. Even if some regional governments are favourably placed in this respect, they might be inhibited from the provision of social services for fear of imposing obligations upon their own citizens which the citizens of other States do not bear. Hence regulation by the general government becomes necessary if these services are to be provided at all. In Switzerland the powers of the general government in the field of social services have been increased by several amendments to the constitution. In 1890 the Federal government was given the power to deal with accident and sickness insurance. In 1925 the Federal government acquired power to introduce old age and widows insurance and invalid insurance. In the United States, the Social Security Act, 1935, instituted (1) old age and survivors' annuities, (2) unemployment compensation, (3) old-age assistance, (4) aid to dependent children and (5) aid to the blind. The old age and survivors' annuity is administered entirely by the federal government. Unemployment insurance is administered by the States but the general government provides grants in aid and prescribes conditions which State schemes are to fulfil if they are to obtain the necessary financial assistance from the Federal government. In the case of old age assistance, the Federal government contributes the administrative cost of the programme and fifty per cent of the benefit payments upto \$ 40 per month per recipient. The Federal government has also assumed half the administrative cost and benefit payments for aid to dependent children and for aid to the blind. In Canada, the Dominion Government assumed in 1930 the provision of 75 per cent of the funds needed for a scheme of old age pensions, the Provinces administering the service. The Royal Commission on Dominion-

Provincial Relations in Canada recommended that unemployment insurance should be a Dominion responsibility. By the amendment to the constitution in 1940, the subject was placed under the Dominion's exclusive control and the Dominion Parliament passed the Unemployment Insurance Act, 1940, introducing a nation-wide unemployment insurance scheme on a contributory basis. A Family Allowance Act was passed in 1944 providing for the payment of allowances for the care, maintenance and education of children. In 1945 the Dominion Government offered substantial financial inducements to the Provinces in the hope of securing their acceptance to a nation-wide health programme. The Provinces, however, did not accept the scheme. In 1948 the Dominion Government proposed embarking on a scheme involving the payment of Planning and Organisation grants to the Provinces "as the first stage in the development of a comprehensive Health Insurance Plan for all Canada". In Australia invalid and old age pensions are vested with the Commonwealth Government by the Constitution. Since 1939 there has been a substantial increase in the range of expenditure on social services in Australia. By passing in 1944 the Commonwealth Unemployment and Sickness Benefit Act, the Commonwealth Government has assumed responsibility for unemployment benefit payments. In 1946, as a result of a referendum, additional powers to provide various social service benefits and services were conferred on the Commonwealth. The Social Services Consolidation Act came into force in 1947; the services within this Act comprise old age and invalid pensions, widows' pensions, child endowment, hospital benefits, maternity allowances and unemployment and sickness benefits. These services are now administered by the Department of Social Services. The Commonwealth Government has established also an Employment Service which is available to all employers and employees through a net-work of district officers in capital cities, and in the main country centres, with agents in smaller towns and villages. It deals on a voluntary basis with all kinds of employment. The bulk of the social services in Australia in short has become a Commonwealth concern.

The powers of the general governments in the field of social services have been increased by the method of financial inducement and control as well. While services like education, public health, etc. are peculiarly regional, they require expanding outlays which the regions cannot incur due to inadequacy of resources. Consequently they have to depend upon grants from the federal government. Thus in Switzerland the federal government makes grants to the cantons for education, sickness and unemployment insurance, unemployment

assistance and public health. In the United States conditional grants are given for highways, vocational education, agriculture, old age assistance and unemployment insurance. In Canada conditional or specific purpose grants paid by the Dominion government include amounts for old age pensions, unemployment and agricultural relief and various works of a national character. In Australia, the Commonwealth Government gives grants for public health, provision of roads, and encouragement of agriculture. Thus by means of financial aid also the general governments have entered the sphere of social services. At the same time the acceptance of grants has tended to weaken the autonomy of the States, as they have to submit to federal supervision and control.

The revolution in transport and industry has been another factor accounting for the increase in the power of general governments. Developments in means of transport and communications have made for economic integration; the growth of large corporations has also served the same end. Economic life has become inter-State instead of intra-State and consequently has come within the control of the general government. In the United States the 'commerce power' now extends federal control not only to every sort of transportation and communication but also to manufacturing, mining and other business that affect inter-State commerce. Between 1930 and 1940 the 'commerce power' was employed to regulate labour relations, control radio broadcasting, fix minimum wages and maximum hours, regulate stock exchanges and extend control over banking and credit. Again that great social and economic experiment, the T. V. A., was justified by the Federal Government and upheld by the Supreme Court. In Australia, the Commonwealth Government has power to legislate upon monopolies and agreements in restraint of trade, carriage of goods by sea, conciliation and arbitration for the prevention and settlement of industrial disputes extending beyond the limits of any one State.

The chief forces causing increase in the economic powers of the general government can be summarised as "power politics, depression politics, welfare politics and the internal combustion engine".¹ War and economic depression necessitate unified control and "price of victory in war and the price of economic recovery is at least temporary unification"². Growth of social services has necessitated financial

1. Wheare, K. C.: *Federal Government*, p. 251.

2. *Ibid*, p. 251.

assistance from the general governments and this has led to increased control over regional governments. Revolution in transport has made for tightening of the federal grip on economic life.

It is in the sphere of finance that the increase in the powers of the federal governments has been most pronounced. Financial arrangements made at the time of the federation, by which the federal governments were confined to customs and excise, had to be adapted to changing circumstances and federal governments now have entered the field of direct taxation. In Australia, Canada and Switzerland, State governments have been completely excluded from the income-tax field. In U. S. A. the federal and State governments compete in this field; but income-tax is not the main source of revenue for the State governments. Income-tax is imposed in almost three-fourths of the States and it produced in 1946 about 17 per cent of the States' revenues. The chief source of State revenue is the Sales Tax. In Canada, the Provinces are excluded from the field of inheritance tax as well. In Australia both Commonwealth and State Governments impose probate and succession duty taxation and there has been some overlapping in jurisdiction. In the United States 75% of the revenue from inheritance tax goes to the Federal Government; double taxation has however been avoided by the system of federal credits by which the Federal Government gives credit upto 80 per cent to the tax payers who have paid a State inheritance tax. Some of the lucrative commodity taxes have also been levied by the federal governments. In the United States about 70% of the taxes on alcohol and 90% of the taxes on tobacco accrue to the Federal Government. In Australia and in Canada receipts from sales tax accrue to the Commonwealth and Dominion governments respectively. In 1942 at the request of the Commonwealth Government, the States in Australia vacated the field of amusement duties and entertainment taxation. In Australia even the independent power of borrowing of the State Governments has been controlled by the Loan Council set up in 1927 by agreement between the Commonwealth and States. By this agreement, the Commonwealth assumed the existing public debt of the States and agreed to make contributions towards their service and liquidation. All future borrowings were to be controlled by the Loan Council. The whole agreement was made legally binding by virtue of an amendment to the constitution effected in 1928 (Section 105 A). Thus general Governments in all federations have become financially predominant. This has created a lack of balance in the distribution of Government functions and resources. While the resources of the federal Governments are larger and are capable of expansion, the functions to be performed by the States Governments, especially in the

sphere of social services, have been greater. These services require large and expanding outlays which the States with their inadequate revenue can ill afford. If a State Government wishes to expand an existing service or undertake some new service, it has no flexible source of revenue. The situation has been met in two ways. In the first place, there has been an attempt at reallocating functions by transferring certain functions from the regional to the general Governments. In Switzerland by constitutional amendment, accident and sickness insurance, old age and widows' pensions were handed over to the Federal Government. In Canada a similar transfer of unemployment insurance was made in 1940. In Australia in 1946 the Commonwealth Government was given additional powers to provide various social service benefits like unemployment and sickness benefits, maternity and children's allowances. In the United States under the social Security Act 1935, old age and survivors' insurance is administered entirely by the Federal Government. In the second place, the general Governments have come to the help of regional Governments by guaranteeing a minimum annual amount for the surrender of progressive income taxes, as in Canada and in Australia, and by the system of grants-in-aid for specific services. But the complaint has been, especially in Australia, that the reimbursement payments have been insufficient to meet the revenue requirements of the States and there has been a demand both in Canada and in Australia for a reallocation of certain fields of taxation by which the States could not only secure additional revenues but also introduce a measure of flexibility to their budgets. It has been pointed out that "the greater the proportion of State revenue obtained from taxation, and the greater the variety of the forms of State taxation, the more practicable will it be for the States themselves to vary their income to meet their changing requirements". There can however be no final solution to the allocation of financial resources. There can only be adjustments and re-allocations in the light of changing circumstances. It is now increasingly realized that income taxation, taxation of corporations and of inheritance call for an administrative unit which is larger than a region; national control will bring greater economy and efficiency in collection. Since the lucrative sources of revenue thus pass into the hands of the Federal Government, the regional Governments have been left with inadequate resources for development expenditure and for expenditure on social services. They have, therefore, to depend upon financial assistance from the general Governments. This financial assistance takes the form of grants from

¹ Federal Financial Relations in Canada and Australia Report prepared for the Government of Tasmania by K. J. Ganns, p. 51

the general to the regional Governments. Special grants from the Federal Government have played an important part in the financial systems of Australia, Canada and U. S. A. and they have been based on the necessity to maintain minimum service standards throughout the Federation. 'Federal underwriting a national minimum for essential social services', to use an expression of Hansen¹, would involve an extension of federal aid to States and the basis of distribution of this aid has become an important issue in all federations.

DEVELOPMENT OF FEDERAL FINANCE IN INDIA

The development of federal finance in India is associated with the constitutional evolution from a unitary to a quasi-federal type of government. Till 1871 there was complete centralisation of finance as of administration. All the revenues were vested in the Governor-General-in-Council and the Provinces were given funds for specific services. The smallest details of Provincial expenditure were subject to close central control. The absence of financial responsibility on the part of the Provinces was not conducive to economy and the result was that the distribution of revenues degenerated into a scramble in which, as Sir Richard Strachey has pointed out, the most violent had the advantage. Financial decentralization seemed the only remedy and Lord Mayo in 1871 transferred certain services of a local character like jails, police, education, roads and civil buildings to the Provinces, and to meet the cost of these services, the excise revenue was transferred to the Provinces together with a lump sum assignment. In 1877 the Provinces were made responsible for more services like land revenue, excise, stamps, law and justice and general administration; at the same time the revenues raised from law and justice, excise and the licence tax were handed over to the Provinces. This was not adequate for the requirements of the Provinces and consequently had to be supplemented by cash assignments and by a share in land revenue. In 1882 the annual fixed assignments to the Province were abolished and instead the Provinces were assigned exclusively certain heads of revenue and a share in certain central sources of revenue. Thus for the first time we come across the three-fold classification of revenues into 'Imperial' or central, 'Provincial' and 'Divided'. Receipts from customs, salt, opium, post and telegraph remained wholly central. The bulk of the revenue from railways and irrigation also remained central. Receipts

¹ State and Local Finance in the National Economy by A. H. Hansen & H. S. Perlott.

from forests, excise, license (income) tax, stamps and registration were divided equally between the Central and Provincial governments. Provincial rates, receipts from law and justice, education, ordinary public works, provincial railways, medical receipts were vested wholly with the Provinces. The excess of provincial expenditure over revenues was made good by a share in land revenue which otherwise was a central source of revenue. In order to impart stability to the finances, the financial settlement was subject to quinquennial revision and the revisions were made in 1887, 1892 and 1897 involving no change of principle but only some minor adjustments. In 1904 the settlements with the Provinces were made quasi-permanent to avoid any element of uncertainty and in 1912 they were made permanent. These settlements were in force till the Reforms of 1919 which put the financial relations between the Central government and the Provincial governments on an entirely new basis. The divided heads of revenue were abolished and for the first time a clear-cut allocation of revenues was made between the Centre and the Provinces. Land revenue, irrigation, excise, forests and judicial stamps were entirely given over to the Provinces; while customs, income-tax, commercial stamps, receipts from railways, salt, opium, posts and telegraphs were to remain central heads of revenue. The distribution of resources between the Centre and the Provinces left the Centre in a substantial deficiency and the Centre had to depend on the Provinces for contributions. These contributions were fixed by the Meston Award in 1921-22. The Meston Settlement was a source of constant friction between the Centre and the Provinces as it ignored their relative requirements and when Provincial deficits occurred in the post-1919 period, there arose a clamour for its abolition. The improvement in Central finances after 1923 led to a gradual reduction in the Provincial contributions and to their final extinction in 1928-29. The Government of India Act, 1935, which ushered in Provincial autonomy, revived in a modified form the earlier division into central, provincial and divided heads of revenue. The proceeds of income-tax (other than agricultural income) and of the jute export duty were to be divided between the Centre and the Provinces. By the Niemeyer Award which came into force in 1937, the ultimate provincial share of income-tax was fixed at fifty per cent of the receipts from income-tax other than corporation tax and the tax collected from federal emoluments and centrally administered areas. The basis of the distribution among the Provinces was also laid down by Sir Otto Niemeyer. The Niemeyer Award was slightly modified during the second world war and the percentage share of the Provinces was readjusted after Partition. This, in brief, is the evolution of financial relations between the Centre and the Provinces in India.

Let us now turn to an examination of the distribution of revenues as embodied in the present constitution which came into force on 28th January 1950. In all federations, what the German writers used to call the 'independent system', wherein the federal and state governments drew their revenues from independent sources, that is to say, without any concurrency or contact, has given place to the mixed system wherein there is an element of concurrency or contact in the financial arrangements. This contact is established either by federal and state governments sharing the proceeds of certain taxes or by the system of federal grants-in-aid to the States. The system of federal finance embodied in the Republican Constitution of India is a 'mixed system.' There is both the separation of revenues as well as the sharing of the proceeds of certain taxes. Further, there is the provision for grants-in-aid to States like West Bengal, Assam, Bihar and Orissa. Certain sources of revenue are to be collected and exclusively appropriated by the Union (Central Government) and by the States respectively. The exclusive sources of revenue of the Central Government are corporation tax, customs duties excluding the grants to the states of Assam, Bihar, Orissa and West Bengal in lieu of the share of the export duty on jute and jute products; taxes on the capital value of the assets exclusive of agricultural land, taxes on the capital of companies and commercial stamps. The exclusive sources of revenue of the States are land revenue, taxes on agricultural income, duties in respect of succession to agricultural land, estate duty in respect of agricultural land, taxes on buildings, taxes on mineral rights subject to any limitations imposed by Parliament by law relating to mineral development, duties of excise on alcoholic liquors excluding medicinal and toilet preparations containing alcohol, taxes on the consumption or sale of electricity (except electricity consumed by the Government of India or by its railways), taxes on the sale or purchase of goods other than newspapers, taxes on advertisements other than advertisements published in the newspapers, taxes on goods and passengers carried by road or inland waterway, taxes on professions, trades, calling and employments provided the total amount payable in respect of any one person shall not exceed two hundred and fifty rupees per annum, taxes on luxuries, including taxes on commercial documents. It must be remembered that the States have to share with the local authorities some of these sources of revenue.

In this enumeration of Central and State tax fields, there has been a deviation from the Government of India Act, 1935. The Government of India Act gave power to the Provinces to levy duties of excise on medicinal and toilet preparations containing alcohol, but this power has now been withheld from the States. Similarly, under the

Government of India Act 1935 Provinces could levy taxes on the sale of goods and on advertisements, but this power has now been limited by excluding taxes on the sale or purchase of newspapers and taxes on advertisements published in the newspapers. Moreover, restrictions have now been placed on the imposition of a tax by the States on sale or purchase of goods. By Article 286 of the Constitution no tax can be levied on the sale or purchase of goods taking place in the course of inter-State or inter-national trade. Again by the same article (286 (3)), the assent of the President is essential to any bill of a State legislature imposing or authorising the imposition of a tax on the sale or purchase of goods declared by Parliament by law to be essential for the life of the community.

Apart from the exclusive sources of revenue of the Central and State governments, certain taxes are to be levied and collected by the Central Government but the proceeds are to be assigned to the States. By Article 269 these taxes are duties in respect of succession to property other than agricultural land; estate duty in respect of property other than agricultural land; terminal taxes on goods and passengers carried by railway, sea or air; taxes on railway fares and freights; taxes other than stamp duties on transactions in stock exchanges and future markets and on the sale or purchase of newspapers and on advertisement published therein. By Article 271 Parliament may levy a surcharge on any of these duties or taxes and the whole proceeds of such surcharge will form part of the revenues of the Union Government.

The sources of revenue to be shared between the Central and State governments are income-tax and excise duties. With regard to taxes on income (excluding corporation tax) it is laid down in Article 270 that such percentage as may be prescribed of the net proceeds of any such tax except proceeds attributable to centrally administered areas and taxes payable in respect of Central emoluments shall be distributed among the States. But the Union Government may levy a surcharge (Article 271) on income-tax and the whole proceeds of such surcharge will accrue to the Central Government. Thus in the Central Government budget of 1951-52 a surcharge of 5 percent was levied on incomes above Rs. 7,200 a year in the case of individuals and Rs. 14,400 in the case of Hindu undivided families, for exclusively Central purposes. With regard to excise duties, other than excise duties on medicinal and toilet preparations, it has been laid down by Article 272 that the whole or any part of the net proceeds of such duties shall be distributed among the States.

The tendency towards unification or centralisation by finance which is visible in other federations is also a characteristic of the present constitution. Thus the exclusive tax jurisdiction of the State governments is limited in the first place by the power of Parliament to legislate with respect to any matter included in the list of State subjects, in the national interest. Secondly, by Article 360, if the President is satisfied that a situation has arisen whereby the financial stability or credit of India or any part of it is threatened, he may proclaim a state of financial emergency. During the period of such a proclamation, the Central government can give directions to any State to observe such canons of financial propriety as may be deemed necessary. Any such direction may include a provision requiring the reduction of salaries and allowances of persons serving in connection with the affairs of a State including salaries of High Court Judges and a provision requiring all Money Bills to be reserved for consideration of the President after they are passed by the State legislature.

The Royal Commission on Dominion Provincial Relations in Canada had recommended the creation of a Finance Commission for fixing the national adjustment grants to be given to the Provinces. The Indian constitution has made provision for a similar Commission. Article 280 provides for the appointment of a Finance Commission within two years from the commencement of the Constitution and thereafter at the expiry of every fifth year or at such earlier time as the President may deem necessary. The function of the Commission is to make recommendations to the President as to (a) the distribution between the Union and the States of the net proceeds of taxes which are to be divided between them and the allocation between the States of the respective share of the proceeds, (b) the principles which should govern the grants-in-aid of the States from the Consolidated Fund of India, (c) the continuance or modification of the terms of any agreement entered into by the Government of India with Part B States, (d) any other matter that may be referred to the Commission in the national interest. Thus the President shall prescribe the percentage of the net proceeds of income-tax to be distributed to the States and also determine the manner in which the States' share shall be distributed after considering the recommendations of the Finance Commission. Similarly, the President has to consider the recommendations of the Finance Commission in fixing the grants-in-aid in lieu of the share of jute export duty to the States of Bengal, Bihar, Orissa and Assam.

How far does the distribution of revenues satisfy the criteria of adequacy and elasticity? This can be answered only after examining

the functions and resources of the Centre and the States. So far as the Central Government is concerned, it is entrusted with the two most important tasks of defence and economic security. The provision for defence services in the budget for 1951-52 amounted to Rs. 180.02 crores or 47.9 per cent of the total expenditure of the Central government. Unless the Kashmir dispute is satisfactorily settled, there is no prospect of a reduction in defence expenditure. Again the vast size of the country which has to be guarded imposes a limit to the reduction in defence expenditure. The necessity to subsidise food grain imports is also imposing a strain on the finances of the Government of India with increase in the price level of imported foodgrains. Total outlay in respect of food subsidies and bonus payments on procurement of foodgrains amounted to Rs. 35.07 crores in 1950-51 (revised budget). Further, the Government of India is committed to a five-year plan of economic development of the country for which it has to raise Rs. 734 crores out of the Rs. 1493 crores of estimated expenditure during the next five years from its own resources. Thus the financial needs of the Centre appear to be paramount. As for its resources, the yield from income-tax, which has been showing buoyancy in the post war period, may be expected to increase with the effort of the Income-tax Investigation Commission in unearthing evaded incomes. Income-tax collections in 1951-52 represented 40.4 per cent of the total tax revenue of the Central government. With the imposition of new and higher rates of export duties since the devaluation of the rupee in September 1949, customs revenue has shown a marked increase. Estimated receipts from this source in 1951-52 has been placed at Rs. 156.04 crores which is only slightly less than the total estimated yield of income-tax (Rs. 164.95 crores) for the same year. The high level of export duties especially on jute, pepper and oilseeds is weakening India's competitive position in markets abroad and hence export duties cannot be depended upon as a stable source of revenue. Central excise duties have shown considerable buoyancy in the post-war period and is the third most important source of revenue for the Central government. It will be seen that the most elastic source of revenue has been income-tax and naturally there has been a demand on the part of the States for an increased share of it. The prospect of the Centre making over to the States substantial sums depends however to a large extent on reduction in defence expenditure.

The states have been entrusted with a number of development services like agriculture, industry, irrigation, communications, fisheries and social services like education and public health. These services are both expansive, and expensive but the allocation of financial resources

has not corresponded with the allocation of functions. Land revenue, the mainstay of Provincial finance before the war, has remained inelastic and the abolition of zamindari is not expected to make an appreciable addition to State revenues. On the other hand, the abolition of zamindari will entail additional expenditure in the shape of compensation to zamindars. In 1951-52 the Madhya Pradesh Government have made provision for Rs. 2.68 crores for payment of one-tenth compensation to proprietors while the Madras Government have made provision for Rs. 1.20 crores for advance payment of compensation to zamindars. Before the war in 1938-39 revenue from excise contributed about 22% of the total tax revenue of the Provinces; on account of the policy of prohibition adopted by State Governments like Madras, Bombay and Uttar Pradesh, the share of excise duties now is only 11%. Income-tax receipts from the Centre and sales tax now form the largest item of State revenues. Income-tax receipts (including agricultural income-tax) constitute 22 per cent of the total tax revenue of the States, while sales tax comes next with 20 per cent. The scope for tapping new sources of revenue is limited. Agricultural income-tax is now levied only by Bihar, West Bengal, Orissa, Assam and Uttar Pradesh. To introduce an element of progression in land revenue as well as to increase the revenue receipts, the imposition of agricultural income-tax is essential and the other States will have to follow suit. Another source of revenue which can be tapped is estate and succession duty in respect of agricultural land and Central legislation for levying this tax is already contemplated. With the extension of irrigation works, the States can resort to a betterment levy. Even these additional sources of revenue cannot be expected to cope with the present and prospective increase in expenditure. Since the war, the State governments have been faced with a heavy programme of overdue expenditure on nation-building activities. Provincial expenditure on social services (including education, medical, public health, agriculture, rural development, veterinary, industries, civil aviation and scientific departments) constituted Rs. 20.89 crores in 1938-39. In 1951-1952 (budget) this had risen to Rs. 96.09 crores, more than four and a half times the pre-war level. The percentage share of social services in total expenditure of the Provinces in 1938-39 was 26; in 1951-52 this had increased to 31. During the war, the Provinces had built up reserves out of revenue surpluses and this nest egg had to be drawn upon in the post-war years to meet revenue deficits and to finance post-war reconstruction schemes. Orissa, Punjab and West Bengal do not maintain such reserve funds. The outstanding balances of the other six States, Madras, Bombay, Bihar, Madhya Pradesh, Uttar Pradesh and Assam amounted to Rs. 82.78 crores in 1947-48; in

1951-52 they had fallen to Rs. 51.26 crores. In the absence of revenue surpluses or loans from the Central government or market borrowings, the States had also to draw upon their cash balances for the finance of development projects. The cash balances which amounted to Rs. 19.12 crores at the close of 1950-51 is estimated to be reduced to Rs. 1.71 crores in 1951-52¹. Partition has added to the administrative difficulties of Assam, West Bengal and Punjab, while the merger of the former Indian States has caused additional expenditure to States like Bombay, Madhya Pradesh, Orissa, West Bengal and Bihar. According to the revised budget for 1950-51, the deficit on revenue account of the States has been estimated at Rs. 5.38 crores and the deficit for 1951-52 has been estimated at Rs. 2.80 crores. In 1951-52 only three States, Bombay, Bihar and Madhya Pradesh, have budgeted for a surplus. The overall deficit on revenue and capital accounts of the states for 1951-52 has been estimated at Rs. 66.27 crores².

The analysis of the financial resources of State governments points to the conclusion that unless the State Governments give up or go slow with their socio-economic policies like prohibition and zamindari abolition and reduce their expenditure on development schemes, they have to look to a transfer of revenue from the Central Government. The appointment of the Finance Commission to review the allocation of financial resources between the Centre and the States is therefore timely. The Commission has been charged with the duty of making recommendations to the President on (1) distribution between the Union and the Part A States of the net proceeds of the taxes to be divided between them and the allocation among the States of the respective shares of such proceeds and (2) the principles which should govern the grants-in-aid to the States out of the Consolidated Fund of India. The taxes to be shared between the Centre and the States are income tax and Central excise duties (Articles 270 and 272 of the Constitution). The Niemeyer Award, which fixed the pattern of allocation of the divisible pool of income-tax between the Centre and the Provinces in 1937, was allowed to continue even after independence. For the years 1948-49 and 1949-50 the Central Government evolved a revised scheme of distribution of income-tax by which the portion of the shares to be taken away from Bengal, the Punjab and Assam in respect of parts of these States included in Pakistan were reallocated among the other States. For 1950-51 and 1951-52 Sir Chintaman

1. Reserve Bank of India Bulletin, April 1951, P. 256.

2. Reserve Bank of India Bulletin, April 1951, p. 257.

Deshmukh gave a binding award. The Award which was restricted to Part A States as they were before the merger of Princely States into them, benefited the partitioned States of West Bengal and East Punjab. The reallocation of Chintaman Deskmuth was largely based on population with some weightage in favour of these weaker States. Uttar Pradesh lost 1 per cent from its percentage of 19 and Madras and Bihar $\frac{1}{2}$ per cent from their percentage of 18 and 13 respectively. The other percentages remained as under the post-partition ad hoc arrangement with 21 for Bombay, 6 for Madhya Pradesh, 3 for Assam and 3 for Orissa. The following table shows the share of Part A States under the Niemeyer Award, the interim arrangement made by the Government of India after Partition and the Deshmukh Award.

TABLE I

State	Niemeyer Award.	Interim arrangement after Partition.	Deshmukh Award.
Madras	15	18	17.5
Bombay	20	21	21
West Bengal	20 (Bengal)	12	13.5
Uttar Pradesh (U. P.)	15	19	18
Punjab	8	(undivided Punjab) 5	5.5
Bihar	10	13	12.5
Madhya Pradesh (C. P.)	5	6	6
Assam	2	3	3
Orissa	2	3	3
	100	100	100

As the Finance Commission will take some time to make its final recommendations and as the budgets of the Centre and the States for the next financial year had to be prepared, the Commission gave an interim advice for the continuance of the Deshmukh Award for another year. But the Commission has to lay down eventually the principles and procedure regarding the division of income-tax, firstly between the Centre and the States and secondly between the States *inter se*. To begin with, the Commission has to determine the quantum or the absolute amount that could be made available to the States. The Sarkar Committee recommended that the States' share of the divisible pool of income-tax should be increased

to 60 per cent from the present 50 per cent. There are certain grounds which justify this proposal. The Central revenues have increased to a greater extent than those of the States since 1938-39. From Rs. 84.47 crores in 1938-39 Central revenues have increased in 1951-52 (budget) to Rs. 401.89 crores, while those of the Part A States have increased from Rs. 84.74 crores in 1938-39 to Rs. 308.81 crores in 1951-52. Secondly, the sources of revenue of the States have not been as elastic as Central revenue sources. In 1938-39 the yield of taxes on income other than corporation tax accruing to the Centre amounted to only Rs. 15.24 crores; in 1951-52 this had increased to Rs. 132.22 crores, an increase of about nine times the pre-war level. The yield of corporation tax itself has gone up from Rs. 2.04 crores in 1938-39 to Rs. 32.73 crores in 1951-52. As for State sources of revenue, land revenue has only increased from Rs. 25.41 crores in 1938-39 to Rs. 39.86 crores in 1951-52 and excise revenue from Rs. 13.08 crores in 1938-39 to Rs. 24.95 crores in 1951-52. It is only the yield of sales tax which has shown a buoyancy; from Rs. 17.03 crores in 1947-48, it has increased to Rs. 44.35 crores in 1951-52. Thus the State sources of revenue have not been as elastic as those of the Centre and consequently they have claimed an increased share from the most elastic sources of revenue, namely, income-tax. The Centre can satisfy the claims of the States for more funds only by increasing the divisible pool of income-tax. The States are practically unanimous in demanding that the share of income-tax allocated to them should be at least 60 per cent of the net proceeds as against 50 per cent at present. In view of the phenomenal increase in the yield of income-tax since 1937 when the Niemeyer Award was made and in view of the comparatively inelastic sources of revenue left to the States, this demand will have to be met by the Finance Commission.

Having determined the quantum of income-tax to be made available to the States, the Finance Commission will have to lay down the basis of its distribution among the Part A States. There are four main methods of distribution which may be followed. In the first place the origin of income may be adopted as the basis for distribution. Bombay, Bihar and West Bengal, industrially the most advanced areas, will benefit on this basis. But with the vast net work of transactions involved in buying and selling and with the spread of consumers throughout the country, the assignment of income to a particular area or region can only be arbitrary. Secondly, the residence of the tax-payer may be adopted as a principle of allocation. The predominance of joint-stock enterprise in business, the dispersion of the shareholders of companies all over the country

and even outside, the absence of authoritative information in income-tax records as to the area of residence of an assessee, all this make the criterion of residence a difficult factor to apply in distributing the proceeds of the tax. A third basis for distribution is the place of collection. This place is usually the place of business of the tax-payer. This criterion ignores the areas of origin and sale. Thus many of the manufacturing companies in Bihar have their head offices in Bengal. Bombay and West Bengal will benefit from the principle of place of collection. It has been calculated that Bombay will be entitled to 44 per cent and West Bengal 24 per cent on this basis, while the share of the others will be insignificant. A fourth basis of allocation is the population of the respective areas. Population, it is pointed out, is a rough measure of need. Madras, Uttar Pradesh and Bihar will benefit if the principle of population is accepted. Thus on this basis Uttar Pradesh will be entitled to 24 per cent, Madras 21.5 per cent and Bihar 16 per cent, while Bombay and West Bengal will get about 9 per cent each. States like Orissa and Assam have urged that due weightage should be given to undeveloped States. No single principle by itself, it can be seen will be an equitable basis for the allocation of income-tax. Sir Otto Niemeyer expressed the view that "substantial justice will be done by fixing the scale of distribution partly on residence and partly on population, paying to neither factor a rigidly pedantic deference". But most of the Provinces remained dissatisfied with the Niemeyer Award. The Madras Government, for instance, felt that provinces with smaller population were given greater percentage shares in income-tax. During the war years the remarkable buoyancy of revenues made the Provinces forget the Niemeyer Award for the time being. Post-war financial difficulties have again served to kindle the old discontent. An indication of how deeply the States are dissatisfied with the Award can be had from the Memoranda submitted by them to the Sarkar Committee on the Financial Provisions of the Constitution in 1947 and from the representations which the States are now making to the Finance Commission. The Sarkar Committee proceeded on the basis of collection, population as well as of need and recommended that the States' share of income-tax be distributed 20 per cent on the basis of population, 35 per cent on the basis of collection and 5 per cent as a balancing factor to mitigate any hardship that may arise in the case of the application of the other two criteria. The Finance Commission will have to pay greater need to population than the Sarkar

Committee did, since in the final analysis the consumers contribute to the income of industries. The argument by which population basis is sometimes sought to be justified, namely that larger the population, the larger the needs of a State for funds for education, health, medical relief, transport, irrigation, forgets the fact that a 'share' is something to which a State is entitled because its citizens or things have in some measure contributed to the fund, while needs have no reference to contribution and are usually met by grants.

As regards Central excise duties, the States are to receive a share of the proceeds if Parliament by law provides (Article 272). The share to be received and the principles according to which that share is to be distributed among the States are also to be formulated by Parliament. The States have claimed that 50 to 75 per cent of the proceeds of Central excise duties ought to be distributed among them. The Sarkar Committee was unwilling to give the States a share in too many Central excises, as that would bring about benefit without responsibility. Further, many of the excise duties have been levied to replace the loss of revenue from customs as a result of the levying of protective duties. The Sarkar Committee therefore suggested the sharing of one of the important excises on a commodity not subject to tariff protection, namely tobacco. Of all the Central excises, the duty on tobacco fetches the largest revenue. The most equitable method of distributing this duty, according to the Sarkar Committee, is the estimated consumption in each State.

Certain States have claimed a share in export duties. By Article 273 of the constitution, the proceeds from the export duty on jute are to go wholly to the Centre, and the States of West Bengal, Assam, Bihar, and Orissa are to be entitled to grants-in-aid in lieu of a percentage share for a period of ten years or for as long as any export duty on jute products continue to be levied by the Government of India, whichever is earlier. By the Deshmukh Award in 1950, the quantum of grants-in-aid was related to the sums which these States had been actually receiving in the past and on this basis West Bengal was granted Rs. 105 lakhs, Assam Rs. 40 lakhs, Bihar Rs. 35 lakhs and Orissa Rs. 5 lakhs. One of the functions of the Finance Commission is to give advice to the President regarding the amount that may be granted to these States in lieu of the share of jute export duty. Following the example of Bengal, Bihar and Orissa, other States have also claimed a share in export duties. Thus Assam has claimed that 75 per cent of the export duty on tea should go to her. Madhya Pradesh has demanded that 50 per cent of all

export duty on minerals should be allotted to her; while Bombay and Madras represented before the Sarkar Committee that 50 per cent of all export duties should be distributed to the States. There has been a general complaint that export duties, by raising the prices of commodities, are acting as a handicap to exports and the Central government will have to lower the high level of export duties, especially on jute, if the exports are not to fall¹. There are limits to what the foreigner can be made to pay and if this is so with regard to a monopoly like jute, it is much more so with regard to other commodities. Export duties cannot be counted as a stable source of revenue and consequently is not an item of taxation which can be shared with the States.

For implementing the Five-Year Plan the States should have an idea of the resources that they can depend upon. The recommendations of the Finance Commission as to the share of the States in the net proceeds of taxes which are to be divided between the Centre and the States and the allocation between the States of their respective shares will remove the present state of uncertainty.

FEDERAL FINANCIAL INTEGRATION OF INDIAN STATES

Following the merger of many of the Indian States with former Provinces and the formation of others into viable Unions and Chief Commissioners' States (now Lieutenant Governors' States) it became necessary to integrate their finances with the rest of India to establish a uniform system of federal finance throughout the country. On the recommendations of the Indian States Finance Enquiry Committee appointed in 1948, the Government of India have concluded agreements with each of the Part B States except Jammu and Kashmir and Vindhya Pradesh (the latter being now administered as a Lieutenant Governor's State) by which the Central government have taken over on a 'functional basis' federal items of revenue and federal items of expenditure. The federal revenues are, duties of customs including export duties, income-tax and corporation tax (excluding agricultural income-tax), Central excises, Railways, Posts, Telegraphs, opium (so far as regards cultivation and manufacture or sale for export), taxes other than stamp duties upon transactions in Stock Exchanges and "futures" markets, taxes on the capital value of assets (exclusive of agricultural land) of individuals and

1. The Govt. of India have now (Feb 1952) reduced the export duty on hessian from Rs. 1500 to Rs. 750 per ton.

Companies and on the capital of companies. The federal services are defence, aviation, broadcasting, meteorology, archaeology, geological survey, patents, copyrights and trade mark, registration of joint-stock companies, national highways, currency, coinage and mints and accounts and audit. All the assets and liabilities associated with 'federal' functions are also assumed by the Centre, while the assets and liabilities associated with 'Provincial' functions remain with the States. The net loss arising from the transfer of 'federal' items of revenue and expenditure to the Centre (the 'net revenue gap') is to be made good by the Centre in full for five years and thereafter at a diminishing rate for another five years; at the end of the ten year period, the Central assistance will be stopped altogether. The loss of revenue from internal customs, abolished on federal financial integration, is to be borne wholly by the States. As Rajasthan, Madhya Bharat and Hyderabad derive substantial revenue from internal customs, it is agreed that Madhya Bharat and Rajasthan will abolish the duties in five years and Hyderabad in four years, during which period they will develop alternative sources of revenue. Income-tax at full India rates is to be imposed in PEPSU (Patiala and East Punjab States Union) and Travancore-Cochin, while in Madhya Bharat and Rajasthan, the rates prevailing in Saurashtra are to be imposed and all the States' rates will be raised gradually to the Indian level over a period of two to six years. No State can participate in the divisible pool of income-tax until two years after the full rates of Indian taxation have been reached; meanwhile under an ad hoc arrangement it has been decided to keep income-tax collections in each Part B State separately and to pay the State half the net collections. A State's share of income-tax and other divisible sources of revenue are to be set-off against the 'revenue gap' payment; it is to receive either the amount of the revenue gap or its share of the divisible taxes whichever is higher. If a State had no 'revenue gap' or if the 'revenue gap' was less than the State's share of divisible federal taxes, the latter was payable. Hyderabad, Mysore, Travancore-Cochin and Saurashtra have revenue gaps larger than the income from divisible sources and consequently receive the amount of the revenue gap. While for PEPSU, Madhya Bharat and Rajasthan, the revenue gap being smaller than their share of income-tax, the latter is paid to them by the Centre. For 1950-51 the 'revenue gap' receipts of Hyderabad, Mysore, Travancore-Cochin and Saurashtra were provisionally placed at Rs. 76 lakhs, Rs. 3,25 lakhs, Rs. 2,80 lakhs and Rs. 2,50 lakhs respectively and are increased to Rs. 1,16 lakhs, Rs. 3,45 lakhs, Rs. 3,08 lakhs and Rs. 2,83 lakhs in 1951-52. The revenue gap computations have been made according to the principles laid down by the Krishnamachari Committee with

reference to federal revenue and expenditure of the State concerned during an agreed basic period. The other three States, PEPSU, Madhya Bharat and Rajasthan obtain their share of income-tax, as they do not have a 'revenue gap'. The following table shows the 'revenue gap' grants-in-aid and income-tax allocations to the States.

TABLE II

State	'Revenue Gap' payments		(In lakhs of rupees) Income-tax allocations	
	1950-51 (Budget	1951-52 (Budget	1950-51	1951-52
Hyderabad	76	1,16	...	...
Mysore	3,26	3,45	...	...
Travancore-Cochin	2,80	3,08	...	...
Saurashtra	2,50	2,83	...	...
PEPSU	...	...	24	22
Madhya Bharat	...	...	35	16
Rajasthan	...	...	22	...
Total	9,31	10,52	81	38

It will be seen that for 1951-52 the States of Hyderabad, Mysore, Travancore-Cochin and Saurashtra will receive Rs. 10.5 crores as revenue gap grants-in-aid. The aid, it is pointed out, is not in the nature of "compensation" for the loss of "federal" revenues. It will be recalled that the Krishnamachari Committee laid stress on the principle that there could be no question of compensation for the Centre taking over the "federal" functions, together with the connected revenue and expenditure, assets and liabilities. The Committee, however, realized that the States which had so far depended to a greater or less extent on their "federal" revenues would not be able to maintain their existing scale of expenditure in the "provincial" field immediately after financial integration without the special assistance for a transitional period.

The Centre has also assumed liability for an equitable share of the public debt of Hyderabad, Travancore-Cochin and Mysore. No other Part B State has any public debt. The Central Government's share of the public debt of Travancore-Cochin has been fixed at Rs. 276.4 lakhs and for Mysore at Rs. 470 lakhs. The figure for Hyderabad has yet to be worked out. Privy purses of rulers to the

tune of nearly Rs. 4.8 crores annually are charged to the Central revenues.

A similar scheme of financial adjustments between the Central government and Part A States is being evolved in respect of merged States. The effect of the merger on the finances of the Part A States has been unfavourable, as revenue collections in merged areas are less than expenditure commitments. The Central government, accepting the recommendations of the Indian States Finance Enquiry Committee, have agreed to allot to them the excess of 'federal' revenue over 'federal' expenditure in the merged areas, whichever was higher. 'Revenue Gap' payments by the Centre to Part A States in respect of merged areas amount to Rs. 1.96 lakhs in each of the two years 1950-51 and 1951-52, of which the major share of Rs. 145 lakhs accrues to Bombay, while Madhya Pradesh, Orissa, West Bengal and Bihar obtain Rs. 19 lakhs, Rs. 16 lakhs, Rs. 12 lakhs and Rs. 4 lakhs respectively.

The financial arrangements between the Centre and the Part B States will be reviewed by the Finance Commission under the provision of Article 280 of the Constitution. They are to be in force for a period of ten years, but the President may at any time after the expiration of five years terminate or modify any such agreement if after consideration of the report of the Finance Commission, he thinks it necessary to do so. Thus normally these agreements with Part B States which came into effect from 1st April 1950 will have a life of five years, and may not be called for examination by the Finance Commission during the period unless special circumstances justify it.

With the financial arrangements with the Part B States, there is now complete equality between Part A and Part B States in all matters of financial assistance, subsidies, grants, etc. from the Centre. As a result of these arrangements again there has now emerged a uniform and integrated fiscal and financial system. The abolition of internal customs duties (except in Rajasthan, Madhya Bharat and Hyderabad where the abolition has to take place within a period of five years) has ushered in freedom of trade in the country. There is now uniformity in the levy, assessment and collection of federal taxes throughout the country. Double taxation and tax evasion are effectively checked. A co-ordinated trade and tariff policy can now be pursued. A uniform system of transport and communications will contribute to the even development of all parts of the country. As a result of federal financial integration, we can now have a consolidated picture of Indian finances. Economic planning on an all-India basis has become feasible

and the Five-Year Plan submitted by the Planning Commission integrates the development expenditure of the Part B States as well.

The problem before the Part B States is to bring up their level of administration and social services to the level of Part A States. With the taking over of 'federal' sources of revenue by the Centre and the abolition of internal customs duties, the Part B States have to develop other sources of revenue to cope with their increasing expenditure. Excise and land revenue are their most important sources of tax revenue; the revenue from these sources constitute 33.8 and 25.9 per cent respectively according to the budget for 1951-52. Excise is the most important single source of tax revenue for Hyderabad, Mysore, Travancore-Cochin and PEPSU, while land revenue holds the prime place in the tax system of Madhya Bharat and Saurashtra. Though sales tax is levied in all the Part B States, it is not yet a well-developed source of revenue, particularly in Saurashtra and PEPSU. Of the estimated total sales tax receipts of all the Part B States for 1950-51 of Rs. 5.09 crores, Travancore-Cochin and Hyderabad account for Rs. 2.08 crores and Rs. 1.29 crores respectively. In Travancore-Cochin sales tax is next in importance to excise. Only Hyderabad and Travancore-Cochin levy agricultural income-tax and the yield is small. Comparing the revenue sources of Part A and Part B States, we find that for Part A States income-tax receipts (including agricultural income-tax) and sales tax are the most important items of revenue, while for Part B States excise and land revenue are more important. While developing new sources of revenue, Part B States have to see, if their budgetary equilibrium is not to be upset, that they do not sacrifice existing sources of revenue in the pursuit of socio-economic objectives. In fact, the Indian States Finance Enquiry Committee *sounded a note of warning that Part B States should proceed with caution in the matter of prohibition, abolition of jagirs, etc. as their finances would not be able for a number of years to bear the loss of revenue involved.* Moreover Part B States have also a heavy programme of capital expenditure on developmental projects. The provision for capital expenditure made in the budget for 1951-52 is Rs. 25.28 crores. The overall deficit of these States in 1950-51 was wholly on capital account. Of the estimated overall deficit for 1951-52 Rs. 58 lakhs are on revenue account and Rs. 8.70 crores on capital account. As in the case of Part A States, Part B States are also covering their deficit by drawing on cash balances and by liquidating investments in the Cash Balance Investment Account. For social and developmental projects the Part B States have to depend upon the Centre for loans and grants and it is for the Finance Commission to lay down the principles that should govern the grants-in-aid to Part A and Part B States.

FEDERAL GRANTS-IN-AID

The distribution of functions and resources in all federations, we have seen, does not exactly correspond in the sense that each layer of government does not have exactly the revenue it requires to perform the functions allotted to it. In fact, it is practically impossible to adjust the financial resources of the whole federal system so nicely that the general and regional governments have exactly the revenues to match the functions. Financial resources are divided on one principle and functions on another and there is no guarantee that each will have exactly the amount it needs to discharge its responsibilities. Certain taxes like income-tax, taxation of corporations and of inheritance have become more and more suitable for central control and collection and we have noticed already the tendency towards centralisation by finance in all federations. Important functions on the other hand, like the undertaking of social services, remain regional. It is here that the right type of local diversity is visible and the right type of local initiative developed. But these services require expanding revenues which are not at the disposal of regional governments. Hence a maladjustment has arisen between governmental functions and sources of revenue.

There is not only an uneven allotment of financial resources in all federations; there are also inequalities as between developed and undeveloped States. The States in a federation are diverse in fiscal strength. In some States the per capita income is lower than in others due to lack of natural resources and (or) their imperfect development. As a consequence, the tax revenue that they can raise is small and the 'bundle of services' that they can provide is at best limited. There are such States in all federations; Western Australia, South Australia and Tasmania in the Commonwealth of Australia, the prairie Provinces of Canada which are extremely vulnerable to economic depressions and even the maritime Provinces of Prince Edward Island, Nova Scotia, and New Brunswick; South Dakota, Oklahoma and South Carolina in the United States; the States of Assam and Orissa in India. Owing to the poverty of their resources, they are unable even in normal times to provide services considered to be the absolute minimum. During depressions these States are in serious financial straits and are forced to reduce the all too meagre services that they normally render. As against the weaker units in a federation, there are the prosperous units which because of their economic development, are more favourably placed. The Provinces

of Quebec and Ontario in Canada, the States of Victoria, Queensland and New South Wales in Australia are the typical examples. In the richer States, because the citizens are richer they can provide many of the services privately for themselves instead of depending on the Government. The income and hence the taxable capacity of these States being greater, they can provide services quantitatively larger and qualitatively better than those of the poor States. Moreover, the tendency is for the strong States to grow stronger and for the weak States to grow weaker with the result that they cannot give even normal services to their citizens.

Thus, either because of uneven distribution of financial resources or because of inequality in economic strength as between the States, the federal governments have to come to the help of regional governments. This is done by the system of grants-in-aid. It has been pointed out that a 'federation works most satisfactorily if each State has sufficient financial provision to enable its citizens to receive normal services from the Government¹'. If a State through financial weakness has to starve its services like education and public health, it grows weaker and this cuts at the very root of the common nationality which federation fosters. The federal government therefore has a special responsibility towards the weaker States. Federal grants-in-aid are regarded as the "balancing factors" in a federation.

There is provision in most federations for obligatory grants by the federal government to the States. In Canada, in return for the provinces surrendering the power to levy customs and excise duties, the Constitution provided for specific annual subsidy to the Provinces to meet the expenses to government as well as an annual subsidy at the rate of 80 cents per head of the population. In 1947 by the Taxation Agreements entered into by the Dominion with the Provinces, the Provinces were offered reimbursement grants for their surrendering personal income-taxation, corporation taxation and succession duties to the Dominion government. The Australian Constitution provided that three-quarters of customs and excise collections should be paid to the States as grants from the Commonwealth for a period of ten years. At the end of the ten years the States still found themselves in need of grants and hence in 1910 a new system of grants of 25 s per capita was substituted which lasted until 1927. Again, by the States Grants (Tax Reimbursement) Act, 1946, the States are given a reimbursement payment for the surrender

1. Commonwealth Grants Commission - Fourth Report, 1937, p. 114.

of income-tax to the Commonwealth government. In India, the Government of India (Distribution of Revenue) Order, 1936, provided for grants-in aid of the revenues of United Provinces (Rs. 25 lakhs for five years), Assam (Rs. 30 lakhs each year), North-West Frontier Province (Rs. 100 lakhs each year), Orissa (Rs. 47 lakhs in the first year, Rs. 43 lakhs in each of the succeeding four years, and Rs. 40 lakhs in every subsequent year) and Sind (Rs. 100 lakhs in the first year and Rs. 105 lakhs in each of the succeeding nine years). These grants were meant to put these Provinces on an 'even keel' at the introduction of Provincial Autonomy.

The present constitution of India has also provided for certain obligatory grants. Thus by Article 273, in lieu of the assignment of any share of the net proceeds of the export duty on jute and jute products, grants-in-aid of the revenues of the States of Assam, Bihar, Orissa and West Bengal are to be given. These shall be paid so long as any export duty on jute products continues to be levied by the Government of India or until the expiration of ten years from the commencement of the Constitution, whichever is earlier. It is also laid down in Article 275 that grants-in-aid shall be paid for the purpose of promoting the welfare of Scheduled Tribes in a State or for raising the level of administration of the Scheduled Areas in that State to that of the rest of the areas of that State. Further, grants-in-aid of the revenues of Assam shall be paid equivalent to (1) the average excess of expenditure over the revenues during the two years immediately preceding the commencement of the Constitution in respect of the administration of (specified) tribal areas, and (2) the costs of such schemes of development as may be undertaken by that State, with the approval of the Government of India, for raising the level of administration of the said areas to that of the rest of the areas of the State.

The obligatory grants provided for in most of the federations are meant for a transitional period. They are at best stop-gap arrangements in the early stages of a federation and are not intended to be permanent. They have arisen out of the necessity to reimburse the units for the surrender of certain sources of revenue to the federal government and were meant to last till such time as the units could develop independent sources of revenue.

Apart from obligatory grants, the federal government in all federations makes special grants either for special purposes or on the ground of financial need. In recent years such special grants have been increasing in importance in all federations. In the first place, federal

governments are forcing State action especially in the field of social services by the device of grants-in-aid. The most outstanding example of such initiative is that taken by the Federal Government in the United States under President Roosevelt. By the Social Security Act, 1935, grants are offered for old age assistance, unemployment compensation, aid to dependent children and care of the blind. The Federal Government undertook to pay 50 per cent of the amount which the States spent on old age assistance. It is true that almost from its inception the Federal Government in U. S. A. has made grants to the States; the first important assistance to the States in the social sphere being the Morrill Act of 1862 which made grants for agricultural and technical education. But it was in the 'thirties under President Roosevelt that there was a great increase in the number of services for which grants were offered. Whereas in 1930 the Federal Government in the United States gave grants only for eleven separate subjects, in 1940 grants were given for twenty-one items and of these social services comprised 53 per cent of the total. Federal aid to States for social security and other purposes increased from 573.1 million dollars in 1939 to 757.9 million dollars in 1946. In Switzerland, the Federal Government gives grants to the cantons for education, sickness and unemployment insurance, unemployment assistance and public health. In Canada, the Dominion Government undertook in 1930 to provide 75 per cent of the funds needed for a scheme of old age pensions, the Provinces administering the services. In recent years the Commonwealth Government in Australia has made grants for specific health services. But the most important form of grants in Australia is that given under Section 96 of the Constitution on the recommendation of the Australian Grants Commission set up in 1933. These grants are not given for any special service; they are intended not merely to relieve financial distress of the claimant States but also to enable them to provide services on the 'Australian Standard'.

The federal government in all federations are in a position to aid the regional governments because its taxing powers range over the whole country. But though it has superior taxing power, it is not the best authority to administer certain services like education and public health which are best administered by State governments. Hence "financial power at the Centre must energize experience at the periphery¹". The federal government can do so since it can take more from the prosperous areas by means of taxation and give it to poor areas. Taxes collected by the federal government on a broad

1. Wood, G. L. : The Future of Federal Aid (Economic Record, December 1945 p. 200).

nation-wide basis are reallocated to the poor States by the method of grants-in-aid. Thus federal grants-in-aid involve inter-area transfer of income. The richer areas are exploited for the benefit of the poor.

On what basis should grants-in-aid be made? Population of each State may be regarded as a proper basis for the assignment of grants. But population by itself is not a sufficient criterion. A rich state will become entitled to a larger amount of grants on a population basis. The whole purpose of grants-in-aid may thus be defeated.

The Australian Grants Commission have adopted as basis for special grants the financial needs of a State government. The Third Report of the Commission says: "The Commission is convinced that special grants are justified when a State from any cause is made to discharge its functions as a member of the federation, and should be determined by the amount of help found necessary to make it possible for a State by reasonable effort to function at a standard not appreciably below that of other States". A grant on this basis is intended to relieve the financial difficulties of a State having regard to all the circumstances, geography, economic conditions and national policy, and to enable it to function at a standard not below that of other States. The Commission have taken as 'normal' the standards of expenditure and taxation of the three State governments, Victoria, Queensland and New South Wales which did not ask for special grants and a comparison is made with the budgetary position of the claimant States. But differences in budgetary position of the several States may be due to variations in their financial policy. For instance, a State with high taxation may have a low deficit, while another State with low taxation may have a higher deficit. If the burden of taxation in each State were equal, their relative deficits would be different. To gauge the true financial position it is necessary therefore to make an adjustment for taxation. Again, a State with extravagant expenditure may have a large deficit, while a State practising economy may have a surplus. It would not be fair, to say the least, to give the extravagant State a grant without making some adjustment for the different scales of expenditure. The Commission therefore makes adjustments for differences in standards of revenue and expenditure under the heads of relative severity of taxation, expenditure on social services, administrative expenditure, charges for State services and maintenance of capital equipment. The index of severity of taxation is calculated by the Commission as follows: first an index of taxable capacity for each State is obtained by using Federal income-tax returns, supplemented by information about wages so as to take into account small incomes which are exempt from federal tax; next, an index of tax collections

per head for each State, adjusted to take account of local taxation, is prepared; finally, the index of collections is divided by the index of capacity and the result is referred to as an index of the comparative severity of taxation. The Commission thus discovered how each of the claimant States stood in relation to the 'normal' in taxation. Then a comparison is made of expenditure of the claimant States with the 'normal' expenditure of the other States. But the Commission did not conclude that special grants should be given equal to the deficiency. A claimant State must make an additional effort through curtailment of expenditure and severity of taxation so that it might have an incentive to improve its position by its own efforts. The requirement that a claimant State must make a reasonable effort from its own resources derives from the premise that it must be prepared to accept the financial consequences of its own policies and that it is the duty of the State, so far as it is possible and reasonable to do so, to find the financial means of meeting the expenditure required to carry out those policies. The magnitude of effort required of a State is expressed in terms of social service expenditure and taxation. A claimant State should practice economy about equal to 6 per cent of the normal standard for social services and in addition there should be some special effort expressed in terms of severity of taxation amounting to 10 per cent of the normal severity of taxation. If a state has a low severity of taxation, its grant is to be reduced accordingly. Similarly, there are to be deductions on account of an extravagant scale of social services or administrative costs. A state guilty of extravagance in financial administration is expected to impose taxation above the average severity. A State requiring assistance has to make a determined attempt to solve its financial troubles by reducing expenditure and increasing revenue. The special grant is thus based on financial need as determined by the Grants Commission.

The Royal Commission on Dominion-Provincial Relations in Canada recommended 'National adjustment grants' to Provinces to enable them "to provide normal Canadian services with no more than normal Canadian taxation". According to the Second Report of the Commission, "what is significant for the purpose of the Commission is the size of the surplus or deficit which would exist in a province if it were to provide the normal Canadian standard of service and impose taxation of normal severity. It is not the services which each Province is at present providing, but the average Canadian

1. Report, II, p. 272.

standard of services that a Province must be put in a position to finance. It is not the revenue which its taxes yield at their present level which matters, but the revenue which it would derive from them if its people were as heavily taxed as Canadians in general". The Commission attempted to compute, Province by Province, what the cost would be if the Province and municipalities taken together were to provide services on the Canadian standard, which is taken to be the per capita expenditure on them for the whole country. The weight of taxation is measured by comparing the Provincial and Municipal taxation with the total income of the Province. The computations showed the amount of the adjustment grant required for a Province or that no grant was needed. According to the Commission's calculations, six Provinces appeared to be in need of grants. Thus the criterion adopted by the Royal Commission in Canada in recommending grants is the fiscal need of a Province in relation to a 'standard' which is taken as the norm.

The climate of opinion therefore seems to be that the basis for grants-in-aid should be the financial need of the State governments. This is to be computed by taking into account the 'normal' standards of expenditure and the taxable ability of the States. Grants are meant to bridge the gap between the two. The States claiming the grant must however have made all reasonable efforts to mobilize their own resources.

Another problem with respect to grants is whether they should be conditional or unconditional. Australia has largely adopted the system of unconditional grants by which grants are given without any 'strings' attached. This type of grants is for general purposes and requires no detailed specifications as to use. The United States, on the other hand, has developed the system of conditional grants. The earlier American grants to States were land and money grants without conditions on their use, but today grants are conditional and usually require a matching grant from the State and acceptance of federal supervision in the aided function. The grant is given subject to participation usually on a 50-50 basis. They carry with them the right of supervision and control, and the withholding of further payments when their utilisation is not satisfactory. Conditional grants have been the means to stimulate State action in matters in which there is a national interest. Thus grants have been given for vocational education, for highways, for old age assistance on a conditional basis. Usually the Federal government has insisted on "matching dollar for dollar". By means of the conditional grant, the Federal government is able to enforce minimum standards for the whole country. By offering to pay

a portion of the cost upto a certain maximum, the Federal government has encouraged the States to increase their old age assistance payments. Major highways all over the country have been improved, thanks to federal aid. The bait of money is so attractive that rarely does a State resist the impulse to accept the grant.

The conditional grant is said to impair State sovereignty; it tends to put the State governments under the 'financial tutelage' of the Federal government. Moreover, the stigma of federal charity or patronage is supposed to accompany them. Since the needs of the States are different, it has been maintained that they should be left free to make use of the grant according to their own judgement. As against this, it has been said that unless conditions are imposed, the principle of financial responsibility is infringed, since the revenue is raised from citizens of one area and spent by citizens of another. The conditional grant, as in the United States, is given for a specific function and it carries with it federal supervision of State performance. It puts a premium upon State performance of certain activities and thus has helped in stimulating State action in spheres of activity in which there is a national interest. The Australian Grants Commission is not in favour of any condition being attached to the grants recommended by it. Similarly, the Royal Commission on Dominion-Provincial Relations in Canada stated: "there are many fields in which the conditional subsidy may be highly useful..... but as a method of financing major functions of government and of providing for necessary inter-governmental transfers in a federal system, it fails to meet the test of efficiency, and dissipates seriously responsibility for public expenditures. It is for these reasons that the Commission recommends National Adjustment Grants to which no conditions are attached¹". The case for unconditional grants has been accepted by the Commonwealth government and the governments of the claimant States. In Canada, however, despite the recommendation of the Royal Commission, the plea for unconditional grants has been rejected. But there has been a feeling that conditional grants in Canada have not been very successful.

In the United States in recent years there has been a demand for 'equalisation grants'. Grants, it is pointed out, should be distributed on the basis of relative needs and relative financial resources, that is to say, those with the greatest need and least

1. Quoted in *Federal Financial Relations in Canada and Australia* by K. J. Binns p. 66.

resources should receive the largest per capita grants, while those with the least need and greater financial capacity, should receive the smallest per capita grants. In other words, the federal government must attempt "to overmatch the dollars of the poor States and to undermatch the dollars of the rich States¹" It has been increasingly felt that there should be a national minimum service standard in education, health and public welfare; that the Federal government, in other words, should 'underwrite minimum service standards'. Thus each governmental unit must be able to provide the minimum programme without great strain on its resources. A beginning has been made with regard to public health grants where a wide discretion has been given to the Federal officers in allocating the grants and they have used it for purposes of equalisation.

In India, specific grants are given by the Central Government for development schemes, for Grow More Food and for education. Subsidies are also given for housing and for food. In 1945 the Provinces were informed that they could draw up their schemes of post-war development on the assumption that in the five years beginning with 1947-48 they could expect assistance by way of grants of Rs. 250 crores which would be distributed on a population basis. After Partition, adjustment had to be made for the Provinces in Pakistan and for the division of Punjab and Bengal. In 1948, following a review by the Centre of development schemes, the Provinces were informed that development grants from the Centre would be contingent upon the Provinces spending from their own resources at least equivalent sums. Thus the grants became conditional. In the case of West Bengal and East Punjab which were severely affected by the Partition, and of Orissa and Assam which are comparatively less developed, it was agreed that the entire expenditure on approved schemes would be reimbursed by the Centre subject to stated maxima. The grants for Grow More Food schemes were limited to 50 per cent of the expenditure incurred and in the case of Assam and Orissa to 66 2/3 per cent. In 1949-50, in view of the inflationary pressure in the economy, grants to Provinces were severely cut. The budget estimates of the Government of India for 1950-51 allowed for Rs. 9.59 crores for development grants. In the revised estimate the allocation for grants has been reduced to Rs. 5.50 crores. In the budget for 1951-52 no provision is made for development grants to Part A States. The States have been advised to charge expenditure on intensive food production schemes to food bonus receipts; in the case of some States, the excess expenditure,

if any, is to be shared by the Centre. In the 1951-52 budget, provision has been made for a grant of Rs. 1 crore for special assistance to States on account of natural calamities and Rs. 20 lakhs for grant to Orissa for construction of a new capital.

Following federal financial integration of continuing Indian States and States' Unions, the Central Government have agreed to make good the revenue gap arising from the Central assumption of federal sources of revenue and expenditure, by grants-in-aid. These grants, as we have seen, amounted in 1951-52 to more than Rs. 10 crores. From 1950-51 the Part B States are also entitled to development and other grants-in-aid from the Centre in the same way as Part A States.

The Finance Commission which has now been set up is charged with the responsibility of making recommendations to the President as to the principles which should govern the grants-in-aid of the revenue of the States out of the Consolidated Fund of India. It has been maintained that the Commission should be guided by the Constitution which in the directive Principles of State Policy has laid down that "every citizen shall have an equal right to an adequate means of livelihood"; that "the State shall strive to promote with special care the educational and economic interests of the weaker sections of the people" and that "the State shall regard the raising of the level of nutrition and the standard of living of its people and improvement of public health as among its primary duties". If a State is called upon to observe these functions, it is the duty of the Centre, it is pointed out, to help the weaker States and provide them with resources to discharge their constitutional obligations. The States, in other words, argue that the theory of the welfare state imposed on them makes it obligatory on the part of the Central government to distribute grants according to needs. As in other federations, so in India, the States are in unequal stages of development and their fiscal capacity is therefore unequal. The financial needs of backward States like Orissa and Assam are greater than in the case of other States. Again, Partition has affected the financial position of States like East Punjab and West Bengal. Further, the standard of living and administrative efficiency is lower in most of the Part B States than in Part A States. The following table shows the per capita revenue and expenditure of Part A and Part B States for 1951-52:

1. Maxwell, James S.: *The Fiscal Impact of Federalism in the United States*, p. 394.

TABLE I

	Total Revenue (per capita)	Tax Revenue (per capita)	Expenditure (per capita) Part A States	Expenditure on Security services	Social services
Madras	10.47	7.79	10.59	3.14	3.90
Bombay	16.31	12.81	16.30	5.32	5.69
West Bengal	13.74	11.21	15.66	4.26	4.74
Uttar Pradesh	9.68	7.09	9.02	3.07	2.64
Punjab	13.16	7.94	13.32	4.17	3.42
Bihar	6.21	4.87	7.74	1.92	1.94
Madhya Pradesh	9.14	7.56	9.50	2.41	2.82
Assam	10.54	7.02	11.61	2.85	3.80
Orissa	7.21	4.70	7.86	2.25	2.28
Part B States					
Hyderabad	14.79	10.57	14.87	4.16	3.81
Travancore-Cochin	16.05	9.59	16.10	2.03	5.36
Mysore	15.22	7.24	15.63	2.27	7.10
Madhya Bharat	14.24	10.63	14.30	4.38	4.50
Saurashtra	19.52	9.04	19.47	6.57	6.66
PEPSU	14.17	9.92	14.12	4.84	3.33

(Source: Reserve Bank of India Bulletin, April 1951, p. 54, and July 1951, p. 482)

Per capita revenue and expenditure reveal wide disparity, from per capita revenue of Rs. 16.31 for Bombay to Rs. 6.21 for Bihar and per capita expenditure of Rs. 16.30 for Bombay to Rs. 7.74 for Bihar. Per capita expenditure on social services has been lowest in Bihar and Orissa, while it is the highest in Bombay. The Expert Committee on the Financial Provisions of the Union Constitution considered the question whether as in Australia grants should be made in order to equalise or at any rate to reduce the disparity between the levels of services and severity of taxation in the different States. The Committee have pointed out that "there is undoubtedly something attractive in seeking to bring up the backward units at least to 'average' standards both in effort (severity of taxation) and in performance (standards of service)". But in view of the wide

1. Report of the Expert Committee on the Financial Provisions of the Union Constitution, p. 11.

difference in the levels as between the States in India and in view of the fact that the number of States in India is much larger than in Australia, the Expert Committee was constrained to remark that "in such a background 'averages' would be mere mathematical concepts totally unrelated to actual facts".

The Finance Commission has to make, in the first place, an appraisal of the financial needs of every State to discharge its functions at a standard of efficiency not appreciably below that of other States. Secondly, the Commission must satisfy itself that a State has made reasonable efforts from its own resources to reach this goal. In other words, the Commission has to satisfy itself that a State has qualified for grants-in-aid. This will involve an examination of its budgets in order to ascertain the revenue effort made by the claimant State. States which write off large sums of money in pursuit of socio-economic objectives will have to be advised to go slow to be eligible for grants. For the implementation of the Five-Year Plan the Centre will have to make specific grants and in distributing such grants the varying economic circumstances of the different States will have to be taken into account. The Finance Commission may well adopt the principles and formula evolved by the Australian Grants Commission with suitable modifications to suit the economic conditions in India.¹

Transfers of revenue by means of grants-in-aid is inevitable in a federal system because of the impossibility of securing an exact balance between financial resources and functions. Federal grants serve to bridge the gap between State needs and financial resources. But for this device, a poor State will be forced to abandon or starve some services or allow the federal government to exercise the functions, though the State is better able to perform it. Federal grants relieve the strain on the budgets of financially weaker States and help them promote economic expansion in their areas. Thus financial inequality as between States is not allowed to stand in the way of furthering national interests, the federal grants-in-aid helping to solve the problem of functions without resources. Any expansion in the system of grants, it is pointed out, will however inevitably tend to weaken the autonomy of the States. But it is the price which has to be paid for establishing a national minimum of services.

1. The task before Finance Commission is indeed onerous. While it is evident that no fixed principles can be laid down for all time, let us hope that a workable formula will be found to establish harmony between the financial needs of the Centre and the States in their drive towards the economic uplift of the nation.

Since federal grants amount to a transfer of income collected in the rich States to the citizens of poor States, it is likened to the subsidisation of an inefficient firm. But this criticism overlooks the fact that some States if left to themselves cannot provide certain services at a minimum national level and hence the federal government may have to redistribute revenue among the States so that the deficiency of resources in some States may not prevent provision of a minimum level of services. Again, it has been said that federal grants prevent the maximisation of national production, since they hinder inter-State labour mobility by counteracting the incentive to mobility, namely real wage differences¹. This criticism also cannot be sustained, since the object of federal grants-in-aid is not so much to establish uniformity of standards throughout the country as to establish a national minimum standard. Diversity of standards is bound to exist in a federation due to regional heterogeneity.

Some Dravidian Loan-words in English

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The study of loan-words in a language is an extremely interesting and profitable branch of work, because it throws light on the civilization and cultural and other contacts of the people whose language we study. This will open up vast vistas of ancient life and manners at the mere sight of some words as if by magic, like the words "Open Sesame!" in the story of Alibaba. Among all the languages of the world, English is the one language which has been borrowing right and left, from any contact it has had with any country or people of the world. The original stock of pure Anglo-Saxon words, which are mostly monosyllabic, is very little. Through the ages, it has borrowed freely from Celtic, Scandinavian, French, Greek, Latin, Italian, High and Low German, Russian, Turkish, Egyptian, Africans, Persian, Hindi, Urdu, Chinese, Japanese, Malay, the Australian tribal languages, and last but not the least, from the South Indian Dravidian languages as well. All this only shows what wide and varied contacts the English people have had all through the centuries.¹

Again, the Britishers have profited greatly from those contacts. They have not remained 'purists' in the matter of language, but have believed and are believing that they could pick up expressive terms and words wherever found, and incorporate them into their own language. They have thus built up their language on a wonderful scale as they have built up their Empire, rather, as they built their Empire till some years ago but which is now disintegrating. Though the countries of their Empire might go away from them, the words they have incorporated into English from those people will remain in the language, as long as it continues to be spoken or written in the world. This tendency of taking up new words from other languages and making them their own, without wasting time to translate them into English in an indifferent and ununderstandable way—as some of our Indian languages are doing now in the case of foreign words—shows a progressive outlook, and an abundant vitality and adaptability, which are remarkable. This spirit of vitality

1. A. D. Scott: A Note on Grants in Federal Countries *Economica*, Nov. 1950.

1 H. Bradley :- "The Making of English "

and adaptability is responsible for the phenomenal growth and development in the language and literature of the English people. No wonder that it is spoken by nearly three-fourths of the human race though it is the language of a tiny island in the North Sea. Like a snow ball rolling and gathering fresh snow on wintry ground, it has gathered new matter as it has rolled along through the different countries and through the centuries. There are few other languages like this in any other part of the world.

In the matter of enriching the language, trade has played a more important part than conquest or colonisation. "The merchant adventurer holds an important place in the history of the English language."¹ Usually new words first come into the spoken language and then they percolate into the written language also. The reverse process also takes place sometimes. In some cases, it is seen that the same word is borrowed at different times repeatedly, i. e. sometimes directly and sometimes also indirectly through some other language. For instance, many Indian and Far Eastern language words have come to English through Portuguese or Dutch or French, because those countries traded with the above mentioned Eastern countries before the British. Similarly some Sanskrit words have come into English through Greek, Latin or Arabic, and again directly from Hindi or Urdu. For example, words such as "pepper", "elephant" "silk" have come to English through other languages like Dutch, Portuguese or French, from East Indian languages and Chinese. The modern tendency however is for English to borrow directly from the languages of the countries with which they have contacts. This is how any number of words from Hindi, Urdu and some from the South Indian Dravidian languages have found their way into English. We can see these words being used in plenty by Indo-Anglian writers in their works. After being adopted into the language, these words behave exactly like other ordinary English words in the matter of inflexion, conjugation, accentuation, etc.²

As far as Indian words are concerned, there are two periods of borrowing; first, before the mediaeval period through Arabic, Greek and Latin; second, direct borrowal from the sixteenth century onwards. Among the languages of India, North Indian languages like Hindi and Urdu have contributed a larger number of words to English than the South Indian Dravidian languages. The reason for this state of affairs is greater contact between the British and the people of North India.

1 O. Jespersen :- "Growth and Structure of the English Language"

2 O. Jespersen :- "Growth and Structure of the English Language"

Contacts in the military, commercial and governmental fields have been greater there than here down in the South. But still a fairly good number of words from the Dravidian languages has come into English. These words have been borrowed from Tamil, Telugu, Kannada and Malayalam—the chief Dravidian languages. But among these Kannada has contributed very few words, because it is an inland language, and the possibilities of contact with the British have been few. The seat of government, commercial stations and ports are found only in the Tamil, Telugu and Malayalam areas, so that contacts between the British and the people of these parts were greater and fuller than in the Kannada country. Most of the Dravidian words entered the English language only from the 16th century onwards, and now they have become quite good English words, and sometimes, even difficult to be recognised in their old South Indian forms.¹

Now, we shall take up some of these borrowings in detail; these words are found and used in practically all important aspects of life. They have become so common that we are surprised when we learn that they have been borrowed from one or the other of our own South Indian languages.

I shall welcome you to read this article in the traditional South Indian fashion, by first offering you "betels" and "arecanut.". Of course "betel" and "arecanut" remind us of the third requirement "chunam" and all these words are of Dravidian origin. They have been taken completely into the English language, and they are treated exactly like other pure English words as regards grammar and usage. The word "betel" travels into the English language via., Portuguese, for they began trading with our part of the country earlier than the British. This is the case with many other Dravidian words; they have gone into the English language through Portuguese, and through Dutch and French. The Portuguese word is "betel". Ultimately it comes from Malayalam "Vettila" and Tamil "Vetrilai". (வெற்றிலை). The word is used by many 15th and 16th century writers, of which I shall give a few examples a little later.

Similarly, the word "arecanut" comes from the Portuguese "areca" and from Malayalam "adakai". We can compare the Kannada form of the word "adakey" and even in Tamil there is an old form "adaikay" (அடைக்காய்) meaning "adai" (அடை) cluster; "kai"

1 H. Palmer :- "Principles of Language Study."

(காய்), fruits or nuts. Chunam is from the Tamil word "chunnambu" (சுண்ணாம்பு). And now for some of the sentences where these words are used by early writers.

R. Burton: "The Hindu will chew his betel and squirt the scarlet juice all over the floor."

W. Philips: "They (the Hindus) do nothing but sit and chew leaves or herbs called "bettele" with chaulke and a fruit called "arequa".

Hakluyt. Great quantity of "archa" which fruit they eat with the leaf of a herb, which they call "bettel".

Purchas. The "arequa" maketh men almost drunk".

Of course, in these examples, the curious reactions of strangers to our ancient and traditional habit is clear, and is funny to us now as also to Englishmen who have lived with us for a long time.¹

In the sphere of victuals also we find that many familiar words are of South Indian origin. The word "rice", for example, the name of the staple food of millions in the East is ultimately derived from the Tamil word "arisi" (அரிசி). Of course, from Tamil it was borrowed by Greek, where it assumed the form "oruzā", because they came into contact with the Tamils early when they traded with the South. The Italians borrowed the word from the Greeks and it took the form "risa" in that language. From Italian it was borrowed into French and it became "ris" there. From French it crossed the British channel and went into the English language as "rice".

Similarly, the word "paddy" ultimately comes from a Dravidian language, through Malay and Javanese languages. Those far-eastern languages like Malay, Javanese etc., also borrowed some words from the South Indian languages, when the ancient Tamils traded with them, and also they had their empire in those areas, and from those languages English borrowed some of these words, which could be ultimately traced to Dravidian origin. "Paddy" in Javanese is "Pari" and Malay it is "Padi". How can we say that the word is of Dravidian origin? In Kannada the word for paddy is "batha" and in Telugu it is "Vaddlu". There must have been a form in the earliest Dravidian language which must have given the Malayan form "Padi". Archaeologists have come to the conclusion that South India is perhaps the

¹ Hobson and Jobson by Yule and Burnell.

most ancient part of the Earth's surface and people here were civilized and knew agriculture and the use of implements long before the people of other parts of the world. So it need not surprise us that the words for "paddy" and "rice" are of South Indian origin, because we were the first to grow and eat rice, which is the most easily digestible food in the world. The Hindi word for cooked rice "bath" also must have come from that Dravidian word.

The English word for pepper water "mulligatawny" is borrowed from the Tamil word "milagutannir" (மிளகுத்தண்ணீர்) i.e., pepper water, i.e., "rasam" (ரசம்). Of course, it is natural for rice and "mulligatawny" to go together for eating purposes, and it is no wonder that they have been borrowed from the same source.

The modern English word "curry" is from the Tamil word "kari" (கறி) through French "cari" and Portuguese "caril" meaning a vegetable preparation. Of course, with the development of the culinary art, we have "fish curry", "mutton curry" etc., The word has become a first class English word and standard authors like Thackeray used it in their works. Thackeray says in one of his novels: "If you come to dinner, there is "curry".¹

The names of some of the well-known varieties of fruits have also been taken from South India. "Mango", for example, comes from Tamil "mangai" (மாங்காய்) through Portuguese, where the word for it is "manga". We find this word in more or less the same form in all the four important Dravidian languages. Malayalam "mangai", Kannada "mavinakai", Telugu "mamudikai". Our part of the country was the first to grow mangoes in the world. The best varieties of the fruit are available only here; for example, the "Neduchalai" (நெடுச்சலை) variety of mango is grown in the Salem district of our state. This reminds me of an incident reported in the papers some years ago, when the late George Bernard Shaw was happily with us. It appears that our revered Prime Minister, Pandit Jawaharlal Nehru, presented the late George Bernard Shaw with some fine mangoes when he went to visit him at his place, Ayot. St. Lawrence in England. After tasting them, it seems George Bernard Shaw remarked that he had not tasted such luscious fruit at any time previously in his life. He had not eaten mangoes at all previously. Many others began to evince an interest in eating mangoes afterwards, so that it was

¹ Hobson and Jobson by Yule and Burnell.

reported that traders sent mangoes by air, and fairly good business was done in that fruit.

"Jack" fruit is nothing but our Malayalam "chakkai". It has gone into English through Portuguese where the word is "Jaca". So two out of our traditional three fruits (மூக்கனிகள்) ("mango", "jack" and "plantain") have gone from South India.

"Ananas" i.e., pine apple is from our Tamil word "Annas" (அன்னாஸ்). It is found in more or less the same form in the Singhalese language also. It grows in abundance in South India, Ceylon and the Malay peninsula.

The word "Copra" comes from Portuguese and Spanish "Copra", which is ultimately derived from the Malayalam word "Koppara"; it is found in more or less the same form in the Tamil word "Kopparai" (கொப்பரை) and the Kannada word "Kobri".

The second part of the compound word "sugar candy" is from the second part of the Tamil word for it "karkandu" (கற்கண்டு), "kandu" meaning a lump. Of course even the word "sugar" is of Indian origin, from the Sanskrit word "sarkara".

In the olden days we did not believe in patent medicines or pills or injections for the treatment of diseases. We used to cure all our ailments from the leaves of herbs, which are even now called "pachilai" (பச்சிலை) in Tamil. This word has given to the English language "patchouli".

There is another word "catechu" which has been defined in the Oxford Concise Dictionary as "an astringent substance containing 40 to 50% of tannin, obtained from the bark of wood or fruits of various plants, used in medicine, tanning, dyeing, printing etc." This is also from the Tamil word "kachu" (கச்சு) through Malay "kachu" meaning "bitter".

The word "cheroot" is the same as our Tamil word "shurutu" (சுருட்டு); through French "cheroute" it has gone into the English language. Tiruchirapalli is, and has always been, famous for its "cheroots". Here are some sentences where the word has been used early.

Indian Gazette. "Chewing beetle and smoking cheroots".

Annual Review. "He who wants a cigar in the East must ask for a cheroot."¹

Next we shall take up a word which refers to a kind of cloth. The word "calico" which means a kind of cotton cloth is of Dravidian origin. In fact, it is finally derived from "Kozhicode" an important sea-side city of Malabar. In Malayalam it is "Kozhicode" the Arabs wrote it and pronounced it as "qualikut"; in Medieval Latin it took the form of "Collicutta". It was "Qualicut" in Portuguese from where it came into English as "Calicut". The O. E. D. defines the word as follows:—"The kind of cloth (cotton) made in Calicut; many kinds of cotton cloth bleached and unbleached called "calico".

And now for an early example of the usage of the word in a book:

J. Robertson in his book "Spinster" writes:—"A tawdry, pie-spotted, flabby, ragged, low priced thing called "callicoe" made by a parcel of Heathens and Pagans that worship the Devil and work on half penny a day".² (Incidentally, the attitude of the English people in those days to our countrymen engaged in calico trade also becomes clear from the sentence).

Then if we go into the sphere of dwellings and housing accommodation we find a lot of words in English which have been ultimately derived from the South Indian languages. The word "teak" for example, comes from Malayalam "theka" (cf) Tamil "thekku" (தேக்கு), through Portuguese "teca". Then the word "bamboo" comes from the Dravidian word "bambu" (cf) Kannada "bambu" through Malay. Javanese "bambu" and Portuguese, Spanish and French "bambu"; (cf) also the Dutch form bamboes".

Hakluyt writes: The houses are made of canes which they call "bamboos".³

The word "palmyra" for the variety of palm tree seen in plenty in South India is from our Tamil and Malayalam word "Panamaram" (பனாமரம்). It comes into the English language through Portuguese where its form is "palmyra" the spelling having been apparently modified erroneously after "palmyra", a city in Syria. The dictionaries say that the word is of Indian origin.

1 Hobson and Jobson by Yule and Burnell.

2 Ibidem

3 Hobson and Jobson "by Yule and Burnell.

The word "choultry", a village rest-house, is from the Dravidian word "chavadi" (சாவடி) found in Tamil, Telugu, Kannada, Malayalam. The railway station in Salem district "Macdonald's choultry" is called "Makudan Chavadi" (மகுடஞ்சாவடி) in Tamil.

The word "godown" meaning a ware-house is from the Tamil word "gidangu" (கிடங்கு), also called "giddangi" (கிட்டங்கி) sometimes even now in the Malay language. As pointed out previously many Dravidian words were taken into Far-Eastern languages like Malay, Javanese etc., because of the trade and cultural contacts that the Tamils had in ancient days with those countries.

"Pandal", built in front of marriage house or for big gatherings like the annual session of the Indian National Congress, is from the Tamil word "pandal" (பந்தல்).

The word "balcony" meaning an upper window is derived from an Italian word "balacone"; the first part of this word "balco" is said to be from O. H. G. word "balcho" meaning a ridge; this is what is given in the O. E. D. But to my mind, the derivation seems to be unnatural and far-fetched. I suggest, subject to correction, that we can connect this word with our Tamil word "palakani" (பலகணி) meaning the upper-window, and it might have been borrowed by the Europeans from us when they came into contact with us, for purpose of trade and commerce in the 15th and 16th centuries.

The word "bandy" is for instance, from the Telugu word "bandy" (cf) Kannada "bandy" and Tamil and Malayalam "Vandi" (வண்டி).

In "*A Handbook of British India*" occurs the sentence: "A buggy being a one-horse vehicle, at Madras, they call it a bandy".¹

For sailing in the sea along the East Coast, fishermen use the "cattamaran" which is from the Tamil word "kattumaram" (கட்டமரம்). It is useful for sailing long distances in the sea, and is never upset by even high waves in stormy weather. This word "cattamaran" has a figurative sense also, and means a cross-grained person of whom others are afraid. Let us see some usages:—

The Blackwood Magazine: "He is the very cattamaran of oratory, when he explodes."

¹ Hobson and Jobson by Yule and Burnell

W. Collins: "That old cattamaran, of a maiden aunt of his....."¹

Then let us turn to trade and commerce and monetary transactions. The word "coir" is from Portuguese "cayro" and it is ultimately from the Malayalam word "kayar", (cf) Tamil "kayir" (கயிர்). Of course it means the fibre produced by the cocoanut tree.

Forrest says in his book:— "The cocoanut tree produces coir."²

"Corundum" meaning "crystallised mineral of some species as sapphire, ruby etc." is from the Tamil word "kurundum" (குருந்தம்) which is largely used for preparing abrasives.

"Tootanague" meaning zinc, is from the Tamil word "thuttanagam" (துத்தநாகம்).

The word "coolly" meaning the worker on wages, so useful for industry and commerce is from the Tamil word "cooli" (கூலி), meaning the man who earns wages, for which idea also the same word is used. Some scholars think that it might be from the Guzerati word "koulli" meaning an aboriginal tribe; but that has not been accepted by all linguists.

R. Percival writes: "A cooly is a common fellow of the lowest class".³ (Incidentally, he creates a separate class or caste of people in our country as "coolies" as if we are not having enough of them already!).

The coins used for monetary and commercial transactions were three—"cash", "fanam" and "pagoda".

"Cash" meant "coin of low value in East Indies. It is from Portuguese "cas" (cf) French "cas", Singhalese "casi"; all these forms are ultimately derived from the Tamil or Malayalam word "kasu" (காசு).

Daupier writes:— "The money-changers sit in the markets with leaden money called "cash" which is generally given for small money

¹ Ibidem

² Ibidem

³ Hobson and Jobson by Yule and Burnell

in all these countries; but, cash here is lead or tin (usually with a small hole in the middle)¹

The word "fanam" is from the Tamil word "panam" (பணம்); 80 "cash" make one "fanam".

Pagoda was a gold coin, made up of 42 fanams, and it also meant a temple or sacred building in India and China, especially its sacred tower, usually pyramidal in shape, built over the relics of Buddha or some saint or any place of devotion. The gold coin called "pagoda" had on one of its sides the picture of a temple tower. Now this word was also written "pagotha", "pogodo" and it is derived from the Portuguese word "pagodi". The dictionaries say that the Portuguese word is of Indian origin; but, the derivation suggested is rather curious and out of the way. Some scholars take it as coming from "but + kadah", meaning a temple of idol. Some others say that it is from the Samskrit word "bhagavat", meaning "holy"; some others say that it is from "Bhagavati", meaning "Durga, a goddess". But all these derivations do not sound plausible. I suggest that the word "pagoda" might be a corrupted form of our Indian word "gopura" by the "law of metathesis", according to which sounds and letters of a word might change places. Thus "gopura" became "pugora" then "pagora", and then "pagoda". "r" became changed into "d" because in some Indian languages "r" is pronounced as "d" (Soft).

(r) (d)
"Badoda", "Nayad". What I suggest here is subject to correction, and approval by scholars, and I request those interested to give their opinion about this hypothesis of mine.

Finally, we shall take some miscellaneous words, which are greatly in use in English, and which also originate from one or the other of our Dravidian languages. The word "peon" meaning office-boy is from the Tamil word "payyan" (பையன்). Its correct pronunciation is "pien" and not "pūn" as most of us say.

The word "boy" in the sense of "bearer" or "servant" is from the Telugu word "bōyi", according to some scholars.

"Pariah" meaning an untouchable is from the Tamil word "parayan" (பறையன்), one who beats upon the "parai" (பறை) or country drum.

¹ Ibidem

"Bandicoot" meaning a big-sized rat is from the Telugu word "Pandikokku". J. Forbes, writing about the East India Company warehouses on the Coromandel coast says:—"Bandicoot-rats frequently undermine ware-houses and destroy every kind of merchandise."¹

The word "Coromandel", by the by, is from Tamil "Chola-mandalam" (சோழமண்டலம்).

"Canicopolly" is from the Tamil word "Kanakupillai" (கணக்குப் பிள்ளை).

"Ferringhee" or "Firinghee" is from Tamil and Kannada "Parangi", (பறங்கி) (Cf). "Parangipettai" (பறங்கிப்பேட்டை) meaning the place where Ferringhee or "white people" live. St. Thomas Mount is called "Parangimalai" (பறங்கிமலை) even now.

"Poligar" is from the Tamil word "Palayakkaran" (பாளையக்காரன்) or small chieftain.

"Ramaswamy" (இராம சுவாமி) a common name among Tamil males has a figurative meaning also. It means "any Tom, Dick or Harry in Madras." It also means a twisted piece of cotton in a tube, made of cotton in a tube, made of silver for lighting cigars."

"Pet" or "pettah" is from Tamil "pettai" (பேட்டை) meaning bazaar.

Ayah is from the Tamil word "ayah" (ஆயா) through Portuguese "aia", Spanish "aya" and Italian "aja". An example of early usage is Mrs. Sherwood's sentence in a work, "The ayah and her lady."

"Chit" or "chitti" is from the Tamil word "cheettu".

"Tapal" meaning the mail is from the Telugu word "tappalu" which is singular in number. But some Telugu clerks of the East India Company, it appears, mistook it for the plural form because of the "u" ending and formed the singular "tapal" which has gone into English in that form.

"Tom Tom" meaning beating the country drum and announcing something or the drum itself, is from the Tamil word "thambattam" (தம்பட்டம்).

¹ "Hobson and Jobson" by Yule and Burnell

“Yercum” meaning an East Indian herb, its fibre used medicinally is from Tamil “Erukkam” (ஏருக்கம்), a common plant in South India.

“Chatty” is from Tamil “Chatti” (சட்டி) meaning earthen pot.

There are many other words like “anicut” (அணைக்கட்டு), “ayacut” (ஆயக்கட்டு), “maramath” (மராமத்து) etc., pertaining to engineering. They are from Tamil. Similarly “kummi” (கும்மி), “kolattam” (கோலாட்டம்), “Bharatha-natyam” (பரதநாட்டியம்) pertaining to the dance art are from Tamil.

Thus, quite a number of words have gone into English from the Dravidian languages. A study of these words is very interesting and instructive for students of language and literature.

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All the words noted here in this paper and their derivations are from the Oxford “New English Dictionary”.

KUMARA KAMPANA IN THE TAMIL COUNTRY

BY

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ONE of the little known chapters of Vijayanagar history is that concerning the activities of Kumara Kampana in the Tamil country. How the Tamilnad became part of the Vijayanagar Empire needs to be fully worked out. It is an interesting and inspiring theme of historical investigation. The sources for this kind of research work in the history of South India are copious, especially the epigraphical and literary ones. Here an attempt is made to describe briefly the activities of Kumara Kampana or Kampana II in the Tamilnad.

Kumara Kampana was the second son of Bukka I, (1355-76 A.D.), the second ruler of the first Vijayanagar dynasty. He was the hero responsible for the conquest and consolidation of the Tamil Country during the reign of his father. His example was followed by the later sovereigns of Vijayanagar. Kumara Kampana was not merely a political conqueror but also a restorer of the indigenous culture and the preserver of the ancient religion in South India. The Muslim invasions from the north, beginning from the time of Allauddin Khilji, had brought untold misery and misfortune to the ancient royal dynasties of South India. The Chola Empire was no more; the Pandyan kingdom had become a thing of the past and the Hoysala ruler Ballala III who tried his best to save South India from the tyranny of the Sultans of Madura fell in the battle of Kannanur-koppam. The South Indian temples had been plundered and desecrated, their untold wealth had been carried away and their magnificence and grandeur were destroyed. The exact condition of the Tamil country before the advent of Kumara Kampana could be gleaned from the famous work called “Kamparaya Charitam” by Gangadevi. The mysterious lady, who appeared before Kampana while he was at Virinchipuram, told him as follows:

“O King! The place known as Vyagrapuri (Chidambaram) has become truly so, for now tigers inhabit where men once dwelt. The

Vimana of the Srirangam temple is so dilapidated that now it is the hood of Adhishesha alone that is protecting the image of Sri Ranganatha from the falling debris. The Lord of Gajaranya (Thiruvanaikkavu) who once killed an elephant to obtain its skin for his garment has now again been reduced to that condition because he is stripped of all clothing. The Garbagraha and mandapa of many temples are crumbling and the doors of many other temples are eaten up by white ants. Where there resounded once the joyful music of mridangam there is now heard the howling of the jackals." ¹

The above description of the temples in the Tamil country though poetic in character cannot be regarded as opposed to facts of history. What applied to the condition of the temples may also be applied to the political condition of the Tamil country. It was a period of small autocratic states ruled over by independent chieftains who refused to recognise a supreme authority. To put it more explicitly there was no supreme power which could control the petty states. Of these small states which existed in the region south of the Tiruvengadam hills, two claim our attention for the present purpose. They were the Tondaimandalam region under the Sāmbuvarayas and the Madura Sultanate. The Sāmbuvarayas held sway in the present Chingleput, North Arcot and portions of South Arcot districts. The Sultans of Madura ruled over the present Trichinopoly, Madura and Ramnad districts. It is necessary that the history of these two states must be sketched for the proper understanding of Kampana's conquest of the Tamil country.

The Sāmbuvarayas of Tondaimandalam :

The Sāmbuvaraya chieftains were once the feudatories of the Chola monarchs. Since the extinction of Chola rule from the time of Raja Raja III, the Sāmbuvaraya chieftains became prominent. The earliest ruler of this minor dynasty was Sengeniminden Attimallan Sāmbuvarayan. He was a contemporary of Kulottunga III. In the 8th regnal year of Kulottunga III, this Sāmbuvaraya made gift of taxes to the Tiruvallam temple near Conjeevaram.² The most important ruler of this Sāmbuvaraya family was Rajagambira Sāmbuvaraya. An inscription of his at Padaivedu in North Arcot district mentions that in 1258 A.D. he became independent of the Chola ruler and refused to pay him tribute.³ During his rule, the Tondaimandalam region came to be called as Rajagambirarajyam. He was succeeded

1. Madhuravijayam by Gangadevi, Introduction.

2. South Indian Inscriptions, Vol. III, No. 60.

3. T. V. Sadasiva Pandarathar : Article on Sāmbuvarayas in Tamil Fozhil, Vol. 2.

by Virasola Sāmbuvarayan in 1322 A.D. and he assumed the title of Sakalalogachakravarthi Venrumāngonda Sāmbuvaraya. These titles may be regarded as too much for a petty ruler. But in those far off days, any chieftain could add to his name any kind of title. According to inscriptional evidence⁴ he ruled up to 1338 A.D. and during this period, the Sāmbuvaraya state attained the zenith of its power. All his neighbours were afraid of him and even the attempts of the Rayas of Vijayanager to expand their rule southwards were unsuccessful. He was succeeded by his son Rajanarayana Sāmbuvaraya (1338-1366 A.D.) who also assumed the prefix to his name Sakalalogachakravarthin. His inscriptions are found at Kanchipuram, Mahabalipuram, Padaivedu, Vellore and *Tirupputkuli*. It was during his rule that Kumara Kampana invaded the Tamil country.

An exact description of Kumara Kampana's campaign against Rajanarayana Sāmbuvaraya is found in the famous book "Kamparaya Charitam". According to that valuable source of information Bukka I ordered his son Kumara Kampana to march against the Tundira country (Tondaimandalam) and after defeating Sāmbuvaraya to conquer Kanchipuram. Then he was ordered to proceed against the Sultan of Madura. According to the instructions of his father, Kampana started on his famous expedition to the south from his head-quarters at Mulbagal. He crossed the Andhra districts from Mulbagal within five days and reached the banks of the river Palar. There the forces of the Tamil chieftain Rajanarayana Sāmbuvaraya met those of Kumara Kampana. The forces of Sāmbuvaraya were defeated and they fled for safety to their citadel Rajagambiram (Padaivedu). Kampana proceeded against that place also and besieged the fort. When pressed hard, the Sāmbuvaraya came out of the fort sword in hand and there was a duel between him and Kumara Kampana. The poem Kamparaya Charitam mentions that in the duel, the Sāmbuvaraya was killed.⁵ But Mr. T. V. Sadasiva Pandarathar in his article on the Sāmbuvarayas says that Kumara Kampana after defeating Rajanarayana showed his magnanimity by restoring the kingdom to him and accepted tribute.⁶ The latter's opinion is more reliable since Kumara Kampana assumed the title of "Sāmbuvaraya Sthapanacharya."

After the defeat and restoration of the Sāmbuvaraya chieftain at Padaivedu, Kampana proceeded to Kanchi and Virinchipuram and

4. Madras Epigraphical Report, 1911.

5. S. K. Iyengar : Sources of Vijayanagar History, p. 23.

6. T. V. S. Pandarathar : Tamil Pozhil, Vol. 2.

took rest during the rainy season. It was here, according to Madhura-vijayam, that a mysterious lady appeared before Kampana and after describing to him the disastrous consequences of the muslim invasions of the south and the sad plight of the Tamil country and its temples, exhorted him to destroy the invaders and to restore the country to its ancient glory. She also presented to Kampana a divine sword which, she said, would give him victory over the Sultan of Madura.

The Sultanate of Madura :

The history of the Sultanate of Madura is an interesting but at the same time a horrible one. According to Ibn-Batuta, Muhammad Tuglak appointed Sheriff Jalaluddin Ahsan Shah to be the Governor of Ma'bar which became one of the provinces of his vast empire. This Jalaluddin rebelled and usurped the ruling power, killed the lieutenants and agents of the Sultan and struck, in his own name, gold and silver coins.⁷ But Ahsan Shah was assassinated by one of his nobles in 1340 A.D. and was succeeded by another noble called Allauddin-Udaji. He ruled for a year and, after a successful war with the Hindus of Madura, was shot dead on the spot by an arrow from an unknown hand. A son-in-law of his who assumed the title of Qutbuddin succeeded him. He was killed within forty days of his accession and his successor was one Ghiathuddin Dhamagani, originally a trooper in the service of the Delhi Sultan. Ghiathuddin, according to Ibn-Batuta, was a fiend in human shape and the atrocities of his rule are well depicted by Ibn-Batuta.

It was during the reign of Ghiathuddin that the Hoysala ruler, Vira Ballala III, made his final attempt to destroy the muslim rule in the south. As fortune would have it, though almost successful in his attempt, yet he was captured alive and put to death horribly at Kannanur-Koppam. Soon after his return to Madura, Ghiathuddin lost his only son, his wife and mother by an attack of cholera and himself died a fortnight later. Ghiathuddin was succeeded by his nephew, Nasir-ud-din, who had been a servant of Muhammad Tuglak at Delhi from where he fled to his uncle at Delhi. He ascended the throne of his uncle by a lavish distribution of gold to the nobles. One of Nazir-uddin's first acts was the killing of a son of his paternal aunt because he was the husband of Ghiathuddin's daughter. Having murdered the husband he married the widow. The successors of Nazir-uddin were Adil Shah (1356-57 A.D.), Fakruddin Mubarak Shah (1357-58 A.D.) and Allauddin Sikander Shah (1372-77 A.D.).

7. S. K. Iyengar : South India under Muslim invaders.

The rule of the Sultans of Madura from 1335 to 1377 A.D. may be regarded as the worst period in the history of South India. The difficulties which the people, their religion and culture had to experience had been well attested to by Ibn-Batuta. The tyrannical rule of the Madura Sultans was put an end to by Kumara Kampana. After subduing the Sambuvaraya chieftain, Kampana marched southwards, helped by his friend, Saluva Mangu. Gangadevi describes the Sultan of Madura who was defeated by Kampana as "one who reduced to a low condition, the Cola and Pandya by his valour, who proved to be the latchet to the creeper, the prosperity of the Ballala."⁸ Dr S. K. Iyengar interprets this statement and comes to the conclusion that the Ballala referred to was Ballala IV and the Sultan of Madura who was defeated by Kampana was Naziruddin, the successor of Ghiathuddin. He would date Kampana's expedition to Madura prior to 1358 A.D.⁹ But Father Heras, on the strength of the coins of the last Sultan of Madura, pushes back the date of Kampana's expedition to Madura to 1377 A.D.¹⁰ Mr. T. V. S. Pandarathar thinks that the invasion of Kumara Kampana against Madura would have taken place before 1354 A.D.¹¹ But a careful study of the inscriptions during the time of Kumara Kampana would convince anybody that none of these dates may be regarded as correct. I have studied many of the inscriptions that were inscribed during the reign period of Kumara Kampana in the south. Many of these inscriptions are dated in the Saka era, but some contain only the name and month of the cyclic year. The earliest inscription which mentions about Kampana's rule in the south comes from Chittoor district and gives the Saka era 1283 which corresponds to 1361 A. D. The latest records mentioning about Kumara Kampana are found at Tiruppullani (Ramnad district) dated 1374 A. D. and at Tirupparaithurai (திருப்பராத்தூரை), (Trichinopoly district) (1374 A. D.). Therefore Kumara Kampana was active in South India between the years 1360-1375 A.D. for about fifteen years. It must be between 1370 and 1375 A. D. that Kampana invaded Madura and defeated the Sultan of Madura.

Father Heras in his 'Aravidu Dynasty' says, "One of the most transcendental acts of Kumara Kampana in the south was the restoration of the Pandya ruler to the Madura kingdom. He made enquiries concerning the members of the Pandyan royal family and their respective rights to the Pandyan throne. The result of this enquiry was the

8. S. K. Iyengar : South India under Muslim Invaders.

9. Ibid, p. 182.

10. Father Heras : Aravidu Dynasty, p. 106.

11. T. V. S. Pandarathar . History of the Pandyas in Tamil, p. 156.

coronation of Somasekhara Pandya as the ruler of Madura. " ¹² But this conclusion is based upon local chronicles and is not supported by epigraphical evidence. The name Somasekhara Pandya is unknown to the genealogical lists of the Pandya rulers. Further there were in existence till the year 1377 A. D., coins of the Sultans of Madura. Therefore Kumara Kampana's restoration of the Pandyas to their ancestral throne is a myth. Inscription No. 64 of 1916 is helpful in solving the problem. The substance of the record is "The times were Tulukkan times. The devadana lands of the temples were taxed with the *kudimai* ¹³ However, the temple worship had to be conducted without any reduction. The cultivation of the temple lands was done by turns by the tenants of the village. At this juncture Kampana Udaiyar came on his southern expedition destroyed the Tulukkans and established orderly government throughout the country. He appointed many Nayakkanmars for inspection and supervision so that the worship in all temples might be revived as of old."

So far, I have tried to narrate the political achievements of Kumara Kampana in the Tamil country and it is clear that he was completely successful in his attempt. But the conquest of the Tamil country alone was not his main object. He came to the south as the champion of Hinduism and as the preserver of the South Indian temples. The temples at Madura, Srirangam, Kannanur, Chidambaram and Conjeevaram were left uncared for during the period after the decline of the second Pandya empire and before the establishment of the Vijayanagar Empire. Therefore it became an important duty of Kumara Kampana and his friends and officers to see that the temples of South India were restored, preserved and protected.

The first duty of Kumara Kampana after defeating and killing the Sultan of Madura was to restore the daily services in the famous temple at Madura. The Pandyan Chronicle gives a very interesting account of the incident. "Kumara Kampana Udaiyar, a native of Karnataka, having conquered the Muslims, took possession of Madura. He opened the Siva and Vishnu temples which had been locked up for a long time. After opening the temple of Minakshi, he obtained a personal view of the goddess. Things were found precisely as on the day when the temple was closed. The lamp that was lighted on that day, the sandalwood powder, the garland of flowers and the ornaments usually placed on the morning of festival days were now found exactly as they were before. Kampana on seeing this miracle was glad, closed

12. Ibid, pp. 106-107.

13. A kind of tax.

his eyes and with great piety made the customary offerings. He gave many villages to the temples and established ordinances for the regular performance of worship ¹⁴

The next temple that was restored to its former grandeur was that of Srirangam. During the invasion of Malik Kafur and Muhammad-bin-Tuglak, the idol of Sri Ranganatha had experienced difficult and painful incidents. Due to the religious fervour of a Srivaishnava of Srirangam and his son, the idol was carried from place to place in South India and was kept secretly in a cave in the holy hills of Thiruvengadam. It was Gopanaraya, the Governor of Senji and an important officer of Kumara Kampana, who drove the Muslim Governor of Samayavaram near Trichinopoly and reinstalled the idol of Sri Ranganatha at Srirangam. Before he did so, he brought it safely from Tirupathi and kept it safely in the rock-cut shrine at Singavaram (near Senji). Then, in an opportune moment, he marched with an army to Samayavaram, defeated the Muslim governor there and restored worship in Srirangam temple. This glorious achievement of Gopanaraya is testified to by his Srirangam inscription. He was a Brahman officer belonging to the Apastamba sutra and Bharadwaja Gotra.

This was not the only achievement of Gopana Raya. He was appointed by Kampana as the Governor of Senji province and also as the general supervisor of temple affairs in South India. Inscriptions Nos. 86, 87 and 88 of Vol. I of South Indian Inscriptions mention the part played by Goppanaraya at Kanchipuram. In these records he is mentioned as Koppanangal which is only a Telugu version of Goppanaraya. No. 86 refers to Kampana as the lord of the eastern and western oceans and his officer Koppanangal restored the lands which once belonged to the Rajasimheswara temple. The lands had been sold away by the temple authorities to Anekathangavatham (அநகதங்காவதம்) shrine. In Saka 1286, Goppana ordered that the lands should be restored to the former temple. Inscription No. 87 belonging to the same year records that with the approval of Koppanangal, the authorities of the Rajasimheswara shrine at Kanchi sold some houses in the northern row of the Sannidhi street to certain Mudalis for 150 panams. No. 88 dated Saka 1291 mentions that during the reign of Kumara Kampana, with the approval of Koppanangal, the temple authorities gave a *mutt* near the temple and some lands to a certain Gangarayar of Thirumudukunram (Viruddachalam). No. 52 of 1.05 is an inscription found at Dalavanur temple in South Arcot district. It registers the grant of land by Saluva Mangu in accordance with a letter received from Goppana. According to the inscription the correct name of the village is Thalaivinnallur (தலைவிநல்லூர்).

14. Taylor: Oriental Historical Manuscripts

The other great officers of Kumara Kampana who helped him in the tremendous task of establishing peace and security in the Tamil country were Vittappar of Anegondi, the treasurer, and Somappa Udaiyar, the Mahapradhani. Both these officers are mentioned in an inscription at Kurmayi in Chittoor district dated Saka 1283.¹⁵ According to this inscription, these two officers issued an order to Meydevar who was the subordinate treasury officer, in Pulinadu, to assign certain duties in kind on all articles that passed through his province for the benefit of the Vishnu temple at Kurmayi. The treasurer Vittappar was appointed as the royal officer in the Siva temple at Tiruvottiyur in Saka 1290. He found that the servants of the temple had struck work owing to differences between them. Vittappar enquired of the Virasolaanukkar and the Kaikolars concerning the cause of this strike and called a meeting of the Srirudras, Maheswaras, Isabhaitaliyas and Devaradiyars in the Vyakarnamandapa of the Tiruvottiyur temple. Then he settled a procedure in the matter of order of service to be followed by them in temple service. But the question was not finally settled. Three years afterwards under the orders of Kampana Udaiyar these people had to meet again in the same hall presided over by an officer called Tunaiyirunda Nambi Kongarayar. This time it was successfully settled.

Besides the above other instances could also be mentioned to prove the beneficent activities of the officers of Kumara Kampana in the Tamil country. No. 255 of 1935 from Tirukkoilur gives the information that one Maraya Nayaka, the son of Somappa Dandanayaka executed repairs to the temple at Tirukkoilur. Another inscription dated Saka 1289 records the gift of land for the maintenance of one Kattanainan (கட்டநயினன்) of Pidavur for singing the sacred hymns before the deity of Nerkunram and is signed at the end by Goppamangal who is evidently no other than Goppanaraya. No. 162 of 1936 dated Saka 1294 comes from Kannanur, the capital of the Hoysalas in the Tamil country. It mentions that the temple of Poysaleswaram Udaiyar was demolished upto its sacrosanctum and converted into a mosque by the muslims during their occupation of the temple. After Kampana's conquest of Madura the temple at Kannanur was restored and reconsecrated for worship.

It is clear from the above literary and epigraphical evidences that Kumara Kampana aided by his officers such as Saluva Mangu, Goppana Raya and Somappa, was responsible for the restoration of peace and order in the Tamil country both in the political and religious fields.

15. No. 309 of Appendix B. M. E. R. 1913.

MYSTICISM AND AMBIVALENCE

BY

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Mysticism "seeks by contemplation and self surrender to obtain union with or absorption into the Deity". Bertrand Russel opines "mysticism is to be commended as an attitude towards life, not as a creed about the world."¹ There had been many an attempt to analyse the constituent elements of this mystic attitude. St. Thomas Aquinas developed what may be described as "the classic explanation of the mechanics of the intellectual communication implicit in the experience of mystical union"². Among later mystics Meister Eckhart had explained this mechanics of the mystic attitude in greater detail. Rudolf Otto had attempted to show that in mysticism there is no difference as East and West.³ Recently Swami Akhilananda⁴ had supported the same view.

Now, most of the students of the mechanics of mysticism had agreed there are different stages of experience within mystic life such as crisis, call, "divine darkness" or "purgatory", vision or samadhi or superconsciousness, atonement, estrangement, reunion and so forth. Apart from these specific experiences most of which are *sui generis*, there is another attitude which is unique in its own way and yet accompanies a few of the other experiences mentioned above, as their integral part. This we can name ambivalence. Freud uses this term in his "Totem and Taboo."⁶ It is very significant that this term appears in its adjectival form as one among the addenda of the third edition of the Concise Oxford Dictionary. The ambivalent attitude is "having either or both of two contrary values or qualities."

Having either of two contrary values, i. e., the first type of ambivalence, is understandable and is almost a daily experience of the common man. But having both of two contrary values or qualities

1 'Mysticism and Logic' by Bertrand Russel p. 8

2 *Do the Mystics Know?*—An article by Rev. T. Celbishley in the Hibbert Journal Vol. 50 No. I. P. 3

3 *Mysticism—"East and West"* By Rudolf Otto; translated by Bertha L. Bracey and Richenda C. Payne cf. Introduction.

4 *Hindu Psychology—Its Meaning for the West.* By Swami Akhilananda. P. 168

6 *Totem and Taboo* By Sigmund Freud (translated by A. A. Brill) chapter II deals with Taboo and the Ambivalence of Emotions.

is a mystic experience. Thus the second type of feeling of ambivalence is something extraordinary but understandable. It is analogous to the feeling of lovers described in Tamil Literature as "Oodal or Pulavi."¹ It is a kind of "wanting" and "not wanting" the relationship with the partner. Having ambivalent experience in the former sense of the term, namely, having one of two contrary values, is seen in the samadhi and reunion stages of mystic experience. In these stages, the soul is attracted by divine values. But in the stage of estrangement the soul holds dear the mundane and carnal things. In the stages of call, crisis and darkness, the second type of ambivalence is experienced i. e., now the divine is valued and now the vulgar is valued. Thus both types of ambivalence cross and recross mysticism in a number of places.

The experience of ambivalence is well illustrated by St. Paul in his Epistles. For instance, when Paul refers to "Not I, but Christ liveth in me",² he includes the one way ambivalence. But when Christ refers that "The spirit is willing and the flesh is weak"³ He points out to the painful two sided ambivalence.

Out of the four Saivasamayacharias—Sambandar, Appar, Sundarar and Manikkavasagar—Sambandar's life illustrates mostly the divine unilateral ambivalence and the lives of other three, the bilateral type. Manikkavasagar's utterances are full of the bilateral ambivalence.⁴ But it should be mentioned here that both the types of ambivalence occur in the life of any one mystic, but at different times.

Let us now refer to the possible explanations of this ambivalent attitude. According to the psychologists and more notably to McDougall, man acts on the level of sentiments. These sentiments are clusters of instincts around a person, place or thing. We can say that in the life of the mystic, when he moves toward God, there is a rivalry between two sentiments namely world-regard and God-regard. In the scale of sentiments which the mystic has developed the one or the other dominates. When the dominance is continuous for a fairly long period, the mystic experiences the unilateral ambivalence, and when there is a tension or quick succession of the two sentiments, the bilateral ambivalence is experienced.

1 Cf. *Tirukkural* Chaps. 131—133.

2 Galatians Ch. 2, verse 20

3 Matthew Ch. 26 verse 41.

4 For example see his "Forsaken Ones Petition" stanza 9.

The one way ambivalence can also be looked upon as a fall from moral sentiments to the instinctive level, or an elevation from the instinctive level to the level of sentiment as the case may be. Similarly, the bilateral ambivalence can be viewed as the period of tension between the two levels—instinct and sentiment—or the quick change from one to the other alternately.

J. S. Mackenzie uses the term "Universes of desires"¹ in the place of sentiments, and inclinations or impulses in the place of instincts. His psychology, of course, is *ad hoc* one. The rest of his theory can be developed *mutatis mutandis*, on the basis of the theory of sentiments mentioned above, to explain ambivalence.

Ambivalence can be also explained from the doctrine of the selves² put forward by T. H. Green. According to him there are three selves in human personality—beastly, rational and saintly selves. Unilateral ambivalence is a movement of the basic rational self either toward beastly nature or toward saintly nature. The bilateral ambivalence is the soul's nature when it is on the eve of leaving beastly to gain rational, or from rational to saintly, side. It also occurs if the movement is in the opposite direction.

From Kant we get a clue to another explanation. He speaks of the Good-will and the Holy will. "A good will is one which always has the power to act on right principles but is also susceptible to other kinds of solicitation e. g., special impulses and passions, desires for certain ends, and so on..... A holy will would be one in which every tendency to action except for the sake of a right principle was absent"³. Kant holds that "there is a peculiar kind of emotion which a being who has a good, but not a holy, will experiences when he contemplates moral purity."⁴ This emotion he calls Achtung. It is described as a species of awe. We can say that this achtung comes very near our ambivalence.

Let us turn now to depth psychology. According to it there are four levels of mind—conscious, subconscious, unconscious and super-conscious. The mystic has the single type of ambivalence in the superconscious state where he sees God and is in non-dual relationship with Him. The other three stages of mental life produce the other type of ambivalence.

1 "A Manual of Ethics" (6th edition) by J. S. Mackenzie P. 34.

2 Ibid. Pages 212 & 213.

3 *Five Types of Ethical Theory* By C. D. Broad. Pages 135 & 136.

4 Ibid. Page 139.

Ambivalence can also be explained by the Hindu doctrine of gunas. Gunas are three—sattva, rajas and tamas. In unilateral ambivalence one is under the influence of one of these gunas. In the bilateral, one is under the influence of two of the gunas.

Again we can divide the experience of the mystic into transitive and intransitive. When the ego of the mystic deals with itself we can say the result is intransitive experience. Here the ego tries to establish a union with God. But the ego has also to establish a relationship between itself and social and physical environment. This leads to what may be called transitive experience. One way ambivalence occurs either in the transitive or in the intransitive experience. Whenever there is difficulty in synchronising these two kinds of experience at the same time, dual ambivalence results.

Ambivalence can also be explained from the angle of the Karma theory. The mystic is a jivan mukta. He is liberated but is in the bodily state. The body is due to the momentum of the fruit of the Karma done already. As long as there is mental balance and concentration, the jivan mukta is in the world but not of it. He is God-centred and he enjoys unilateral ambivalence. But occasionally, he loses his balance and that is very painful to him. This pull towards bilateral ambivalence is due to the nature of the flesh which is a mala. In order to avoid the bilateral ambivalence and the irksome feeling accompanied by it, the last sutra of *Siva-jnana-boham* prescribes for the jivan mukta temple worship and the company of the bhaktas.

The Saiva Siddhanta and some other Hindu systems say that the nature of the soul is the basis of ambivalence, because it partakes of the nature of God or Maya with which it comes to be united. From the Christian terminology ambivalence is due to the struggle between the old Adam and the New Adam.

From the angle of abnormal psychology further explanations can be given. Freud would trace ambivalence, as he has done in Totem and Taboo, to father-complex. Jung would explain it as regression from the normal level to the racial unconscious. McDougall would have tried to explain it on his theory of split personality, conflict leading upto repression and dissociation.

Which of these theories offers an adequate explanation of the admitted facts of the double nature of the ambivalent relation involved in mysticism is a matter for further consideration.

RAMANUJA AS PANENTHEIST

BY

MR. JOHN C. PLOTT.

1. INTRODUCTION

THE purpose of this essay is briefly and suggestively to consider whether Ramanuja may rightly be considered as a panentheist, and to make some general conjectures and comparisons between his system and such a position as is taken (or indicated) by Charles Hartshorne in his Terry Lectures, *The Divine Relativity*. In passing, we shall make some comparative references to the Philosophy of St. Bonaventura, which would show that his system may also be called panentheism. In Runes' Dictionary of Philosophy, Vergilius Term defines panentheism as follows:

"...the view that God interpenetrates everything without cancelling the relative, independent existence of the world of entities; moreover, while God is immanent, this immanence is not absolute (as in pantheism); God is more than the world, transcendent, in the sense that though the created is dependent upon the Creator, the Creator is not dependent on the created. God thus is held to be the highest type of Unity, viz. a Unity in Multiplicity. This term is employed to cover a mediating position between pantheism with its extreme immanence and a theism of the type which tends to extreme transcendence."¹

This definition, I believe, will be seen to fit Ramanuja, St. Bonaventura and Hartshorne, who equates it with another term, of his own coinage, *Surrelativism*. In the Preface² he states his thesis, that

"...the 'relative', or changeable ...includes within itself and in value exceeds the non-relative, immutable, independent, or 'Absolute'

1. As this stands, of course, all types of *bhedabheda* (identity and difference) might be included. For the distinctions between difference in unity, difference and unity, and unity in difference, see C. D. Sharma, *Indian Philosophy* (Benares, 1952) pp. 508-510 and P. N. Srinivasachari, *Philosophy of Bhedabheda*, or, in more brief compass, *Philosophy of Visistadvaita* (Adyar, 1946, 2nd edition) pp. 71-80—an excellent work which was not yet hand during the first draft of this essay. It would be our argument, nevertheless, that most of the *bhedabheda* positions are really qualified pantheisms, whereas Visistadvaita is the only Indian system to which the term panentheism in the strict sense would rightly apply.

2. Charles Hartshorne, *The Divine Relativity*, Yale University Press 1948, p. vii.

as the concrete includes and exceeds the abstract ... Thus Surrelativism, although a single logical principle, not an eclectic conjunction of doctrines, synthesizes into a higher unity 'relativism'—all (concrete) beings are relative—and 'absolutism'—there is a wholly nonrelative (abstract) being."

and further³

"God orders the universe, according to panentheism, by taking into his own life all the currents of feeling in existence. He is the most irresistible of all influences precisely because he is himself most open to influence⁴. In the depths of their hearts all creatures (even those who 'rebel' against him) defer to God, because they sense him as the one who alone is adequately moved by what moves them.... In this (concept we have) vision of a deity who is not a supreme autocrat, but a universal agent of 'persuasion'⁵ whose 'power is the worship he inspires', that is, flows from the intrinsic appeal of his infinitely sensitive and tolerant relativity, by which all things are kept moving in orderly togetherness ...".

and finally in distinguishing, with excellent precision, his doctrine from pantheism,⁶

"If pantheism is a historically and etymologically appropriate term for the view that deity is the all of relative or interdependent items, with nothing wholly independent or in any clear sense non-relative⁷, then 'panentheism' is an appropriate term for the view that deity is in some real aspect distinguishable from and independent of any and all relative items, and yet, taken as an actual whole, includes all relative items. Traditional theism or deism makes God solely independent or non-inclusive⁸. Thus there are logically the three

3. Ibid. p. xv.

4. See Srinivasachari, op. cit., p. 83; "Visistadvaita is ... not a mere metaphysical enquiry into the nature of Brahman as the ground of existence, but is also the spiritual method of attaining Brahman as the goal or supreme end of life". This factor of attainment, coupled with the concepts of Grace and mercy (*krpa* and *daya*) etc., is precisely what Hartshorne means by "open to influence".

5. He uses this term in the same technical sense employed by Whitehead, as having metaphysical as well as moral significance, a concept derived directly from Plato. See *Adventures of Ideas* (Pelican edition pp. 103 and 175).

6. op. cit. p. 89.

7. According to this it should be emphatically pointed out that superficial Christian theologians and others who 'condemn' Sankara as a pantheist are not in the least accurate. Not to mention the fact that to Sankara, Isvara and Brahman are not equatable, his philosophy of the *aksara-adhyasa* relationship, rightly understood, makes it difficult to classify him in any of the traditional Western categories.

8. Madhva's system would seem to fit this description rather well.

views; (a) God is merely the cosmos, in all aspects inseparable from the sum or system of dependent things or effects; (b) he is both this system and something independent of it; (c) he is not the system, but is in all aspects independent⁹. (The second view is panentheism.)"

These quotations should be more than enough to make Hartshorne's basic position clear, although we cannot deal here with all of his developments and proofs. Our question is whether Ramanuja holds the same position and if so, whether if rightly understood, it might not take a prominent place in the modern world as a basis for the Great Synthesis so much desired for our century.

First then, let us examine, in the light of Hartshorne's position, Ramanuja's doctrine that the world and individual souls, *jivas*, constitute the 'body', (*sarira*) of Brahman, the Lord¹⁰. The Traditional Christian theology, dominated as it has been by Jewish concepts recorded in the Book of Genesis more than by the *srutis* like the 4th Gospel, would doubtless look askance at such a doctrine, in spite of the emphasis on immanence in the 'Person' of the Holy Spirit, and on the metaphor of the Church as the 'Body' of Christ¹¹. But as Hartshorne rightly points out,¹² if the implications

9. Independence, of course, is not necessarily pure transcendence. Most theism insists on the latter; but the issue does not arise in the case of Deism, where the deity has only "distance". The machine the Deistic God starts working might conceivably become a Frankenstein and destroy its Maker and everything else. "Metaphorically, one wonders if perhaps this has not happened in our century."

10. It may be noted that Das Gupta observes that the term panentheism may be applied to the Vishnu Purana, to which, avowedly Ramanuja is devoted above all other scriptures. Moreover, when Kuppaswami Sastri, in his foreword to Srinivasachari's *Idea of the Finite Self*, uses the terms *pan-organism* and *pansynthetic monism*, it is obvious that he means the same thing.

11. This, empathically, is Hartshorne's contention; and it deserves serious consideration. The cynical wise-crack, "Shall we elect God President?" for the present will illustrate the actual predicament. Proletarian or 'bourgeois', the whole world is now striving towards some sort of Democratic order. But few philosophers have even dared to ask whether the democratic system can have a metaphysical foundation. Certainly one could find very little rationale for democracy in the system of Advaita, whereas it is a patent historical fact that Ramanuja's success brought remarkable social reforms into the India of his day, whereas strict Sankarites even remain austere and critical even of the social service done by the Ramakrishna Swamis.

12. Op. cit. pp. 32 f; 53; 53; In classroom lectures Hartshorne dilates at length on Whitehead's doctrine of the *Consequent Nature* of God. This doctrine seeks to include God's capacity to suffer also, which Ramanuja does deny, except in the sense of undergoing limitation, but at the cost of some inconsistency. The important thing is that since at least according to the Augustinian tradition, there can be nothing apart from or outside of God, souls being made in His 'image', and participating in His being, the world, though 'created', and thus distinguishable from Him, still owes both its essence and existence, derivatively, to Him; thus, in Whitehead's terms, the world is derived from His 'consequent' Nature, not his 'primordial' Nature. Origen, indeed, and most of Byzantine tradition and (Italian Renaissance Platonists after him) stressed emanationalism almost to the exclusion of the *ex nihilo* theory. Nicolas Berdyaev is the modern exponent of this same tradition.

of the doctrines of the Incarnate Word and of the Holy Spirit had been or could be worked out to the full, panentheism would be the right position for Trinitarians to affirm. When Ramanuja insists that Brahman is at once *adhara* (sensational source and ontological support) and *niyanta* (ruler, by indwelling, not by external sovereignty)¹³, he is trying, it seems, to make the same correction in his tradition, as Hartshorne now wishes us to do in the modern world.

The world is not a dead thing by any means, and it is a mistake—a mistake quite universal in the west since Descartes, (Fechner, Lotze, Bergson and Whitehead being the great exceptions)—to judge the whole of the external cosmos by its lowest and most apparent aspect. With them, Hartshorne insists that if matter is a part of life—as undeniably it is, wherever we find it—then it is much more mature to judge physical reality in terms of biology and psychology rather than to speak of the latter in terms of Newtonian Physics. This does *not* mean, however,—and here, with Ramanuja, we are wisely put on guard against what Hegel calls the Speculative Fallacy—that we say that non-living matter is *indistinguishable* from the qualitatively as well as quantitatively complex and tychically¹⁴ behaving compounds which we call life. Nerve cells, for example, not only show a peculiar sensitivity to certain forms of electricity, but are evidently capable of generating their own current whenever the need arises, in a manner impossible to any other substance without external manipulation. On the other hand, neither does it mean that we may jump into what Kant calls the transcendental illusion, and declare, with most advaitins, that manifest matter, no matter how manipulatable, is therefore nothing at all in itself, but only an undenominatable superimposition on the undifferentiated ‘whatever-it-might-or-might-not-be’ that invites us to investigate what we can never encompass anyway. Behind apparently dead, or latent, matter may lie, as Bergson has insisted, an *elan vital*, and behind this a field of Form (Cassirer), of nexus (Whitehead), of essences—(Santayana); and behind this there *may* be the Ultimate Ground of “Das Nichts” of the Existentialists and the Madhyamikas. But the last level we seriously doubt, although we acknowledge and even insist that if *Indifferentiation* is to be affirmed as ultimate, as Supreme (in Hartshorne’s terms) we deem it more convenient to call it *Nothing*

13. Srinivasachari, *Ramanuja’s Idea of the Finite Self*, pp. 46–47, see also his *Philosophy of Visistadv.* ch. ix, notably p. 222: “The omniscience of Isvara is self-limited by his redemptive love, working through the moral law of karma, in the history of Humanity. The infinite love of God is eternally wedded to the majesty of his law in the dual personality (cf. Hartshorne’s surrelativity) of Srīman Narayana and enters into history in the interests of universal redemption.”

14. cf. Hartshorne’s remarks on contingency, after Pierce, *op. cit.* pp. 29, 30, 107.

than to say that ‘whatever-it-is’ *is*. Only Nothing can be undifferentiated in the strict sense of the term. Hartshorne and Ramanuja are in complete accord in insisting that whatever *is* is necessarily *related*, or at least *relatable* (and also, we may add, *relating*): *To be is to be related*. This is axiomatic.¹⁵ This, admittedly, is only half of the Bradleyan paradox. But the more fruitful resolution of it seems to lie in this direction rather than in denying reality to relations altogether—or more exactly, than in denying reality to *relatedness*. We should frankly recognize that it is in the field of this relatedness of reality lie what Husserl calls the *eidetic forms*; that relations, as it were, *reenter* the reality (or realities) they relate, giving (or *constituting*, in Husserl’s terms) it (or them) greater richness and intelligibility. Indeed, here we should recognize another axiom: *The higher the order of reality, the more relations may be predicated of it*. Certainly an amoeba is capable of more relations (both internal and external) than a hydrogen atom, and a man more relations than a dog. And our solar system, by an analogy such as Fechner saw as necessary, must embody a still higher order of relatedness (focussed in some sort of interplanetary intelligence, whatever its ‘organ’ may or may not be) than the little creature within it called (by himself) man. The Total Relatedness of all the galaxies and nebulae and all they contain stretches far beyond our imagination; but the analogical structure of this relatedness is so universal that we scarcely notice it. Nor do we take sufficient cognizance of the fact that man, and all Intelligence analogously with him, is always *re-relating* things, even creating *new* relations, as in the case of experiments in genetics or scientific rain-making or the cure of diseases by introducing strange organisms into living bodies. If we, with our at least partially limited intelligence, are capable of entering and manipulating bodies (even our own), must not the Supreme, Brahman, Isvara, be *at least* as capable as we? Relatedness, moreover, implies embodiment; and to speak of embodiment (*sarira*—*saririn* relation in Ramanuja’s terms) is correspondingly *at least* as reasonably applied to Deity as to ourselves. We are aware of our existence, of our reality also, only in the *power* of relatedness: it is obviously and definitely our own, as we use it; it is simply absurdity and nonsense to ask the illusionist question, “who uses what?” *Uti* and *Frui* are more primary than *esse*, as St. Bonaventura seems really to believe. Our knowledge, nay our

15. p. 36, *passim*, the *Critique of the negative theology*, notably, “what can this mean, if not that the referent of the category is something original with God, in some fashion God himself? Or the creature participates in being as expressed in the category: God *is* that category: my contention is that the absoluteness...for example, which we have reason to attribute to deity is not only compatible with, but requires, a unique relativity, as another aspect of the same being.” Is not this, in Indian terminology, *parinamavada*? See Srinivasachari,—*op. cit.*, p. 102 cf.

very selves, are never complete, never absolute, and we have a deep-seated suspicion that the whole observable cosmos may be like ourselves in this respect; as we are ever lured on to infinity, so we feel, and almost observe, an infinity, or at least an infinite potential within us. And infinity is not any blank relationless Absolute, but, quite the opposite, ultra-relationality.¹⁶ This entails, for Hartshorne, an important distinction which should be helpful in clarifying Ramanuja's position, if indeed it does not constitute another close similarity. The *Supreme* is not necessarily the same as the *Absolute*. Hartshorne levels the charge against Bradley that he was confused on this point¹⁷, and thus does not come off any better than Spinoza. For Bradley, *Absolute* means, primarily, if not definitively, *all-inclusive*. But the question immediately arises—whether the *Absolute as all-inclusive may not still exceed itself?*¹⁸ and whether, by limiting our concept of this Absolute to the old definition we have not eliminated all meaning from the concept of Perfection, and with it the possibility of making any valid value judgment? The very concept of Perfection, Hartshorne argues, (following St. Anselm) implies not only the "best possible", but that which *surpasses* all conceivable excellences, thereby escaping the contradiction that the perfect (in the sense of Bradley's Absolute) is only the sum-total of all imperfection.¹⁹ To quote.²⁰ "If it be said that the perfect, though it does not include the imperfect things, does exclude their values, whatever is good in them, the reply is that the existence of the imperfect must be strictly valueless,²¹ adding nothing to the sum of values, and might exactly be as well as not be. He who says this implies that God did no good

16. op. cit. p. 48-49, the "mental experiment."

17. *ibid.* p. 62.

18. Compare Srinivasachari, op. cit., p. 221: "The absolute is not only the Being of being, but is the supersubject that is the *prime*, and presuppositions of predication and the ultimate reason of things, the universal which, giving meaning to the universe, excels its content."

19. In this respect, it may be noted, Bradley is actually closer to *Bhaskara* than to Sankara. cf Srinivasachari, *ibid.*, p. 76.

20. Op. cit. p. 19 italics mine.

21. Roughly speaking, is this not the essence of one of Ramanuja's chief charges against Sankara? Vide *Sri Bhashya*, translated by V. K. Ramanujachari, Kumbakonam (1930), Vol. I., p. 139, and notes (derived from commentaries on Ramanuja's commentary) on pp. 140, 141. Note that in the value orientation, the Supreme remains the *focus*, but the enjoyment and the indebtedness, the locus remains in the imperfect individuals. Thus the Perfection of the Supreme (as expressed by Ramanuja in the phrase, "full of inestimable qualities") is defined—and therefore dialectically incomplete without them—by the indebtedness of all to Him, but is not confined within them. For Sankara on the other hand, there is the confusion that either (a) Perfection, as pure indifferenciation (a strange, if not impossible concept!) belongs to all-and-sundry without distinction; or (b) perfection itself being a quality, it cannot be ascribed to Nirguna Brahman on the one hand, or to Isvara on the other nor to *maya*, which includes Isvara.

thing when He created the world, and that our human existence is metaphysically useless and meaningless.²² The only way to escape this is to admit that the perfect-and-the-imperfect is something superior to the perfect 'alone'—or as independent of the imperfect."

By way of comparison (since Ramanuja's own text is difficult for those not acquainted with the terminology)²³, Das Gupta's summary may be cited. He says²⁴

"Brahman as such, without its relation to matter and souls, can be regarded as neither cause or effect. That it can be viewed as cause and effect only because it is looked at in association with the casual or effectuated state of matter and souls. The latter therefore, are regarded as His body, because they, by their own states, serve His purpose in representing Him as cause and effect."

The point is that the Absolute, as cause, is already perfect; yet the effects, as creations of and from it/Him, are imperfect, but in such a way that they only further enhance the value of the 'perfection' from which they derive their being and meaning. An examination of the Visistadvaita interpretation of the famous Upanisadic text *tat tvam asi*, "That thou art", would make this more clear. Olivier Lacombe explains Ramanuja's arguments as follows²⁵:

"If the formula 'Thou art that' signified that the interlocuter should abandon the illusion of his particular individuality, and consider himself absolutely identical with Brahman, then the word *that* would designate the ineffable Brahman in the aspect of the subject on which the illusion is superimposed, and would designate it indirectly since no verbal designation, no matter how indeterminate the *that* might be, could signify it directly; and the word *thou*, would indirectly or by implication signify the annulling of that illusion," (and this is contradictory to the other texts signifying plurality). In other words, Brahman, as the perfect, is *nevertheless* designatable, (*that*) even if only in terms of the imperfect (the *thou*) which is its own overplus. Otherwise, the perfect would itself be an illusion.

22. As Sankara does, of course. But to Ramanuja and to Hartshorne alike this is different.

23. Particular reference should be made, however, to Sri Bhashya, (ed. cit.) Sutras I. 3, 44 (Vol. I. p. 372-374 and 373); I. I. 13 (Vol. I., p. 191); and II. 3. 18 (Vol. II., p. 578 ff.). Also to Ramanuja's commentary on the Bhagavad Gita, II. 3. 17; VIII. 9, 13, 14; IX. 4, 5, 15, 18; XIII. 2, 22, 28; also VII. 7.

24. Das Gupta, History of Indian Philosophy. Vol. III, p. 299.

25. Oliver Lacombe, *La Doctrine Morale et Metaphysique de Ramanuja*. Paris (1938) p. 231 (note 850) Italics mine. (translation a. 150 mine as below).

The relation of perfect and imperfect is therefore just as real (or unreal) as the perfect which is its locus, an obvious impossibility.

So much of Vedantic philosophy is dominated by epistemology that to deal with this topic at all is to involve oneself in endless controversy. That we cannot do here. We can only hint in passing that at this point also Hartshorne and Ramanuja have much in common, and to note one very important implication which should clear up a lot of confused controversial ground. Everyone knows that Ramanuja's chief objection to the strict Sankarite position is that knowledge can be only of a subject, by a subject and for a subject, but in such a way that the object is taken into the subject without compromising its differentiated status.²⁶ For him, *all* knowledge, even of the Absolute, or of the Supreme, must be of the subject-object relationship.²⁷ This emphatically entails just what Hartshorne affirms, namely, that *not only must the Absolute* (in the sense of the term acceptable to him) *be the supreme subject for all objects, but also the supreme object for all subjects.* Thus he writes²⁸

"That the absolute or independent being as such is a cause in all cause-effect relationships is traditional doctrine; also one speaks of Him as first cause as though He were predecessor of all; but that he must also be abstract not concrete, object not subject, constituent not whole, these seem somewhat startling implications. I maintain that they follow as rigorously as the others..... (This 'abstractness' of God facilitates the doctrine of immanence)..... to be known by all subjects is fully as distinctive a status as to know all objects... Only God can be so universally important that no subject can ever wholly fail or ever have failed to be aware of him²⁹ (in however dim or unreflective a fashion). Thus the unique status of object-for-all-subjects is to be correlated with the more commonly recognized one of subject-for-all-subjects. The difference between them is that the latter means 'having relations to all objects' and thus implies universal relativity; the former means that all subjects have relation to the One Object, without the latter having relation (other than the extrinsic or nominal) to them."

Thus we get a harmony of independence and contingency not unlike that expressed by the *samanadhikaranya* rule as interpreted by

26. cf. the term *aprthaksiddha*, Srinivasachari, op. cit., p. 41, 42.

27. see Das Gupta, op. cit., pp. 25 on 307, 323.

28. op. cit., pp. 70-71, *passim*. compare also the remarks anent *dharmabhutajana*, Das Gupta, op. cit., p. 299, 30 on 301.

29. One thinks of the mythological figures of Putana, Hiranyakasipu, and others who won salvation by persistent disbelief or even persecution of Bhagavan.

Ramanuja, and by his *aprthak-siddha* and *dharmabhutajana* concepts, according to which all modes of cognition, at every level of universality, become subjects in themselves, but also objects for other modes, both as substances for themselves and as adjectival inclusions for the higher orders. Thus the individual soul may have *objective* knowledge about others both of things and divine being(s) without compromising either its objective or subjective knowledge of itself; and analogically, Brahman, as all-knower, includes this self-knowing within His own all-engulfing self-knowledge, as well as all concrete, objective knowledges (including knowledge about Himself) possessed both by others and by Himself. We need no light to find light; and it makes itself as well as other things visible.³⁰ Thus, God is not limited by his own possibilities. We are reminded, openly, of Leibnitz in Hartshorne's exposition; but He is necessarily *relational* in respect to his nature as definitely modified by the possibilities which he does actualize. This was a problem which very much vexed western Schoolmen as well as Indian Acharyas: How could God be limited by his knowledge of particulars? The answer lies rather in the doctrine of Love than in the field of knowledge strictly viewed. Sankarites, Thomists, and Kantians all seem to have overlooked this. But, for Ramanuja, and for Hartshorne the difficulty is easily removed. By Mercy and Grace (*krpa* and *daya*) God leads all to devotion, and thus to knowledge of Himself, which knowledge gives them not only awareness of his omniscient awareness of them, but also awareness of their freedom within his Love. Hartshorne puts it thus: ³¹

"Could any man exhibit such sincerity, or anything remotely approaching it? Obviously not. Indeed, only an all-knowing being can, in any intelligible sense, be thus supremely relative³² to all beings. For such relativity means that every difference makes a difference in the all-relative one, that for every diversity anywhere there is diversity of relationships in him.³³ Only the conception of an intuition whose

30. cf. Srinivasachari, op. cit., p. 227 ff.

31. op. cit., pp. 76-77. In more recent articles he has further stressed the importance of Love, citing the experience of the Menninger Brothers as reported in their book—Love against Hate.

32. thus his term *Surrelativism*.

33. This seems remarkably like the interpretation of the *samanadhikaranya* given by Professor Lacombe. cf. op. cit., p. 233 (note 869); "One may understand that the *species* or qualities (infra-or-extra specific) are not situated according to the same ontological plan (but) are heterogenous and thus cannot establish in common the *samanadhikaranya* (commonality of casual (contingent?) relation: it is by virtue of determinations of a subject, by virtue of the mode (*prakara*) that they (the species and the qualities) make of it.

"One may also understand that in the example given by the preceding proposition, the species divine, human, etc., are mutually exclusive (one is not at the same time divine and

datum is the (entire) universe gives any positive meaning to such an idea..."

One needs only to remember that Love is the Supreme relationship, both qualitatively and quantitatively.

The principal claim of Panentheism or surrelativism is that it furnishes a synthesis of, and therefore a reconciliation between, Absolutism and Pluralism. To many people (especially in India) this reconciliation is an *a priori* impossibility. But this opinion is, on the face of it, nothing short of sheer dogmatism. It is not only the Vedas and Upanisads (and all other canonical scriptures of the world) that furnish us with support for both extremes, but indeed all of life itself both as we experience it and think of it. If nothing else, common sense demands a reconciliation, if not a synthesis. Religion and Science, Art and Politics, Contemplation and History—all constitute an existential dialectic in which no aspect of reality may be ignored and from which no element can be abstracted without serious mutilation or perversion.

At every turn, Ramanuja kept the goal of this sort of all-embracing synthesis in view. Any number of passages would illustrate this, but we may only cite the following from his Commentary on the Gita as an example: ³⁴

".....the Supreme Brahman, Vasudeva, who is the object of worship ³⁵, forms the chief principle of all entities intelligent and unintelligent, their cause and their basis; He is signifyable by all words because He is of all sorts in as much as all constitute his body: He is the ruler of all as also the only Refuge on account of his hosts of noble qualities; He alone is the Superior (to all else; He is veiled by entities made up of sattva, rajas and tamas, which (entities) present

human) the qualities (masculine or feminine) are likewise mutually exclusive: and with all, the samanadhikaranya is valid in every case. It is necessary therefore to find that which is common to all the determinations, that is, their function as mode (prakara)."

In his other work, *L'Absolue Selon le Vedanta* (Paris 1937), however, he gives a simpler definition: 'unity of functional reference' or 'functional coordination of the proposition'. See p. 107, where he brings out the importance of the term for Ramanuja's pan-organism. The difficulty lies in the fact that, for want of anything better, Ramanuja has ontologized a grammatical term. The important point is that all discrepancies of mutually exclusive classes can be sublated into, but never transcended by, a more basic scheme of reference, and this sublation will universally take the form of *proportionality* of the sort that St. Bonaventura and other Augustinians were fond of... See also Srinivasachari, op. cit., pp. 38—39, noting especially his remarks anent *contradictories* and *distincts*.

34. Preface to Ch. VIII, p. 147-8 of Iswaradutta's translation (Hyderabad, 1930) See also Srinivasachari, op. cit., p. 232-4.

35. This constitutes clearly Hartshorne's notion of 'Supreme object'.

themselves (in this world) in the form of bodies, senses and objects of enjoyment.....this veil can be again dispelled by resorting to the Lord, which resorting) is occasioned by his most excellent virtues; there are three kinds of worshippers, seeking (severally) lordship; the real nature of the imperishable soul (aksara) and the attainment of the Lord (of whom each successive class of worshippers is superior) on account of the (relative) excellence of their resort according to their relative good deeds; that the seeker after the Lord is the most excellent of all, because he has ever union (with the Lord), because he is exclusively devoted (to the Lord) and because the Supreme Purusa is most dear; and He is hard to find."

Such a text would well support detailed analysis; but perhaps it is better to cite another passage from Hartshorne, which seeks to elucidate remarkably the same point of view: ³⁶

"Man contains God, and God contains man. How then is there distinction between including and included?...First, cognitive relativity has intensive as well as extensive degrees ³⁷.....But second, this intensive difference would be meaningless without some extensive difference of inclusiveness. For to say that God does, while we do not, effectually embrace the universe coexistent with us is to say that the universe without any of us might have been a little different in value ³⁸, whereas its value would have been radically different given an equally radical difference in the concrete actuality of God..... Thirdly (he deals with the Whiteheadian argument for the more extensively inclusive 'Consequent Nature' of God)...So God, in his relative aspect, ³⁹ is the only unqualifiedly inclusive being, as in his absolute aspect, he is the only unqualifiedly exclusive one.

"...the existence of external relations does not conflict either with their being something absolute or with their being something inclusive; but it does conflict with the notion that the all-inclusive

36. op. cit. p. 93—94.

37. e. g., intensive jiva-atman-Brahman; extensive sarira-jiva-Brahman.

38. cf. the three kinds of worshippers in the above passage. Note that the *values* are ours only *by participation*, in the full Platonic sense. See Lacombe, *L'Absolue selon le Vedanta*, p. 93: "The communication which Absolute Being makes (between) itself and the relative, or the participation of the relation with the Absolute, bears indeed a certain attenuation and ontological degradation, but the communication and participation are real..." Also pp. 363, 365, 368.

39. In Ramanuja's terms, *nimitta karana* and *upadana karana*. See Srinivasachari, op. cit., pp. 103, 221, 250.

(which must include relations, if such exist)⁴⁰ can be the Absolute. Through this identification, Absolute idealism lost the chance to convey its insight into the inclusiveness of the supreme; just as, through the identification of the supremely good and absolute⁴¹, scholasticism lost the chance to convey its insight into the importance, for theology, of external or nominal relatedness. We must combine the following assertions: the idea of the supreme being connotes absoluteness; it connotes, therefore, extended relations; it also connotes relativity, internal relations, and all-inclusiveness....."⁴².

Hartshorne then adds, for the systematically doubtful, a very chewable section on Relativity and logical entailment. Although written primarily to convince people like Rudolph Carnap, it will bear close study as well by Indian Vedantins who still cling to Bradley and Bosanquet. On the one hand, they will discover that those two do not give them the support they have supposed; and on the other hand, they will find that attention to recent developments in symbolic logic does not necessarily mean complete capitulation to positivistic empiricism.

40. Does not Bradley fail to realize this? Certainly Sankara does, according to Ramanuja's critique, for even relation between the non-relational and the altogether relational is a relation; hence Advaita is reduced back to Madhyamika.

41. This does not apply so much to the Victorians (Huge, and Richard) and St. Bonaventura, as it does to the Thomists. For example, see the *In Hexaameron* of St. Bonaventura, Visio II, Collatio I., where the Love of God as extending not only to the highest sublimity, but also to the most profound abyss, is described, especially as applied to the incarnation (A point of very close parallel with Visistadvaitic Vaisnavism, by the way!) Madhva, on the other hand, stresses a sort of Calvinistic "total dependence" of the creature almost to the neglect of the positive Love of the Redeemer.

42. For a treatment of the same field from the standpoint of modern Scholasticism and of French Tradition, see Lacombe, op. cit. pp. 111-115. Subject himself, perhaps, to Hartshorne's criticism against scholasticism, he nevertheless does reach a clarivoyancy and profundity of understanding very rare in any age. His emphasis on ontology, and his deep interest in non-sentimental-mystical tradition give him a penetration into Vedantic thought and spirituality not found in those who have been limited by British tradition. But his point (p. 111) that by taking the biological organism (*sarira bhava*) as a basis for interpretation, Ramanuja has found a very rich ground for cultivation of a view which avoids the difficulties of the *maya upadhi* doctrine of Sankara, lends full support to our thesis. Of p. 114, where he says: "Finite spirit is not atman except in a secondary sense, in a participated manner, by reason of its 'atomic' finitude, and this is precisely why in that case body and soul remain in presence as two substances, relatively hierarchically related (by proportionality of sublation—the *samanadhikaranya*) but complete each in itself." His emphasis on hierarchy complements rather than alters Hartshorne's dialectic without the proportionality of participation. Hierarchy does lead to the bad absolutism to which Hartshorne objects; but with it, we necessarily have panentheism.

II. THE DIVINE FECUNDITY

Nicholas Berdyaev levels the charge against western⁴³ European tradition that the domination by Aristotle (over both Catholic-Protestant and secular traditions) has been a great source of the *sense of conflict* that has only now in the twentieth century reached its culmination in the conflict of opposing absolutisms in two world wars. Aristotle's *static ontology* (which is in conflict with Aristotle's own preference of biology to mathematics) has led, in theology, to an almost complete neglect of the reality of the Holy Spirit (equatable with the *antaryamin* of the Vedantic systems) and has, by emphasizing hierarchy to the sacrifice of immanence, left little room for the function of the Divine in human society. Thus secularism, as the hypostatization of static universals, as the divorce of state from church, as the opposition of science to theology, as the uprooting of art from mythology, inevitably leads to the Frankenstein sort of perversions and terrors that infect twentieth century culture. Man is considered as an individual instead of a person, and the state becomes a beaurocratic machine (even though it retains a facade of dynamic democracy), and God has always been thought of as more of a tyrant or terrible judge than as a loving Father or intimate Friend. The Mother Mary has been either forgotten or regarded not so much as the Shrine of the Holy Spirit and embodiment of Divine Wisdom, as the mediatrix who pleads for mercy to the Princely Son and the Tyrant Father. Small wonder that philosophers now ridicule theology as only a rationale for pathology or at best a voluntaristic after-thought when ontology has been exhausted by the analytical mind, and aesthetics has been relegated (by scientists and theologians alike) to the position of a pleasant past-time for the dilettanti; and the psychology of sex has been divorced from the philosophy of love.

It would be a tragedy indeed if Indian philosophers wandered into this blind alley; and yet most modern apologists for advaita strain themselves to no end to couch their system on the hard bed of non-theological, or even anti-theological ontology. Sankara's Bare Being—his Nirguna Brahman—gives them an all-too-easy pretext for doing so; his relegation of *Isvara* to the field of *maya* leads theists into an embarrassingly compromised position. The result in India has been the opposite of the Western reaction, however; science has *not*

43. One would hope for a revival of the Eastern European tradition—the heritage, all too neglected, of Byzantium. To some extent, this is represented by Berdyaev, Soloviev, and Bulgakoff, and also by Raphael Demos. For historical treatment in survey, see Vasiliev, *History of Byzantium*, University of Wisconsin Press. Like Demos, perhaps more "Seekers" of our era should go to Mount Athos rather than to India—or at least should stop there on route home!

displaced theology, but rather both are rejected as non-consequential phases of the Search for the Unattainable. But this much remains common: a dualism of illusion and reality, the 'reality' being static and unyielding—*absolute*, in a word. The secularized west has relegated devotion, love, all indeed that does not fit into Newtonian Physics, to the field of 'illusion', but affirms the 'hard' realities of the absolute laws of 'Nature'—the static forms of Aristotelian logic. Brahmanical India, on the other hand, defying *all* logic, has absolutized a strange *reduction to the incomprehensible*, which just as strangely defies secularization as it seeks to sterilize emotion and all the Organic Processes (history for example) that emotion undergirds.

But fortunately, in both lands, there has been a minority tradition that has kept the warm heart alive, and which only now, in the revolt of the Existentialists, is again seeking ascendancy. Bernard of Clairvaux against Abelard, the Franciscans against the Dominicans, the Carmellites counterbalancing the Jesuites, Pascal against Descartes, Schelling against Kant, and Kierkegaard against Hegel: these all have, in effect, made the same objection, the same complaint that Ramanuja (and all the Vaisnavas after him including Nimbarka, Madhva, Vallabha and Chaitanya) makes against Sankara (and all the Advaitins—mostly Saivite—after him, including Vasupati Misra, Vidya ranya, Appaya Diksita, as well as Suresvara, Mandana Misra, and Padmapada). The complaint, essentially, is this: How can Being, from which all things take their origin, have existence, and against which all perversions, truncations or pseudo existents must do mock battle—how can the very nature of the All be less fertile, less creative, less reproductive, less full of Love (and therefore less related, as we have already seen) than the totality of the All? To *Pan* (to bring the Greek of Plotinus to our rescue) is only a barren abstraction out of *ta panta*; to *ti on*, out of *to panta on*. But even Plotinus, much as he liked to criticise Aristotle, did not see this clearly. His hypostases and emanations leave his Absolute quite unaffected and static and barren. Consciousness, life, feeling are found only in logic-making *persons*, not in logically distinguished *individuals*, as Ramanuja cogently argues. Srinivasachari even goes so far as to say that Ramanuja would reverse the Cartesian *Cogito*: I am, ergo (as a *person* capable of exhausting all universals without being myself exhausted, and capable, moreover, of intersubjective intercourse—a point, stressed very well, by the way, in Gabriel Marcel's philosophy of "presence")—ergo, I think; Brahman must be the at-least-personal, not the higher-than-personal; for the latter is an impossibility; any one who tries to find such will only fall into the abyss by jumping up into the empyrean without wings. As Varadacharya says.

"Consciousness is thus not the absolute, but the personal attribute of a self, invariably associated as its function, *dharma*, therefore is known as *dharma-bhuta-jnana*... It is creative in its perfect state of expansion, *vikasa*, and in its lesser stages of perfection it is not creative of reality, but the inventiveness based on the real which it apprehends. The creative activity of consciousness is a result of God's own activity through the individuals who belong to Him."⁴⁴

Surrelativism, in Hartshorne's formulation, is an attempt at making this philosophy of personality systematically intelligible to modern philosophers. The very essence of Personality, its chief characteristic, is its *capacity for relatedness*, and indeed, in a sense, of creating its own relatedness. Thus, if in any sense whatsoever we may think of a God, we must think of Him as characterized by the *ultimate maximum* of relatedness, and not the *barren transcendence* of all relations. In Hartshorne's own words—⁴⁵

"*Maximizing* relativity as well as absoluteness in God enables us to conceive of him as a supreme person. The Absolute is neutral between any and all relational alternatives; surely a person cannot be the neutral... But as we have seen, God is *not* neutral to relationships, *except qua absolute*, and this means, taken merely with respect to the generic and universal forms of his relationships abstracting from their specific or individual content.

"...the character of a man does not think or will, the *man* thinks or wills. The abstract does not act, only the concrete acts or is a person. But it is the divine Person that contains the absolute, not vice versa...

"...of course an absolute God is 'simple' ⁴⁶, has no constituents. But this only shows once more that *it is God as relative that is the inclusive conception*. As relative, God contains an absolute form of which there are no constituents. In this way, God is all-inclusive, and yet not wicked or foolish.....⁴⁷

44. Sri Ramanuja's *Theory of Knowledge*, (Tirupati, 1943), p. 62 Italics mine. See also Srinivasachari, op. cit., p. 281.

45. op. cit. p. 142 ff. Italics mine...see also pp. 15; 21; 22 ff.

46. Of. Lacombe's phrase, '*the simplicity of plenitude*'; which reminds one of St. Bonaventura's scheme of the proportional hierarchy of simple, multiple, multiplex: simplex. (*In Sent.* I. III. 1) which closely parallels Ramanuja's own proportionality *jada*; *jiva*; *atman*; Brahman. Sankara, of course, uses the same terms, but the proportional structure is broken by the structure of everything else (as *maya*) from relationality to Brahman, on the one hand, and the pseudo-inclusion, without individuation (or more strictly, by the cancelling of individuation) of everything *in* Brahman.

47. op. cit. p. 145.

For Ramanuja, we may again turn to Lacombe. In dilating on Ramanuja's treatment of *bhakti*, he says,⁴⁸

"For the *simplicity of plenitude*, such as Ramanuja conceives it, if it is evidently opposed to dispersion, is not at all a pure indifferenciation. It demands that all the nuances of affectivity and of willing be joined to the clear light of intelligence, and that intellectuality make itself more profound in love without alienating it (intellectuality) from its original notes... (memory) tends thus to arouse from beyond a quasi-impersonal exercise of bare intelligence, a dialectic, essentially personal, of love, personal in the sense that it engages the whole of the human spirit. It concerns salvation in a conquered eternity, and not merely the salvation of the intelligence in an unconditional truth recognized in the type of abstract eternity—personal in the sense that it accomplishes the necessary passage from the metaphysical possession of the self and the metaphysical interest for itself, to the dispossession and to the moral disinterestedness (of itself) for itself, *not by a simple displacement of perspective of the individual towards the universal, but by an effective gift from the individual person to the Universal Person, and an effective abandon to Him*. Or, to put it more accurately, intelligence does not realize itself clearly in the eyes of Ramanuja unless it surpasses itself in the love of God where perfect knowledge consumes itself. By virtue of this it is necessary to understand that *bhakti* is not a sentimental effusion, less luminous than ardent, but has a state of pure intellectual transparency interior to an *elan* of adhesion without reserve and of union without any division-union, that is, to the sovereign lovability of the Lord."

If such is the nature of the Love of God, which *ontologically* joins the devotee to his Lord (and that for the very reason that the love, in essence, is inherent in the personal nature of the Lord himself this being the supreme relation in the surrelativity) then the Lord himself cannot possibly be a barren, loveless, uncreative, non-self increasing 'absolute'.

Love creates; it does not annihilate reality.

Again in the words of Lacombe,⁴⁹

"... To say that the individuality of the Delivered is destroyed and that the elements are resolved in the pure indifferenciation of the

48. op. cit. p. 368 italics mine.
nonself increasing 'absolute.'

49. ibid., p. 358.

absolute, is this not to admit an alteration of the objective content of the divine understanding at the same time as that of world, where nevertheless nothing is lost and nothing is created, but only virtual (e. g. potential) and causal state to an actual and effectuated state vice versa?"

The answer lies in a distinction likely to be overlooked by anyone whose contact with western culture has been limited to modern British (e. g. post-Lockian) thought,—a distinction the neglect of which explains why it is difficult for empirical philosophers (and Hegelians as well) to understand the virtue of sanctity and to fit it into their systems. This distinction is that between *organic diversity*⁵⁰ and *simple plurality*. As Lacombe points out⁵¹, in surprising agreement with Hartshorne⁵¹, if holiness is the attainment of an undifferentiated absolute state, it becomes a contradiction. For holiness, if anything, is not the *extinction* of personality, but the triumph of the warmth of Supreme Personality over all of life, transforming the surd factors of experience into meaningful communicable expression of Love, by setting them into Proper Relation, into that dynamic relationality which Plato called *harmonia*, which is very close to the *Dharma* or the "middle path" (including and emphasizing compassion) of the Buddha, or the *Tao* as interpreted by Mo Tze. Only therein lie the complete composure, recollectedness and self-knowledge, that "Presence" in whose fragrance lies the capacity to resolve conflict without violence; and to see through epistemological puzzles to living, intuitive wisdom. Thus if the attainment of *Brahma-vidya* is the end of life, the Brahman so attained could not possibly be less than alive, less than capable of organic diversification and communicability, in a word, less than personal. And to try to invent some category that is 'higher than' the personal—this is *hybris*, *phaula anake*; this is not only the assertion of an absurdity, but *precisely the* 'blasphemy' and 'idolatry' which the Semetic (and one might add, Dravidian) mind has always objected to in the Indo-Greek scienticism. For them both, neither ritual nor definition is enough: the Living Presence, the *Lilas* the 'Miracles', the *Antaryamin* are extremely *intimate* experiences, which provoke loving adoration instead of sacrificial bargaining, and defy all efforts at system-building. Yet, though we may not *define*, we may attempt to *describe*, personality, as Lacombe has, as⁵²

50. This is very close to what Whitehead class nexus. In this respect, Dorothy Emmett is perhaps a better interpreter of Whitehead than Hartshorne. Much indeed depends on the reinstatement of the *logic of analogy*—and further refinements of it also, including precise reformulation of rules for proper use of its various modes and nodes.

51. op. cit., p. 289 ff.

52. See the whole section on *holiness*, p. 124 ff. This deserves detailed consideration—more than we can give it here.

"... to be *for itself*, and only a substance, a subject for itself, and not just any substance, but a substance of a spiritual nature. This *for itself* is not an egoism, nor a simple self-reliance; there is a *communion* between persons both by knowledge and by love; yet the persons do not hold such communion except in distinguishing each other from each other and counter-opposing each other to each other."

But in the impersonality of Sankara's non-theistic Brahman (or Hegel's or Bradley's Absolute) such *communion*, and therefore sanotity as a virtue, would be extinguished, and his *transvaluation of values* becomes no less perverse than that of Nietzsche. Indeed, for the latter, the "death of God" means the *increase* of personality for man, whereas Sankara would obliterate ultimate validity of all value altogether. On the other hand, for Ramanuja (and all panentheists with him) such annihilations are not only unnecessary, but perverse. According to Lacombe, Ramanuja's Brahman, like Hartshorne's God,⁵³

"... is also the *absolute*, that is *irrelative*⁵⁴, in the sense that being the universal substance and the root of all identity, it does not leave anything outside itself to which it might be referred. *But its simplicity is not such that it excludes all immanent relativity*. Since, without speaking of the structural complexity of the divine Personality, it is, from the standpoint of its creation, like a soul face-to-face with its body, and like a substance face-to-face with its attribute."

This structural complexity of the Divine Personality is very well demonstrated by St. Bonaventura in the following passage:

"...Therefore the first speculation, showing that God is three and one, obtains by virtue of four conditions which are in God, namely the condition of *perfection, of production, of produced diffusion, and of diffusive love* (dilectionis)** (**Italics not mine). One of these follows from the other; from which it follows that where there is the highest perfection, there will necessarily be the (highest) production, etc.

"The first of these conditions is in God, because prime Being is the prime principle, and perfection moreover is therein perfection of origin, of order, of indivision. For the originating is more perfect than the non-originating origin, and the origin that originates the originating is more perfect than the origin that originates the origin

53. op. cit., p. 282.

54. but not the non-relational. Hartshorne's term has the advantage of a positive force: *sur* relative.

externally originating is the Father; the originated and originating is the Son, and the originated and not originating is the Holy Spirit. Secondly, this gives us the reason (or rationale) of the producing principle which is not produced, of the produced and producing, and thus because of (this) condition of the perfection, we (necessarily) have a Trinity. Moreover, origin necessarily holds itself (related to) discretion and order; thus we have perfect discretion and arrangement according to order (ordination), which furnishes the rationale of principle, of mediation and of ultimacy,—for, otherwise, disorder (inordination) would describe the divine; therefore the rationale of order entails three persons. So it lies with emanation, with Trinity, with discretion, with order. And since this is so, necessarily there will be indivision, or otherwise there would be recession from perfection and from unit.

"For there is a certain unity in principles and another type of unity in the things which are principled; this has deficiency and imperfection, because, allowing that the principles are simplex, nevertheless, they are imperfect in themselves. Moreover, there is a certain unity in universals, and another type in individuals; this also has deficiency, for universal unity is not gathered together into itself and individual unity must be numbered along with some other (altero) and even universal unity is capable of multiplication and must be numbered by another (alio) that is numbered. Moreover, there is another unity of unanimity or conformity; and this has deficiency from the unity (abunitate) which is said to be in the divine, for persons are incapable of being thus united in mind, (animo) except in so far as they can be divided. Moreover, there is a certain unity of nature, or better, a sort of unity in a sort of natural condition such as that when different things are said to have between themselves a unity because they have the same nature; and this has deficiency, because every composite is separable. For in such unity there is no inseparability. But in the Divine is the highest unity, necessarily, because it has (all) the six conditions in such a way that it is the unity of simplicity and totality (that is, of the full (need of) being, of conformity, immutability, unanimity, (and) inseparability. Whoever therefore says that the unity that is in the divine is of universality or his individual, or must be enumerated along with any other (alia) is not saying enough. For unity, that unity which is in the divine, *simultaneously* has all six of the aforesaid conditions. Thus it is that the condition of perfection is met."

"The fourth aspect of our theory is that indicating the discretion and unity in the Divine, by the mode of love (dilectio). For where

there is beatitude, there is delight (or love—*dilectio*), and consequently a certain reflexive delight, by which one in the highest loves oneself; another kind is the connexive, by which one loves another; and there is another, the endearing (*caritative*), by which one is loved because of another. The second is more noble than the first, and the third more noble than the second, but whatever of nobility is possible is posited in the Divine; therefore it is here that we find the third (in the Divine), since there we find both love and that which is loved because of and along with the beloved (*delectum* and *condilectum*). Thus we have the rationale of the gratuitous love in the Father, which he gives and does not receive; and of the owed love which he gives and does not receive, in the Holy Spirit; and of the mixed love (*permixtae dilectionis*) in the Son, which he both gives and receives. Thus we have Love, pure, perfect, full, effluent as it were in the Father, effused and effluent in the Son, and effused as it were in the Holy Spirit.”

For the Vaisnava, of course, this unavoidable diversity of the unitary Being is not limited to the *para*, *vyuha*, and *antaryamin* aspect of Bhagavan; it extends also to the *vibhuti* and *arca* aspects, and it includes the doctrine of Brahman as the material cause (*upadana karana*) as well. Nevertheless, it would not require much interpretation to show that although St. Bonaventura does retain the doctrine of *prime matter*, as an Augustinian, he puts more emphasis on the emanation concept (more so, at least, than the Thomistic Scholasticism to which Hartshorne objects) than on the doctrine of creation *ex nihilo*. For that matter, it must be remembered that Ramanuja also had to revise the Sankhya concept of *Prakrti*, which is almost identical with the *prime matter* idea. Moreover, stripped of sectarian bias, it may be seen that there is a remarkable parallel between the Christian Incarnation (especially if the *prototypes*, e. g. Moses, David, Melchizedek etc. are included) and the Vaisnava *Vibhutis*, and between the theology of the Sacraments (especially the Mass) and the *arcavataras*. In all cases, the panentheistic structure (and movement) holds. The important point is that the *relatedness* is unavoidably essential within the Divine; Being is *surrelational*, both in its intrinsic structure, and in its extrinsic describability. The Absolute cannot be *nirguna*, barren; and Personality is therefore the highest possible concept.

On this point; St. Bonaventura has reached a high peak of clarity⁵⁵.

55. In *Hexameron*, Visio II, collatio IV, 2, (translation mine, as below) Upon this follows the second condition, the condition of production, by virtue of which is demonstrated what was proposed, namely that God is three and one ... For God produces whatever

On the side of Ramanuja, we may cite the following: ⁵⁶

199. Hence (i) the highest *Atma* Himself appears in both the evolved and causal conditions: His bodies being in the former condition the intelligent and non-intelligent elements in a gross condition, and in the latter the same elements in a subtle condition. As products do not differ from the cause, and as for this reason the products are known when the cause is known, the statement made in the *veda* that by knowing one thing all things are known is fully justified, (ii) In the *Chandogya* text relating to the making of names and forms the words (three *devatas*) refer to all products of matter; and the statement is made that the highest *Atma* makes all *jivas* enter them, and that He Himself enters as their *atma*, and makes names and forms. Hence all words, that have meanings, denote the highest *Atma* alone, as connected with *jivas*, who are themselves connected with products of matter. Hence when a word denoting the highest *Atma* in the casual condition is placed in apposition with a word denoting products of evolution, both the words may be understood in their primary meanings. (iii) *Brahman* clothed in the two elements in the gross and subtle conditions is the product and cause. Hence the universe has *Brahman* for its material cause; and *Brahman* alone clothed in the two elements in the subtle condition is the cause. (iv) Though *Brahman* is said to be the material cause, as it is the aggregate that evolves, the natures of *Brahman* and of the two subordinate elements are not mixed up; and the statement to this effect is appropriate. When a cloth is made of threads, white, black and red, each colour appears in the threads, in which they appeared before; hence there is no mixing up of the colours anywhere

is produced dissimilar from himself, or unequal, of essentially different as is clear in the case of any extrinsic production of a creature. For no creature whatsoever is produced in every sense similar to the producer, or in every sense equal, or in every sense the same; but, as reason urges before the dissimilar there is necessarily the consimilar, before the unequal, the equal, before the essentially different, the essentially the same. Therefore it must be understood that necessarily before every extrinsic production of a creature there must be a prior intrinsic production of the producing, by which it (He) produces whatever is similar as in every sense similar to himself, in every sense equal, in every sense coessential, through which are produced the altogether dissimilar, the altogether unequal, the altogether essentially different ... "The third aspect of our theory showing that God is three and one is the condition of *diffusion*. Here the supremely good diffuses itself by a diffusion that is the most actual, the most integral, the most ultimate. The most actual because it always generates, and always inspires (*spirare*); such diffusion is not to the creature: most integral, because the Father gives all that is in generating the Son...but no creature is fit to receive the whole glory (*speciositas*) of the exemplar; ultimate, for there would be no perfect diffusion except to the highest, which is not in the creature, because of every creature one may think of a higher and better; nor does the goodness of the creature and anything whatsoever to the divine goodness, just as the point adds nothing to the line nor would any creature be able to receive all that was given,

56. It should be noted that we have not been dealing with attributes, but with ontology as such. The problem of the attributes does receive very similar treatment in Hartshorne, Bonaventura and Ramanuja however, although it cannot detain us here.

in the cloth. Similarly, though the universe is made up of the aggregate consisting of the intelligent and non-intelligent elements and of *Brahman*, the intelligent elements obtain enjoyment in the universe; the non-intelligent element serves as objects of enjoyment, and *Brahman* controls; these properties do not get mixed up. There is this difference between the two cases. The threads are fit to have a separate existence; and they are put together at the will of a person; in the separated condition the threads form the cause; in the united condition they form the produce. In the case under consideration, however, the intelligent and non-intelligent elements are the bodies of the highest *Atma* in all conditions; they exist as objects only as being His aspects; and He appears in those aspects, and is denoted by all words at all times. In both cases the natures of the elements that form the aggregate are different and they are not mixed up. In this matter they are alike. Though the highest *Atma* enters into the products, His *svarupa* does not change; and the statement that He is unchanging is appropriate. When the universe comes into the gross condition, and the diverse forms and names, He remains as its *atma*; He is fittingly said to be a product also! to become a product is to come into a new condition. (v) Certain texts state that *Brahman* is without qualities (*nirguna*). This will become appropriate when we take the word *nirguna* to mean unconnected with undesirable qualities. A *Chandogya* text denies this connection by the words 'He is free from *karma*; free from old age death, grief, hunger and thirst'; and affirms the possession of noble qualities in these words—'He has unchanging objects of desire, and an unfrustrated will' (VII-1-5). This determines that the denial of qualities in general terms made in other places refers to undesirable qualities. (vi) Other texts state that the *svarupa* of *Brahman* is *jnana*. This means that the *svarupa* of *Brahman* who is all-knowing and all-powerful, who is an enemy to all imperfections, and who is the seat of noble qualities, can be indicated by the attribute *jnana* alone, and that it proves its own existence without help from anything else. As we admit both the items, the statement becomes appropriate.

It is here in this perspective that our distinction between *diversity* and *plurality* becomes relevant. The latter represents what Advaitins charge Visistadvaitins with falling back into, namely, deficiency, disintegration, ontological poverty, nonfinality. But the former is the *richness*, the *super abundance*, the *Divine Fecundity*, whose attributes are really not external appurtenances, but hypostases, if we may qualify that term as indicating emanational modes which themselves retain the fertility and consubstantiality of the Supreme not only by remote *participation*, but by intimate *appropriation*. As in

Platonism, for the finite individual to become creative, he must become *frenzied* in the *mania Eros*. He must leap out of himself (as the word *ecstasy* literally means.) for the simple reason that the *creativity* is not altogether his own. For there is really only one all-pervading Creativity, as Bergson has taught us; even though it does become individual there is only one Supreme Becoming-in-Being: the Scripture stands: God is Love. Easiest fruit—to be is to be fruitful; *profunditas est fecunditas*—profundity.

St. Bonaventura states in the preface to his Commentary on the 'Sentences' of Peter the Lombard, the same truth that Hartshorne is now trying to make intelligible:

"The profundity of the eternal emanation is the sublimity of the divine being...for true profundity is high (*altus*) and the true height altitude is profundity, as St. Paul says⁵⁸ 'How deep are the riches and the knowledge of God; how unsearchable are his judgments; his ways past finding out.' And Job says, 'perchance thou canst comprehend the footprints⁵⁹ of God, or take refuge in the perfection of the Omnipotent? He is higher than the sky, and who shall find him? He is lower than the depths, whence shall he be known?'⁶⁰ By their own power (comments the saint) thou canst not. Therefore take counsel with St. Paul: 'Be ye grounded and rooted in Love, that ye may be able to comprehend.'⁶¹

"... For the sublimity of the divine being a twofold, that is, in his most noble *emanations*, which are *generation* and *procession*⁶² and in the most noble *conditions* which are the highest wisdom, omnipotence and perfect will, of which the first (*viz*, the *emanations*) are devoid.

"The profundity of the creation is the vanity in the created being, for the more the creature wanes, the more it tends towards

57. Here our previous remark about Plotinus needs qualification. Although to him the One (*to hen*) is barren in itself and undifferentiated (and here our former remark remains valid) it is true that the three hypostases (*hous*, *psyche*, *demiourgos*) do emanate out of it without becoming separated (though in a sense separate) from it. Nevertheless, the term *hypostasis* did undergo a slight modification of meaning under the Christian Fathers, being enriched by the internal dynamic of vitalized being (and vital becoming).

58. Romans. 11:33.

59. *Vestigia*—which means not only 'vestige' in the popular modern sense, but 'footprint'—an analogy which became a technical term already in Plato, and continued in use right down to Campanella.

60. Job 11:7-8.

61. Ephesians 3:17-18.

62. for Ramanuja, the *kalyana gunas* and the *prakaras*.

profundity, that is, he wastes away through blame and punishment. Because of this it is said by the Prophet in the person of a man,⁶³ 'I am stuck in the lowest pit, and there is no substance left in my bones' and again the Prophet in prayer, that he waste not away, says, 'Let not the waterflood come over me, nor the depths cover me up.'

Then, more systematically, in answering the objection that to be fruitful is to descend into the dualities of creation and destruction, plenty and want, love and hate, etc., he says⁶⁴

"... Fruition is said, by definition, to be the union of love. Whence it follows that for anything to be united to self and to another does not refer so much to the other as to the self; but when there is union to another, there is dependence, inherence and indigence; but indeed where the union is to self itself, if that is the *summum bonum*, then there is no inherence or dependence or indigence, but in every manner, sufficiency. If indeed the good is deficient, then there is need; whence it is that only God can be perfectly fruitful in (and by) himself alone, whereas no other could from itself be perfectly fruitful itself. For God alone is the highest good and loves himself in being fruitful (in and by and for) himself and moreover, loves (all) others in being fruitful (in and by and for) himself; and thus just as there can be neither usefulness nor fruition if God with indigence, so He (having no indigence) is (also) our own fruition and usefulness."

But, lest this be taken only theologically, and not as philosophical ontology, we may also cite the following:⁶⁵

"...we may be reminded that Being is twofold. For there is a certain kind of being which is from itself, according to itself and because of itself. Again, concerning the First Being, it may be noted that although it is from itself, it will necessarily be according to itself and because of itself. Therefore that being, in so far as it is from itself strictly speaking, it holds the reason (or cause) of origination; in so far as it is said to be according to itself, it holds the reason of being the exemplar⁶⁶, in so far as it is said to be because of itself, it holds the reason of termination....."

63. Psalm 68 : 2 (67 : 2, King James).

64. In Sent. I. 1. Dubium xii. Italics mine.

65. In Hex. Principium Collatio I, II. 1.

66. a key term, a technical term in St. Bonaventura, to whom, like Ramanuja, everything contains (as well as being contained by) the Divine Refulgence, so that the 'creature', of its own nature, shows forth the Glorious Qualities of the Creator.

These three distinctions are further allied with the three 'persons' of the Christian Trinity (which correspond remarkably with the Vaisnava trinity of *para*, *vyuha*, and *antaryamin*)⁶⁷ thereby elucidating our original point that trinitarian Christianity, rightly understood, is panentheistic, and quite as much so as Visistadvaita.

To return to Ramanuja, we could cite parallel passages many times over⁶⁸. Not to mention his treatment of the sixth chapter of the Chandogya Upanisad, we may be reminded of the argument in the Mahasiddhanta (later portion of the first Sutra) that knowledge for itself must belong to a person—a point succinctly elucidated by Srinivasa⁶⁹ when he says that knowledge must (necessarily and inherently) be for another than itself; but for a spiritual person alone may the 'other' be the person himself: "One calls *being for itself* the fact of manifesting itself to itself for itself."⁷⁰

Finally, Ramanuja summarizes:

"The Veda shows that the highest Atman exists, who is an enemy to all imperfections, and the one seat for all good qualities, who is the cause of the evolution, sustenance, and dissolution of the world, who stands apart from all, who is all-knowing, who has an unfailing will, who is full of love for all that come to him, who is full

67. See Srinivasachari. op. cit. p. 204 ff.

68. See in particular Sri Bhashya. Sutra II 3, 18 (argument from causation); and Gita Bhasya, XIII 2, especially p. 146 (Isvaradutta's translation); and Sutra IV, 4, 17 (V. K. Ramanujachari's edition) Vol. II, P. 910 cf. "By the 'world-activities' reference is made to the control of the coming into existence as objects, of the continued existence and of the movements of all intelligent beings and non-intelligent...objects...also I 3. 1; and I, 3. 44: (Vol. I. P. 313-4 in Ramanujachari's edition) The mention of oneness is due to all objects, intelligent or non-intelligent, being products of evolution from the Highest Atman, and to being on this account identical with Him...The oneness affirmed is based on the fact that a cause and its product are one; but this is not due to the jiva's being one with Isvara. The denial of difference is subsidiary to the affirmation of oneness (cp. the quotation from St. Bonaventura, note 55) and deals with the erroneous view...that a product is different from its material cause...also 1, 4. 27 (Vol. Ibid P. 435-7) "This means that it became so subtle that it could not be spoken of as separate even from His body. Even then the matter and jivas existed...(after the period of cosmic rest) Brahman willed and will become many...He then successively evolved up to the formation of the great elements, the matter and the jivas being his body at every stage...(see I, 2, 4)...The purpose of the evolution was his (Lila) and the matter and the jiva elements were his toys...Brahma evolved by becoming the inner ruler...and being such He is not touched by the changes of the one or the painful experience of the other."

69. Sri Bhashya—pp. 50-54 in the Sanskrit text; pp. 64-70 in Lacombe's translation (e. g. La Doctrine Morale et Mataphysique); or pp. 106-116 in the "Three Tattvas" of V. K. Ramanujachari. For Srinivasa. See Lacombe. (Absolute set on the Vedantas—p. 189)

70. See Lacombe, 1' Absolute selon la Vedanta, p. 188 ff. Note also pp. 189-193 nn., where he gives an excellent exposition of the atomicity of the soul, which cannot be treated here.

of mercy, who is without superior, and who is known as the highest Brahman. The same authority states also that he is pleased with the worship of himself in the form of meditation; that he removes the meditator's karma; that he gives his bliss without limits in the form of enjoyment of himself; and that he will not make him return." ⁷¹

Such a philosophy, we submit, is neither 'sentimental' nor contradictory, nor absolute; and to remove the older prejudices against it, we also submit that by designating it with the modern terms panentheism or surrelativism it may be made acceptable to some who are blinded or frightened by the traditional designations. And, moreover, we submit that as men get the vision of the social nature of Being and of the inter-relationality of the Supreme Deity then there will be more hope of establishing the Blessed Community the Kingdom of Heaven, Ram Raj, here and now!

Time Study and its Purpose.

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What is Time Study: Time study may be properly defined as a science involving the accurate measurement of time, as applied to Industry, in which human effort, machine performance, and conditions surrounding them are studied for the purpose of analysis and standardisation. Analysis by Time study plays an important part in the creation of new machines and in their successful and efficient operation. The most interesting phase of time study work is the study of labour. During the study of labour activity, the need for rest factors or personal allowances will be revealed, and additional time allowances for all other things in the conditions that are beyond the control of the worker can be determined.

To reach the highest reasonable labour activity throughout a department, time study is essential. Through the use of sound time study methods, even the best of departments organised without time study can be improved quite appreciably.

Though single operation jobs existing in mass production factories are easy to study, techniques have been established for studying routine clerical work, power station and all other plant attendance, maintenance and repair gangs, mining, quarrying, digging, load-carrying, painting, etc. Considerable experience is required for any but the single operation type of study.

Though there are a number of excellent books on industrial management describing time study methods in great detail, one cannot learn from them how to choose the "right" time, when readings on a single operation show the usual wide variations. The method of establishing the standard time cannot be taught from a book, personal instruction for at least a few months is required to educate the eye and brain to estimate speed and effort accurately, and express them as a number. It is similar to training a man to estimate the speed of a variety of vehicles under different conditions of surface and gradient.

Taking the Study :

Time study, in actual practice, is the determination of work units of an operation by a systematic process of breaking the complete operation into elements, finding the unit value of each element and determining from them the standard time for the complete operation. The actual times for performing the operations are noted together with the rating, i. e. the estimated speed and effort. The normal pace of a good day-worker is rated at 60, while the normal piece-worker's rating is 80. Ratings as high as 120 or more are also observed, but they are usually found only among experienced men, working on highly repetitive operations with which they are thoroughly familiar. Majority of the experienced operators work between 70 and 90 ratings. A slow or unskilled worker may work at a 40 rating or less. These rating figures correspond exactly to speeds of vehicles. A car running for one minute at 60 miles per hour covers the same amount of ground as a car running for two minutes at 30 miles per hour, or half a minute at 120 miles per hour. Similarly an operator who works for 1 minute at 120 rating does the same amount of work that he would do in 2 minutes at a 60 rating.

After a series of readings are taken of an operation, each reading is converted back to seconds at a 60 unit-hour. For example, a reading of 20 seconds at a 90 rating becomes 30 seconds at a 60 rating. When converted to a 60 rating, all the readings are not necessarily the same. In an apparently similar operation, small differences may account for varying times even at the "normal" rate of working. An average of the converted readings becomes the normal seconds taken by a normally good day-worker, without taking any rest. A rest factor must be added to the above average time, as a man cannot work all day without rest. This rest factor is generally between 15% and 20%, but for strenuous operations, it can be up to 200%. The total seconds obtained by adding a rest factor are divided by 60 to give the time in minutes. Thus, if the time averaged as above is 50 seconds and 20% is added as a rest factor, it gives 60 seconds or 1 minute. This one minute is the unit for the operation, which has allowed for all variables, and can be used in setting tasks. It is the "allowed time" for the operation.

A day rate wage worker on an operation valued at 1 unit should perform that operation 60 times per hour throughout his shift. In practice he may do it 40 times in the first hour, then take some rest, and do it 80 times in the remainder of the second hour; on the whole, he should do it 480 times in 480 minutes, his eight hour shift.

An individual piece worker, paid in direct proportion to his output, is expected to work a third harder than a day worker. He should average 80 units of work per hour, and carry out a one unit operation 640 times in a eight hour shift.

The unit evaluated as above is a common unit of human work. After all the operations in a shop have been studied and allowed times or units established, the normal frequency with which each operation has to be carried out per hour is to be determined. Then the amount of work in man-minutes called for by that operation is obtained by multiplying the unit value of each operation by its normal hourly frequency.

As an example, suppose boxes each to hold 100 packets have to be filled and the number of packets required to be filled into the boxes is 30,000 per hour. So 300 boxes have to be filled per hour. If the unit value is 4 per box, the amount of manual work that filling these boxes calls for is $4 \times 300 = 1,200$ units per hour. On day rates, the number of men required for this operation is $1200/60 = 20$, as each day wage worker is expected to perform 60 minutes of "normal" work every hour. On individual piece work, each experienced worker is expected to turn out at 80 unit hour rate or perform 80 minutes of "normal" work every hour. Accordingly $1200/80 = 15$ men will be required for this operation.

When studies were taken by me in a few factories at Bombay many operations were carried out at unit hours of between 55 and 65, and in these factories day rates were in force. In some departments, unit hours as low as 20 and under were found.

In reorganizing a department to yield maximum production at the lowest reasonable rate, Time study is the first stage. In proper Time study, only useful work is taken into account; unless it is known to be an essential operation, no operation is studied and allowed. There are instances in which 20% of the work in running large plants were eliminated by minor changes in their design.

The next stage is to rearrange duties and allocate work so that each employee has as nearly as possible the same amount of work to do. After duties have been reallocated as above, it will be seen that only few men can reach the given output than was the case previously. Now individual piece rates can be set up on the basis of one man on a given rate of hourly pay producing a given output. Similarly group piece rates can be set up on the basis of a given number of men on a

given rate of hourly pay producing a given output. As an example, if 100 men whose basic rate is annas 2 per hour should produce 1000 good pieces per hour at a 60 unit hour, the piece price will be $100 \times \text{as } 2 = \text{Rs. } 12-8-0$ per 1000. If day rates are used, the whole responsibility for proper labour activity is placed on supervision, after the initial reorganization. In this case, the actual cost per article should be worked out weekly or monthly and compared with the "standard" or correct cost, which is based on the piece rate in the example given above.

For each article manufactured, unit values of all operations in it are added up, and a combined unit value is established. Number of articles manufactured over a period multiplied by their individual unit values gives the total amount of useful work done by the department. Total units divided by the total man hours worked on this production gives the average number of units produced per man-hour. This is the Index of the labour effectiveness of the department. For a time-studied department on day work, any figure above 50 can be considered as satisfactory. Many departments which have not been time-studied generally operate between 20 and 40 in India.

Standard Costing.

It has been explained above that time study enables control to be established over labour activity, output and labour costs. These are the first steps taken in a factory to establish complete control by means of standard costing, over all categories of expenditure, including labour, material, fuel, electricity, water, supervision and all other overheads.

Standard costing is briefly the setting of a standard figure for each category of expenditure, for comparing it periodically with the actual expenditure. The aim of scientific management being the getting of full value for every rupee spent, standard costs help the executive to ascertain in detail the burden of unnecessary expenditure his organization is incurring, and, from this exact knowledge, institute action to reduce that burden so that ultimately he can be in a position to show that he is getting full value for every rupee he spends. The term "Scientific management" came into common use with the war effort during the second world war. It can be defined as management guided by standard costs. Sound standard costs can be set up only by detailed research, and the information revealed by this research is used in initiating reforms.

Apart from providing a basis for standard costing labour, time study provides full details of potential machine, process and departmental capacities for production. This information is made use of by 'Scientific management' to initiate a drive directed to increase output, reduce working hours, reduce costs, and increase wages according to circumstances.

Control :

Generally the finer the control the more efficient is a department. In most departments of a manufacturing concern some system of labour and production control exists. To have a control, a common measure of work done and production is necessary. In a department manufacturing one item only, the number of articles manufactured can be the measure of work and output. But most of the departments do not confine their activities to the manufacture of a single item. Further, where only one item is being manufactured, there may be a range of sizes of the item, and the work entailed on different sizes varies appreciably. In a case such as this the number of articles manufactured cannot represent the amount of work done in terms of a common unit. If, by means of time study, measurement of work in units is established for each article, the index of activity and production of the department is readily available in terms of a common unit.

Labour control :

When the department work has been carefully studied and all items of manufacture given a unit value, the average units of work per hour done by an operator can be found. This figure gives his index of activity or unit-hour. The potential unit rate which is known will be generally 60, where the system of payment is by day-rate, and 80, where incentive payment is adapted, such as piece rate.

Production control :

The units of work, which a department employing a definite number of directly producing labour and working for a certain number of hours, turned out can be found as explained above. The capacity of the department in work units and the average working rate which an operator should reach are known. From these can be assessed the capacity of the department for production in terms of the items required to be manufactured. A production control is provided by comparing the actual production with the standard or potential production.

Control is instituted over varying periods—hourly, per shift, daily, weekly, monthly, etc. — according to requirements. The shorter the period of production check the finer becomes the control. Hourly check would expose to immediate supervision weaknesses present hour to hour, and would enable these weaknesses to be rectified with as little delay as possible. Generally management at lower levels in an establishment are interested only in control statistics over a short period or daily, and senior management are interested in control statistics over weekly or monthly periods.

AN ALTERNATIVE TO BANCROFT'S OVER-VOLTAGE THEORY IN THE INTERACTION OF METALS WITH NITRIC ACID

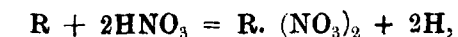
BY

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The problem of the mechanism of interaction of metals with nitric acid is one of the oldest and complicated ones. Factors which influence the interaction have so far been either misconceived or over-emphasised incommensurate with the degree of importance rightly deserved by them, or restated in varieties of ways, thus presenting a complexity of apparently different factors. A perusal of the whole literature of attempts made to bring all the relevant factors into the fold of a comprehensive and tentative theory reveals a prodigious ground yet to be covered and the need for modification of some of the theories which hold the ground today.

The most widely accepted theory so far is that of Wilder D. Bancroft¹ who developed the view that hydrogen over-voltage of the metal is a measure of the reducing power of the metal and is a principal factor in the interaction, catalytic action of the metal and also of the salt of the metals having additional effect. Bancroft's view was based on the hypothesis of Acworth and Armstrong².

Acworth and Armstrong regard the reaction between a metal and nitric acid as consisting simply in the displacement of the hydrogen of the acid and the formation of the corresponding nitrate in the manner expressed by the equation,



where R denotes the amount of metal which is equivalent in combining or displacing power of two atoms of hydrogen. The hydrogen at once

acts on the free acid present, reducing it more or less completely to nitrous acid, nitrosidic (hyponitrous acid), hydroxylamine or ammonia. Bancroft believes this to be a special statement of the electrolytic theory of corrosion long before it was believed by Whitney³ in 1903. It was visualised by Bancroft⁴ that the most striking characteristic of an electrolytic action was one occurring in two places, at the anode and at the cathode and that when the distance between the electrodes vanishes, a chemical reaction is said to occur. Thus he believed in the need for a study of the problem electrochemically.

A criticism of Bancroft's over voltage view.

The results of over-voltage measurements are not exactly reproducible, because various factors, for example, electrode surface and traces of impurities which are not easy to control have an important influence. Hence only certain general tendencies are clear. This is clear from the following table

HYDROGEN OVER-VOLTAGES.

(From J. A. V. Butler's *Chemical thermodynamics*, page 191)

Electrode	Coehn and Dannenberg	Caspari
Platinised platinum	0.000	0.005
Smooth platinum	—	0.09
Iron	0.03	0.08
Silver	0.07	0.15
Nickel	0.14	0.21
Copper	0.19	0.23
Tin	—	0.53
Lead	0.36	0.64
Zinc	—	0.70
Mercury	0.44	0.78

Surface has enormous effect on over-voltage as could be seen by comparing the figures for platinised and smooth platinum (0.005 volt and 0.09 volt respectively); a similar difference is found for other metals, a roughened surface having invariably lower over-voltage than a

smooth electrode of the same metal. That surface forces may be of importance is suggested by the appreciable reduction of bubble over-voltage accompanying the addition of ethyl and methyl alcohols, acetic acid or acetone to the aqueous electrolyte; these substances all bring about a lowering of surface tension. Strongly adsorbed substances, such as amyl alcohol, result in a marked decrease of surface tension, but they have a tendency to raise the over-voltage. Colloidal materials raise the over-voltage although they may diminish the surface tension.

Theories of over-voltage.⁵

The processes occurring at the cathode in an aqueous solution may be considered as follows:—(1) transport of H_3O^+ ions to the electrolyte layer, (2) transfer of these ions or possibly protons to the electrode, (3) discharge of the ions or protons by electrons, (4) combination of the resulting hydrogen atoms to molecules and (5) evolution of hydrogen molecules in bubbles of gas.

In 1900 Tafel suggested that the formation of molecular hydrogen from atoms, one of the stages in the Nernst equilibrium, was responsible for the over-voltage. The variation of over-voltage from one metal to another was ascribed to their differing catalytic effect on the rate of combination of hydrogen atoms; the low over-voltage metals, e. g. platinum, palladium and nickel should be good catalysts and those of high over-voltage, e. g. lead, and mercury may be expected to be poor catalysts. Direct experimental studies with atomic hydrogen bear out this anticipation. Further, low over-voltage metals are the best catalysts for hydrogenation reactions.

A. Smits (1922) and T. Erdey-Gru'z and M. Volmer⁶ viewed that the slowness of discharge of hydrogen ions was responsible for over-voltage.

Another theory, in a sense involving the concept of slow neutralisation of the charge on the hydrogen ion, has been developed by R. W. Gurney⁷ using the methods of quantum mechanics.

A weakness of this, and the previous theory is that it is not clear what specific property of the metal is responsible for its over-voltage, and the catalytic properties of low over-voltage metals are given no adequate interpretation.

In 1939 H. Eyring, S. Glasstone and K. J. Laidler⁸ developed a theory based on the idea that the transfer of a proton, is the cause of over-voltage. If the electrode material is one which adsorbs hydrogen readily, e. g., platinum, palladium, nickel, or copper, it will form relatively strong M-H bonds, and the passage of a proton from a solution layer to the electrode layer will occur more readily than if the metal were one such as mercury or lead, which forms only feeble M-H bonds. The lower over-voltage and the catalytic properties of Pt, Pd, Ni etc. are both due to the same fundamental cause, namely the formation of strong M-H bonds. The above theory has been criticised by J. V. Butler⁹

To the mind of the author each one of the above theories tries to explain how a potential is formed at the cathode but have not been able to explain in clear terms why such a phenomenon should occur to different degrees with different metals. What specific property of the metal contributes to the differential over-voltages in different metals? The approach made by H. Eyring, S. Glasstone and K. J. Laidler is good. But their conclusions include terms dealing with the adsorbing power of the different metals and consequent M-H formation, which is again difficult to measure in terms of any known fundamental property of a metal. The criterion for the formation of a M-H bond is not at all made clear.

Hence it is that over-voltage has so far not been explained in terms of any known fundamental property of a metal. Further, in the interaction of a metal with nitric acid, excepting qualitative conceptions, it has not been possible to isolate one factor or a combination of such ones, whose exact measurement has been possible to allow of a correct and systematic classification of the metals in the order of their power to reduce nitric acid. In such a context, whether over-voltage is exactly related to any known fundamental property of the metal not having been settled, and the exact and systematic order of the metals according to their power of reducing nitric acid not having been worked out, it is unsafe to link the over-voltage of a metal with its reducing power. This is a clear *prima facie* defect of the view put forth by Bancroft apart from other inadequacies discussed below.

N. R. Dhar¹⁰ pointed out the incompatibility of Bancroft's over-voltage view considering similar reduction of nitric acid by substances like starch, sugar, camphor, oxalic acid, sulphur etc., which does

not differ fundamentally from that by the metals. Substances cited above do not lend themselves to be spoken of in terms of over-voltages.

N. R. Dhar (*loc. cit.*) gives a clear criticism of basic view of Armstrong and Acworth as follows:—

"The fact that the metals like Cu, Ag, Hg etc. hardly replace hydrogen in acids like HCl, H₂SO₄ and that they dissolve readily in dilute nitric acid does not corroborate the hypothesis of Acworth and Armstrong. For the small traces of hydrogen, if at all evolved, to have such a rapid action of metals on nitric acid, we have to imagine that the hydrogen set free reacts instantaneously on the unchanged nitric acid. From our experience in chemical dynamics we know that gases react rather slowly with liquids. Hence the difficulty with the hypothesis of Acworth and Armstrong. Moreover, on this hypothesis, the action of metals on nitric acid is put in an entirely different category from that of nitric acid on substances like sugar, starch, camphor, etc., because in the latter cases we cannot make the assumption of the replacement of the hydrogen by the reducing agents." Hence Bancroft's view is inapplicable universally to all cases of nitric acid reduction.

A New Conception

Irrespective of the organised arrangement of atoms inside a metal, when lumps of metal are put in the acid, all the atoms comprising it are not available for reaction. We shall now examine the various factors that are concerned in fixing the conditions for the maximum number of atoms to be available for the reaction.

Total surface area of the lump of metal is the simplest factor. The larger the surface area the greater is the availability of metal atoms for reaction.

There is a second and more important factor which determines the number of available atoms for reaction. If we assume planes of layers of metal atoms occurring one behind the other, whatever may be the order or disorder of arrangement of them in the body of the metal lump, the number of available atoms increases if the layers of atoms behind the first are also available. The extent to which the second layer of atoms are available in addition to the first depends on

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(1) the gaps that separate the discrete atoms in the first layer and (2) the ease with which the first layer can be dismantled. In other words inter-atomic distances are an important factor in determining the availability of atoms for reaction. In the previous paragraph I have mentioned the importance of the total surface area. Now it might be added that even the total surface area resolves itself in terms of the number of atoms per unit area. And the more the closeness with which the atoms are arranged, the greater will be the available number of atoms. In other words subject to certain limitations to be discussed later, the smaller the interatomic distances, the greater are the number of available metal atoms for reaction.

The other important factor depends on the ease with which the first layer of atoms can be dissolved by the acid for the second layer to be available. In other words the smaller the energy with which the metal atoms are held together the greater will be the chances for increasing the probability of the available number of atoms by dissolving the first, second, etc. of layers so that the layer behind each one of these will be available for reaction.

Hence the closeness of arrangement of the metallic atoms which means a smaller interatomic distance and the ease with which the metallic arrangement in the first layer may be dissolved, which in turn can be measured by the energy of binding of these metallic atoms, are the two main factors which influence the availability of the atoms for reaction.

Divers divided metals into two classes as regards their behaviour with nitric acid, namely those which yield nitrite and nitrate with nitric acid but exert no further action forming neither ammonia nor hydroxylamine. In this class are placed Ag, Hg, Cu, and Bi. Secondly those which form ammonia and generally also hydroxylamine but do not yield nitrite or nitrous acid with free nitric acid. On the other hand they readily form nitrite. To this class belong Zn, Cd, Mg, Al, Pb, Fe, and the alkali metals.

We shall see presently how best his division can be explained on the basis of the above theoretical considerations. From an article by Grim and Wolfe¹¹ we get the binding energies of various metallic crystals arranged in a table. By binding energy is meant the work required to separate one gramme atom of the crystalline substance into its constituent atoms; in other words, for monatomic substances,

it is the sublimation energy at the absolute zero of temperature. We shall write down below the classification of Divers putting down alongside it, the binding energy of the respective metals and try to examine if there is any regularity.

I. Metal												
Binding energy				Ag.	Hg.	Cu.	Bi.					
				64.5	18.5	76.0	48.5					
II. Metal	Zn.	Cd.	Mg.	Al.	Pb.	Fe.	Li.	Na.	K	Rb.	Cs.	
Binding energy	32.5	28.0	41.0	60	51	108	46	30	26.5	25	24	

[Binding energy of crystals is given in kilo-calories per gramme atom. (One kilo-calorie per gramme atom is equal to 0.0434 electron volt per atom.)]

In the above table we find that excepting Hg in group I and Al, Pb and Fe in group II all those in group I are of high binding energy and all those in group II are of considerably low binding energy. Thus we find in Divers' classification, which is based on experimental facts a proof of this new conception. Below is reproduced the table from Grim and Wolfe giving binding energy values.

Li	46	Ag	64.5
Be	80	Cd	28.0
Na	30	Ba	39.0
Mg	41	Pt	122.0
Al	60	Au	83
K	26.5	Mg	18.5
Ca	39	Tl	44
Cr	83	Pb	51
Mn	63	Bi	48.5
Fe	108		
Co	105	C	150
Ni	105	Si	81
Cu	76	Sn	76
Zn	32.5		

Rb	25.0	Sb	4.9
Sr	3.9		
		Ne	0.5
		A	1.5
		Kr	2.4
		Xe	3.4
		Rn	4.0

From the above table it is possible to pick out metals of similar low or high binding energies and add them on to the Divers' classification judiciously, thus expanding it.

That the binding energy of atoms of the metal in the crystal lattice has such an important and fundamental role is easily understood by the solution this conception has been observed by the author to supply to the problem of why only some metals like Pt, Pd, Ni, Co, Fe, etc. are only effective as catalysts in hydrogenation reactions and not ones like Pb, Hg, etc. If we examine the binding energies of these we have for Pt, Ni, Co, Fe, 122, 105, 105, 103 respectively from the preceding table and for Pb, Hg, Zn, 51, 18.5, 32.5 respectively. From these values it is clear that those which are good catalysts have high values for their binding energies and those which have low values are useless as catalysts. In the case of nitric acid interaction the more loosely bound the metal the better so that due to easy disintegration the acid could be reduced to greater extents. But in the case of catalytic hydrogenation the more tightly bound the metal the better it is, so that it can remain in tact and help as such in the reduction. Viewed from the point of view of crystal energy this is quite rational.

A great objection to the Bancroft's over-voltage view was raised by N. R. Dhar (loc. cit.) who pointed out the incompatibility of the over-voltage view considering similar reduction of nitric acid by substances like starch, sugar, camphor, oxalic acid, sulphur etc. which does not differ fundamentally from that by metals. Substances cited above do not lend themselves to be spoken of in terms of over-voltages. The crystal energy view does not suffer from any such disadvantage. Most of the organic substances are crystalline ones and those which do not appear to be so externally have been also proved by modern researches to be microcrystalline. Crystals are broadly classified into ionic, bonded, molecular and metallic. Therefore the crystal energy view is of universal application to all substances that reduce nitric acid. Of course, the question of application of the crystal energy view

to reducing substances which form a homogeneous solution with nitric acid solutions does not arise.

Coming to the actual mechanism of the reduction, it is undeniable that the hydrogen ions present must be somehow responsible in contributing to the reduction of nitric acid. The possibility of their being evolved as hydrogen gas and then reducing nitric acid when in nascent stage is one of the views which was actually put forth by Acworth and Armstrong. But Dhar produced theoretical evidence based on chemical dynamics and proved that such a view is untenable. Since hydrogen ions as such are incapable of any reduction we are inevitably driven to assuming a sort of adsorption complexes of hydrogen ions with the metal and this complex playing the main role of reducing the acid. The extent to which the adsorption complex (which could also be safely called a weak compound with a M-H bond) is active is determined by the number of available metallic atoms and the degree to which the M-H compound will dissociate from the crystal lattice in which the metallic atom is held. As has been made clear earlier, the former depends on the interatomic distance and the latter on the crystal energy. Taken together, since crystal energy is related to the interatomic distance, we have that the extent to which the M-H complex is effective depends on the crystal binding energy.

The subject of alloys of hydrogen with metals has been investigated to a considerable extent by various workers. The hydrogen in the alloys has been observed to act as a strong reducing agent¹², e. g. precipitating mercury from its salts, giving hydrochloric acid from chlorine water etc. The M-H complex can also be supposed to act analogously in the reduction of nitric acid.

Hence in the light of these newer conceptions crystal energy of a metal as also of all the inorganic and organic reducing agents seems to be a more fundamental factor in its interaction with nitric acid than the over-voltage and thus the key to the solution of this problem consists in visualising crystal units as molecules.

The author expresses his thanks to Dr. N. R. Dhar of Allahabad 'Varsity for his kind encouragement of the above piece of work.

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Studies on the Mercuration of Aromatic Compounds¹

I. DERIVATIVES OF FLUORENE

BY V. THIRUVENKATACHARI

PART I

A harmonious blending of inorganic chemistry and organic chemistry is fast coming into vogue because increasing interest is being nowadays shown by scientists in the metallation of organic compounds. The work on mercuration of substances dates back to 1843. Exhaustive details have been brought to light in the chemistry of Arsenic and Antimony compounds, which have been found to have earned fairly good places in the increasing use in medicine. At present the author has taken to study the effect of mercuration on aromatic compounds, especially the compounds of the Fluorene Series.

Hosts of scientists, who have been working with herculean efforts fashion the products to the needs of society. Organo mercury compounds have been extensively envisaged and cleared out by Dimroth and others. Dimroth has been fashioning in his mind to produce the organic mercurials and the later scientists have delved themselves into the world finding out the various uses for them.

In this Thesis, the author has taken to study the various reactions in the aromatic chemistry, halogenation, nitration, bromination and mercuration. As mercuration has now become more or less an aromatic property the author has tried his best to give frames of references into which new observations will best fit to give the most satisfactory pictures of various interpretations from the results got.

Dimroth himself has considered the phenomenon of mercuration similar to that of nitration, sulphonation, bromination, etc., in the sense that the position taken by the entering mercury group in compounds containing groups now considered electro-negative, e. g., amino, hydroxyl groups was quite in agreement with the rule of Crum Brown and Gibson. The exceptional behaviour of nitro benzene, benzoic acid and benzo phenone which have been described later in this thesis, he considers as anomalous reactions.

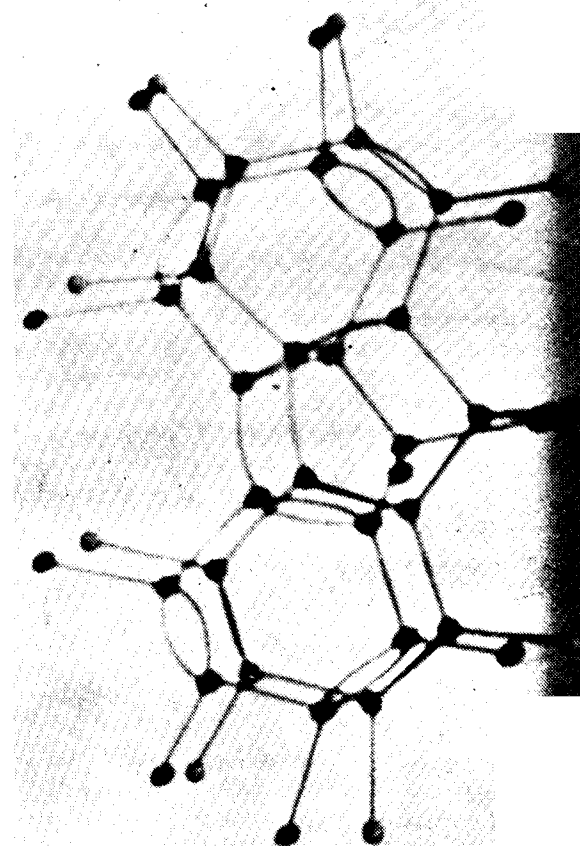
1. Thesis submitted for the M. Sc. degree in October 1948 embodying the results of experimental work carried out in the Annamalai University Chemical Research Laboratories, Annamalai Nagar.

Nature provides no ready source of organo mercuric compounds. It will be quite apparent to the pioneer investigators that only curiosity could have made them indulge in finding out the methods for preparing them and also their behaviour with the utilitarian point of view. For most part of the Chemistry of organo mercury compounds had been thought to be purely a product of laboratory research. Progress in the field has followed closely the improvements in methods of synthesis, and has moved ahead in several well defined surges originating in the development of new methods.

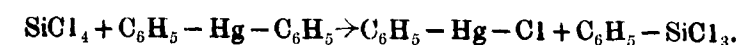
In recent years organo mercury compounds have acquired a new interest owing to their increasing use in medicine, since they have the advantage over inorganic mercury compounds of not precipitating proteins and of not having decomposed to any considerable extent by the metal of surgical instrument. Unfortunately the utility of most of them is limited by their slight solubility in water (1). The limited value of the organic mercurials in utility has not damped the spirits of scientists, who are ardently working in the chemical laboratories. The persistent and persevering work of scientists like Dimroth, Pesci, Kharasch and others has instilled redoubled vigour in the later scientists and by their efforts the Chemistry of organo mercury compounds has attained a fairly big stature.

Many scientists have done elaborately on the mercuration of these aromatic substances, which in certain cases have proved to be of great medicinal value. The upbuilding of a great mass of information and valuable results, new experimental methods and new substances in the field of mercuration will enable industry to select certain bits of knowledge suited to further progress and our everyday welfare. Many scientists have hitherto played a singularly significant part in this field of research, and to realise this, it is only necessary to mention the names of Dimroth, Pesci, Kharasch and others. All these scientists have exercised their influence in Universities or Technical Schools. At present the author of thesis wishes to give a short Monograph of mercuration to show the nature of the reactions taking place and the thermal conditions required for the metallisation of the substance and the properties exhibited by the new organic mercurials. It is inevitable, therefore, in such a work as this, an attempt is made to present some of the great generalizations, which are motivating science. On mercuration lot of hypotheses have been given out. The influx of scientific knowledge has revealed that some of the older ideas are faulty and inadequate. But in this case, more and more facts are being added on. In this work, metallation of the derivatives have been extensively studied. Even as early as 1843, work has been done on the metallation of substances with mercuric chloride.

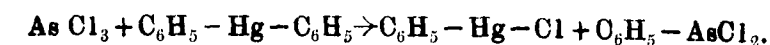
Fluorene Molecule



For the first time in 1843, A. W. Von Hofmann obtained a mercury compound from aniline and mercuric chloride (2). In 1850, Von E. Frankland in his paper "Untersuchungen Uber die Organischen Radicale" has given that ethyl iodide reacted with metallic mercury in sunlight giving gaseous products. Two years later he found a crystalline compound was formed when methyl iodide and mercury were allowed to react in the presence of sunlight (methyl mercuric iodide) (3). The chemists showed much enthusiasm and turned their attention to mercury allyl compounds. In 1854, Strecker made ethyl mercuric iodide by heating ethyl iodide with metallic mercury in diffused light. Many flocked to this field of research and later Buckton made extensive study of other methyl and ethyl mercuric compounds. In 1851, Sobrero and Selmi had given another type of organic compound. By heating mercuric chloride and potassium hydroxide in alcohol they obtained a yellow slightly explosive substance containing mercury and carbon. (Ann. 80, 1851, 108). In 1868, Otto treated bromo naphthalene with sodium amalgam with a view to prepare dinaphthyl but accidentally he got mercury dinaphthyl. (4 and 5). He extended Frankland's reaction to the aromatic series and studied the reaction of the organic mercury compounds in general. In 1871, for the first time Reynolds studied the action of mercuric salts and alkali on acetone. (6). A couple of years later, Cahours made a study of the mercury derivatives of propyl and iso butyl. (7 and 8). When Ladenberg was investigating the reactions of the mercury compounds, he found that mercury diphenyl reacts with Silicon tetrachloride yielding a phenyl silicon compound.

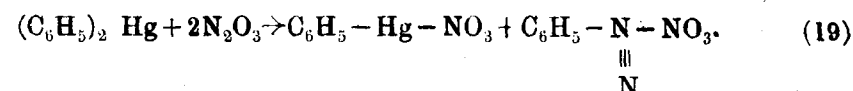


Ethyl acetoacetate was found by Oppenheim to give a mercury derivative (9). About the same year Michaelis found that the following two reactions were proceeding when arsenious chloride was allowed to react with mercury diphenyl. (10).

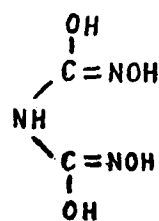


Mercury derivatives of Aniline and its substitution products were published by Pesci in the year 1892. (11 to 14). He misinterpreted the structures of those mercury compounds and reactions. Though he made wrong interpretations of the structures, yet his work was considered very valuable in the light that he paved the way for the brilliant work in the field of Chemistry of Organic Mercury Compounds. About the same year, Pesci and Volhard independently made discovery that hydrogen in the

ring compounds could be displaced by mercury. Regarding the mercuration of thiophene, Volhard (15) showed that by shaking thiophene with aqueous mercuric chloride either one or two of the hydrogens in the thiophene nucleus could be replaced by HgCl and that mono chloro mercuric compound $C_4H_3S \cdot HgCl$ was soluble in hot alcohol and dichloro mercury compound $C_4H_2S (HgCl)_2$ was an insoluble powder. By shaking thiophene with saturated mercuric acetate solution, later workers obtained derivatives of varying composition. (16 and 17). Paolini suggested that the substance got by the above method which was considered by Dimroth as $C_4H_2S (HgOH) (HgOCOCH_3)$ had the composition $C_4H_4S (HgOCOCH_3)_4$. (18). Desesquelle who was preparing mercury compounds of phenols and naphthols was of the view that in all the cases the mercury was linked to the oxygen atom. Later on it was suggested that the mercury is attached to carbon and not oxygen. To his great surprise, in 1897, Bamberger found that when mercury diphenyl was allowed to react with nitrous anhydride, benzene diazonium nitrate was formed. This was later on considered as one of the reactions of organo mercury compounds.

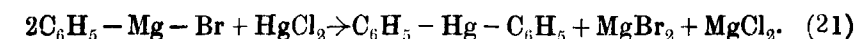


When he subjected mercury dimethyl with the idea of getting an aliphatic diazonium compound he obtained a imido di Hydroxamic acid, instead of the diazonium compound.

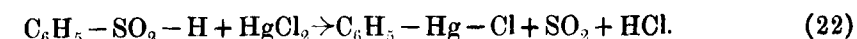


In the year 1898, Dimroth had published that mercuration of aromatic compounds could be considered as analogous to nitration or sulfonation. Dimroth can be considered to be the father of the chemistry of organic mercury compounds as he had done extensive work paving the way for the scientists who followed to contribute their mite in this field. He gave out a well-crystallised account of the work and interpretations of reactions about the various organo mercury compounds. Balbiano and Paolini, in the year 1902, found accidentally that mercury compounds with allyl compounds of phenol ethers were got when they were using mercuric acetate as an oxidising agent. (20). By the use of the Grignard reagent,

Feiffer and Truskier obtained mercury derivatives. They got mercury phenyl by the use of phenyl magnesium bromide with mercuric chloride.

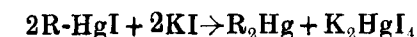


The very next year Peters found out a new method for the reduction of mercury compound. He treated Sulphinic acid with mercuric chloride.

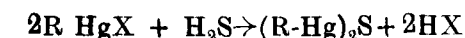


Schoeller and Schrauth published an elaborate account of the organo mercury compounds. Many others like Biilmann, Kraus, Kharasch, Piccard, Manchot and others have contributed a good deal to the chemistry of organo mercury compounds. (23 to 30)

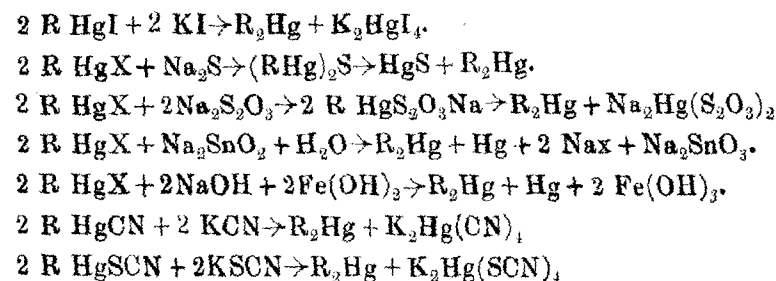
There is an entire disagreement in the behaviour between organic compounds of mercury and of other metals. The linkage between carbon-mercury is more stable than any other metal. Another very interesting point is that these entirely differ from Grignard reagents. For instance ethyl mercuric iodide $CH_3 - Hg - I$ resembles Grignard reagent CH_3MgI (methyl magnesium iodide) but the mercury compound is not so sensitive to active hydrogen compounds such as water, amines and alcohols. In most of the cases, it is found that mercury in the mercury compounds does not act as ionised mercury. Potassium iodide does not form mercuric iodide except in very few cases, in which it reacts with an organic mercuric iodide forming a mercury compound having both bonds attached to carbon. The other product is the inorganic compound.



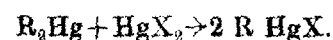
As mercuric sulphide is extremely insoluble, action of sulphides is the most sensitive indicator. Mercury attached to carbon gives no mercuric sulphide when treated with Hydrogen sulphide or Ammonium sulphide. While testing for mercury by treating the compound with Hydrogen sulphide or sulphides of metals, if the mercuric sulphide is not immediately formed, it shows that an organic mercuric sulphide is formed when, either on standing or on heating, loses mercuric sulphide, leaving behind an organic mercury compound, having both bonds of mercury attached to carbon. The following equations illustrate the same.



The production of compounds of the type R_2Hg from $RHgX$ is an important general reaction in the Chemistry of mercury compounds. This can be brought about by Sodium thiosulphate, Sodium stannite and other alkaline reducing agents, such as Potassium cyanide, Potassium sulphocyanate and various metals such as Sodium and Copper and also Aluminium. The equation representing the processes are summarised below:—



It is obvious from the above equation that one half of the mercury appears as inorganic mercury and the other half remains in the compound R_2Hg . The reverse of the above change is also an important reaction.



All the organic mercury compounds react with ease with halogens giving products in which the halogen occupies the position in which originally the mercury group was present. The compound of the type R_2Hg react in two different ways which depends upon the amount of halogen used. If only one molecule of the halogen is used, the products are $R-X$ and $R-Hg-X$. If an excess of the halogen is used the organo mercuric halide reacts further giving another molecule of $R-X$ and a molecule of mercuric halide. This has been made use of for the fixing up of the structure of the organic mercury compound by converting them to the known halogen compounds.

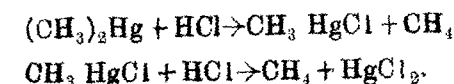
The author of the thesis has briefly discussed the various known reactions of the organic mercury compounds.

The reactions of organic mercury compounds can be described under the following heads:—

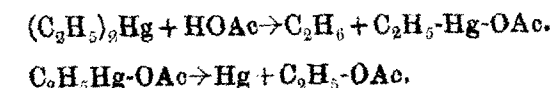
I. REACTION WITH ACIDS.

To dilute acids, the carbon mercury linkage is fairly stable. In the compounds where both the valencies of mercury are attached to carbon

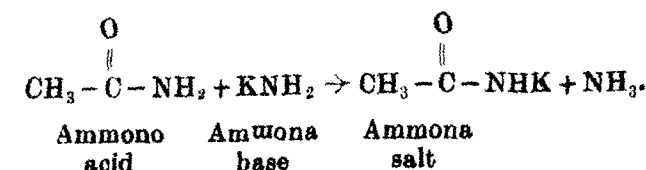
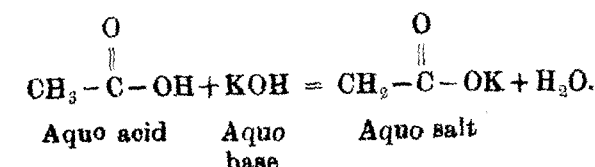
splitting up of the carbon mercury linkage by acids takes place more readily than in the compounds in which only one bond of mercury is attached to carbon.



It has been found that the substances having the mercury alpha to a ketone group invariably lose the mercury on treatment with cold 25 normal Hydrochloric acid. Whitmore has pointed out that mercury di ethyl heated in a sealed tube with glacial acetic acid at 190° gives an amount of ethane, corresponding to one ethyl group. The reaction takes place as indicated below.



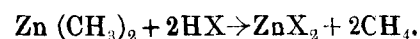
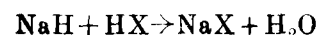
The second step is a thermal decomposition, which involves intramolecular oxidation and reduction. This suggests that at the moment of decomposition mercury in the ethyl mercury acetate has no two positive charges, but has one positive charge and one negative charge, i. e., $+Hg-$. There is every likelihood that such a molecule will lose the mercury leaving the ethyl and acetate groups to combine with each other. A brief account of the reaction of acids and bases has been given. The union of positive hydrogen ions with negative hydroxyl ions is fundamental to all processes of neutralization involving the interaction of aquo bases with aquo acids. The interesting investigations of Franklin (31) Kraus and others have given different classes of bases and acids which have been called Ammono bases and Ammono acids.



Basic salts of the Ammono type.



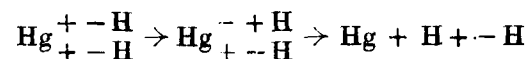
It has been shown that the property of neutralizing acids, that is, of suppressing hydrogen ion, is not restricted to aquo bases and ammono bases. Any compound MX, composed of cation M and an anion X may function as a base in this particular sense. The hydrides of metals, such as sodium hydride, NaH, Calcium hydride CaH₂ and others, as well as metal organic compounds such as zinc alkyls, aluminium alkyls, react with acids suppressing hydrogen ions.



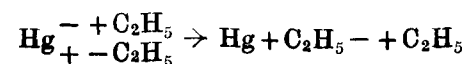
L. W. Jones and Louis werner (32) have pointed out the hydrides of this character may be designated hydrogen bases and metal organic compounds may be called hydro-carbo bases.

The cause for the difficulty in getting an hydride of mercury may be attributed to the tendency of negative hydrogen to lose negative electrons, while at the same time, the cations of these metals, readily acquire negative electrons and pass into the state of free metal. If a mercury hydride of the type $\text{H}^- + \text{Hg}^+ - \text{H}$ could be prepared, it would be expected that an exchange of two negative electrons between hydrogen and mercury would result in the formation of an electromer,—

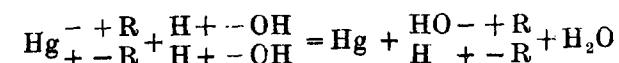
$\text{H}^- + \text{Hg}^+ - \text{H}$, which, in turn, would dissociate to give free mercury and a molecule of hydrogen $\text{H}^- + \text{H}$.



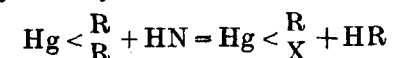
Although mercury hydride has never been isolated, many dialkyl and diaryl derivatives of mercury are known and are comparatively stable substances. But it has been shown that mercury di-ethyl dissociates at about 200° to give metallic mercury and butane. In this case also, the dissociation, considered electronically, implies that one of the alkyl groups functions negatively, while the other group functions positively.



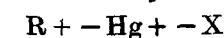
If both the radicals could be eliminated by hydrolysis, the products should be metallic mercury, an alcohol and an hydrocarbon.



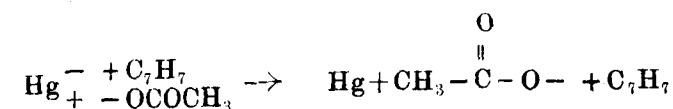
When mercury dialkyls are treated with acids like acetic acid, hydrochloric acid, sulphuric acid, one of the alkyl groups is eliminated quite readily as a hydrocarbon.



Even oxidation with potassium permanganate removes only one radical and produces compounds of the type R-Hg-OH. Halogen salts react with moist silver oxide to give compounds R-Hg-OH which are more pronounced bases, far more active than mercuric hydroxide. By analogy alkyl groups in these mercury salts may be assumed to function positively.



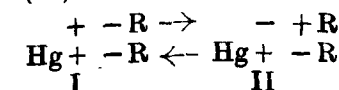
Mercury dibenzyl (34), mercury diethyl, mercury di isoamyl when heated with glacial acetic acid at temperatures near 200° gave almost quantitative yields of metallic mercury. Mercury dibenzyl gave metallic mercury, toluene and benzyl acetate with considerable dibenzyl. When mercury benzyl acetate was heated with acetic acid gave no toluene and no dibenzyl; metallic mercury and benzyl acetate were the exclusive products.



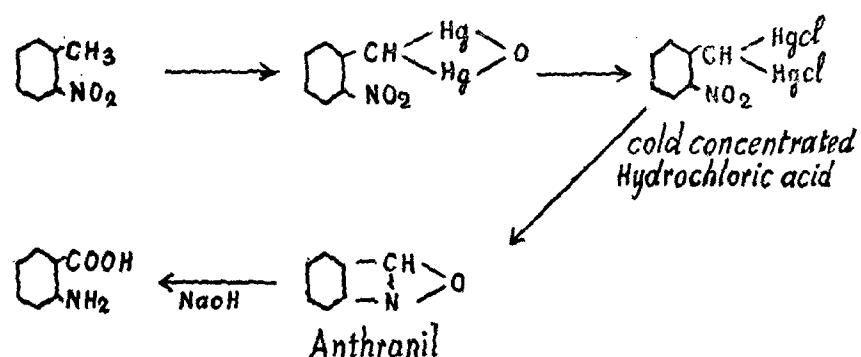
But Schorlemmer has given out that (35) when mercury dialkyls are decomposed by concentrated mineral acids, the products are a mercury salt and a hydro-carbon. Mercuric dibenzyl with concentrated hydrochloric acid gave mercuric chloride and toluene.



"If the polarity of atoms or groups in molecules depends solely on the relative positions of valence electrons, it is conceivable that the relative positions of these electrons may be changing. Electromers may exhibit the phenomenon of tautomerism." Mercury dialkyls suggest the existence of tautomeric electromers. (36).



Mercury bis-diphenyl ($C_6H_5-C_6H_5$)₂ Hg does not get affected even when treated with concentrated hydrochloric acids. Whereas the phenol and naphthol mercuric salts are sensitive to dilute mineral acids. A study of the effects of the halogen acids and oxygen acids gives an interesting account as to how varied changes take place. The conversion of Ortho nitro toluene to anthranilic acid provides a standing example for the intra-molecular oxidation and reduction.

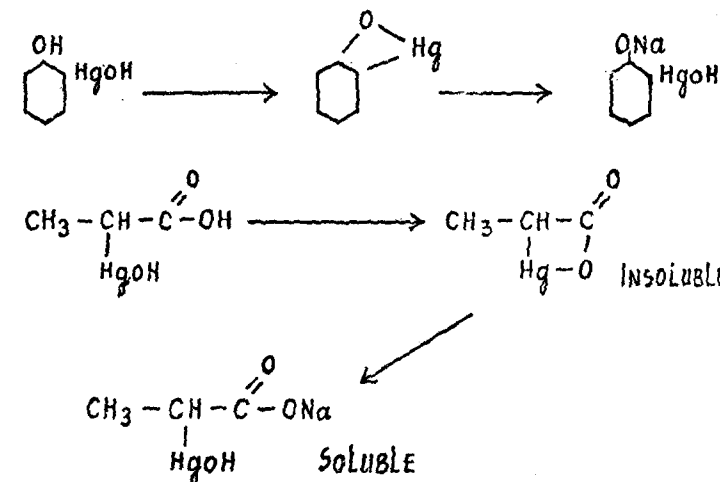


But 10 to 20% sulphuric acid gives with it stable sulphates containing the group $-CH < \begin{smallmatrix} Hg \\ Hg \end{smallmatrix} > SO_4$. Whereas the Halogen acids remove the mercury entirely. (37)

II. REACTION WITH BASES

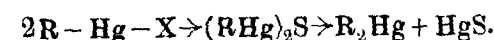
Generally bases do not break the carbon mercury linkage. Many organic compounds can be precipitated out by careful treatment with acid or by cooling. Mercurated anilines are soluble in Ammonium hydroxide and can be recovered by treatment with acetic acid. It has been considered that the solubility is due to the formation of a compound between ammonia and the mercurated compound. The compounds which have both the bonds attached to carbon are usually not soluble in bases. As for example $O(CH_2-CH_2-HgBr)_2$ is readily soluble in bases, whereas the corresponding $O < \begin{smallmatrix} CH_2-CH_2 \\ CH_2-CH_2 \end{smallmatrix} > Hg$ is entirely insoluble in Sodium hydroxide.

Mercury compounds containing a free phenol or carboxyl groups are soluble in bases. Many mercury compounds of phenols and carboxylic acids form anhydrides or inner salts, which are insoluble in water.

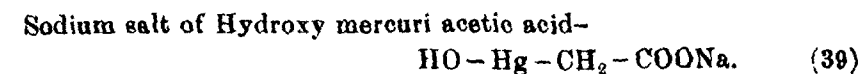
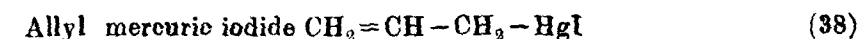


III. REACTION WITH SULPHIDES.

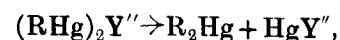
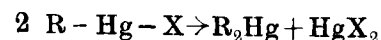
If mercuric sulphide is not formed on treatment of the compound with the solutions of sulphides, or hydrogen sulphide first organic mercury sulphide is formed, which easily decomposes giving the mercuric sulphide.



If the mercury group is in the alpha position to groups like carbonyl or phenyl which render the alpha halogen atom unusually reactive, mercuric sulphide is immediately formed. The compounds which immediately react with sulphides are the following.

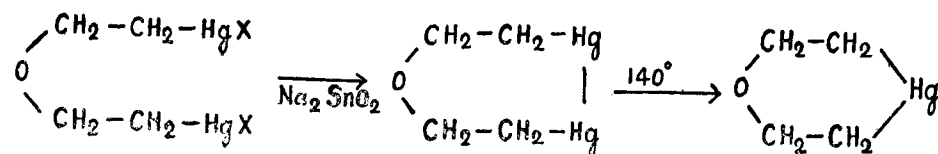


The aromatic mercury compounds with the exception of mercurated phenols are more stable to sulphides than the aliphatic compounds.

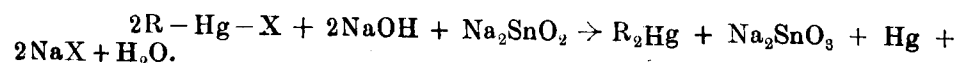
IV. CHANGE OF COMPOUND OF THE TYPE $R-Hg-X$ TO $R-Hg-R$.

Where X and Y are univalent and bivalent acid radicals. This change is brought about by the addition of Sodium thiosulphate solution. The conversion of organo mercuri thio sulphate to R_2Hg is hastened by the use of excess of concentrated solution of Sodium thio sulphate, when Sodium mercury thio sulphate is formed. $Na_2Hg(S_2O_3)_2$. This method is the most general one. The reaction is more facilitated if the substances dissolve in concentrated solution. The intermediate compound that is formed is $R-Hg-SO_3-Na$. The reactions of the sulphides and the Sodium stannite have been discussed later on in this thesis.

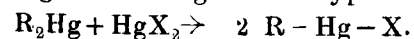
In the case of the reduction to R_2Hg with Sodium Stannite, it is found that a intermediate mercurous compound is formed of the type $R-Hg-Hg-R$. It then decomposes to metallic mercury and $R-Hg-R$.



The general reaction representing the conversion can be given as follows:—

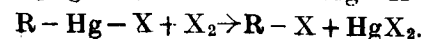
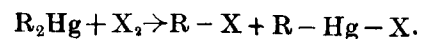
V. Reaction between organic mercury compounds of the type R_2Hg and mercuric salts.

The general change of this type can be represented as follows:—



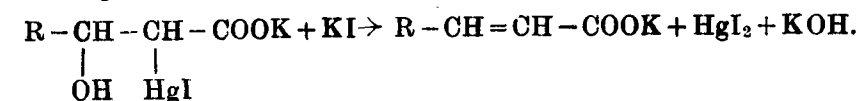
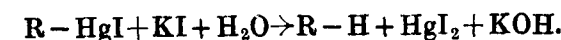
VI. Reaction with Halogens.

The compounds of the type R_2Hg react with halogens giving compounds of the type $R-Hg-X$, which reacts with more halogen giving organic halide and mercuric halide.



VII. Reaction with halides and cyanides of metals.

The carbon-mercury linkage can be easily broken by the halides. The two types of compounds are mercuration products obtained by simple substitution and mercuration products obtained by the addition of the groups $-HgX$ and $-OH$ to an unsaturated acid.



In both cases it is found that only one molecule of the base is given for each carbon mercury linkage. In the splitting of the carbon mercury linkage the greatest amount is in the case of inorganic iodides, bromides are very little and chlorides are not at all acting. The formation of R_2Hg from $R-HgX$ depends on the removal of HgX_2 by the formation of a complex and it has been found out that the iodine complex is by far the most stable and the chloride complex the least stable.



Here half the mercury appears in an inorganic form which will give a precipitate with Hydrogen sulphide.

VIII. Reaction with Halides of non-metals.

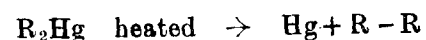
Boron trichloride reacts giving mercuric halides and compounds of the type $R-BCl_2$. Phosphorus trichloride reacts with mercury dimethyl forming methyl mercuric chloride. (41). In general aromatic mercury compounds react with phosphorus trichloride at a high temperature giving $R-PCl_2$. Arsenic trichloride also forms the compounds of the type $R-AsCl_2$ and R_2AsCl . (42 and 43).

IX. Reaction with acid Halides.

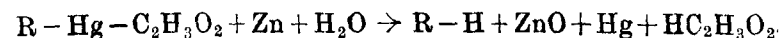
Obviously it will be expected that organic mercury halides react with acid halides forming mercuric halides and ketones. This is not so with most of the organic mercury compounds. Alpha mono mercurated thio-phenes are the only ones which give ketones with acid chlorides. They react with acetyl chloride and benzoyl chloride forming acet-thionone and thiosphene phenyl ketone. (44 and 45).

X. Reaction with Metals.

Mercury dialkyls and diaryls react with many metals on heating giving organic compounds of these metals. In some cases the metal does not enter the reaction and the only change is thermal decomposition of the mercury compound giving metallic mercury and a hydro-carbon according to the equation.



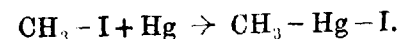
The metals which behave in this way are copper, silver, gold and iron. Beryllium, zinc, magnesium, cadmium and bismuth also react with organic mercurials. Aluminium reacts with dimethyl, diethyl giving the corresponding trialkyls. (46). If an organic mercury compound of the type $R-Hg-C_2H_5O_2$ is heated with zinc dust the products could be represented by the following equation.



The modes of preparing the organo mercuric compounds can be well explained under the following heads:—

I. Production of Organo mercuric compounds with metallic mercury and alkyl halides.

Methyl iodide reacts in sunlight with metallic mercury giving a crystalline mass of methyl mercuric iodide.



Similar process holds good in the case of ethyl mercuric iodide but the reaction should be carried out in diffused sunlight as direct sun light decomposes ethyl mercuric iodide. This method of obtaining organo mercury compounds of higher alkyl halides has not been cleared of all discrepancies. This method is not in vogue at present. In this method only one of the bonds of the mercury is attached to carbon.

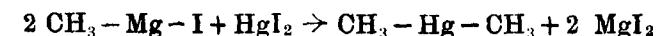
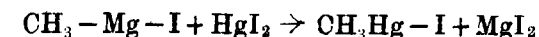
II. Production of Organo mercuric compounds with sodium amalgam and Organic Iodides and Bromides.

Unlike as in the other case in this process both bonds of mercury are attached to the carbon atom. The evidence resulting from the practical experimental data shows that the alkyl halide reacts with Sodium amalgam only in the presence of an ester like methyl acetate. At the end of the reaction, as the ester is recovered unchanged, it is quite evident that it

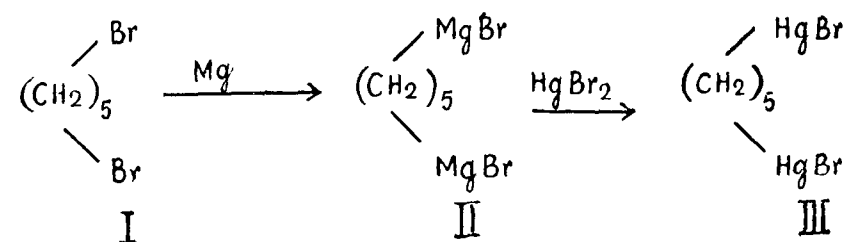
acts as a catalyst and how it functions during the reaction has not been distinctly explained yet. Very dilute Sodium amalgam reacts with much readiness with compounds of the aliphatic series. Better results are obtained with bromides or iodides or methyl, ethyl, n-propyl, isobutyl, isoamyl and octyl. Ethylene dibromide and trimethylene dibromide react without giving an organic mercury compound, but tetramethylene di-iodide and penta methylene dibromide or di-iodide react vigorously with dilute Sodium amalgam giving heterocyclic ring compounds containing mercury. Hydrogen iodide reacts very vigorously with Sodium amalgam in the presence of ethyl acetate but no mercury hydride is got. (Whitmore, Organic Compounds of Mercury, page 28). It has been felt that unusually active halide does not give a mercury compound with Sodium amalgam. Alpha halogen ester, benzyl halides and phenacyl halides $C_6H_5-CO-CH_2X$ are cited as examples.

III. Production of organo mercury compounds with Mercuric halide and Grignard Reagent.

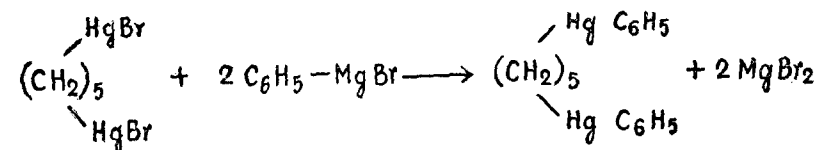
This method is not a popular one and is rarely used in the aliphatic series. The reaction between the Grignard reagent and the mercury halide depends on the thermal changes. The reaction depends also upon the amount of the reagents used. The two stages that promote this change can be represented as follows:—



The use of an excess of Grignard reagent $R'-Mg-X$ on an organic mercuric halide $R-Hg-X$ does not always produce the desired "mixed" organo mercury compound $R-Hg-R'$. But a mixture of R_2Hg and R'_2Hg is got. Grignard reagent obtained from penta-methylene dibromide reacts with mercuric bromide giving penta-methylene di-mercuric bromide III.



The penta-methylene dimercuric bromide reacts with another molecule of Grignard reagent (Phenyl magnesium bromide) on heating, yielding a complex compound.

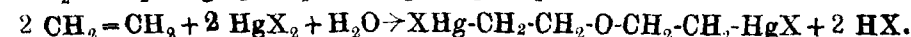
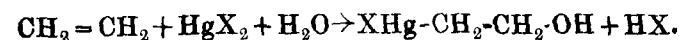


IV. Production of organo mercuric compound with the use of Mercuric oxide.

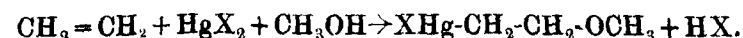
This method has been greatly used for the purpose of getting organo mercuric compounds. Acetoacetic ester and malonic ester react with mercuric oxide giving compounds having mercury substituted for hydrogen of the methylene group. But on hydrolysis it does not give the expected mercury bis-acetic acid, but gives a salt of hydroxy mercuric acetic acid. $\text{HO-Hg-CH}_2\text{-COOH}$.

V. Production of organo mercuric compounds by the use of mercuric salts in aqueous or alcoholic solution.

Usually this method is employed for preparing organic mercuric compounds with unsaturated compounds. Whenever a double-bond compound of the aliphatic series is mercurated by this method, the double-bond gets broken up and groups HgX and OH get added to the compound if the medium of mercuration is water; or groups HgX , OCH_3 get added to the compound if methyl alcohol is used as the medium for mercuration. This way of explaining the reaction is not free from doubtful criticism. For instance, ethylene reacts with aqueous mercuric salts under suitable experimental conditions giving mercurated ethyl alcohol and dimercurated di-ethyl ether. The reaction can be expressed as follows:—

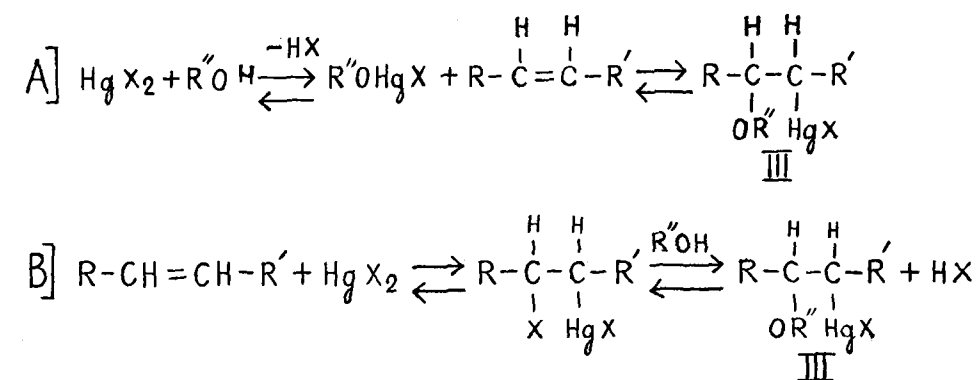


Methyl alcohol solutions of mercuric salts absorb ethylene much more rapidly than the aqueous solutions.



When an unsaturated compound is treated with mercuric acetate in alcohol solution, the elements of methoxy mercuric acetate combine with

the ethylene. The nature of the product has been the subject of controversy for some years and the evidence has been well summarised by Adams, Roman and Sperry. (47). These authors as well as others (48 and 49) have rejected Manchot's hypothesis (50) that such mercurials are molecular compounds of the type RCH=CHR' R''OHgX (I) and they have preferred the second of two mechanisms of formation which designate the reaction as ordinary addition to a double bond. More recent work has substantiated that the structure of the mercurials as III rather than I.



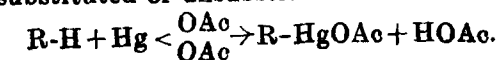
The above are the two mechanisms that have been given and substantiated by results. (51).

VI. Production of organo mercuric compounds from halogenated Acetylenes and Ethylenes.

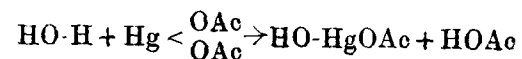
Halogenated ethylenes and acetylenes which have only one hydrogen atom left react with alkaline solution of mercuric cyanide giving compounds in which both the bonds of mercury are attached to carbon. Monochloro acetylene gives mercury bis monochloro acetylene. $\text{Hg (C}\equiv\text{C-Cl)}_2$. A clear knowledge of the chemistry of these compounds is very limited.

VII. Production of organo mercuric compounds from the aromatic series.

The most desirable reagent which has been employed for mercuration of compounds in the aromatic series is mercuric acetate. It is a substitution reaction. In R-H , the H can be easily substituted by an acetoxy mercury group, when R-H is allowed to react with mercuric acetate. (R stands for either substituted or unsubstituted aromatic residue).



This resembles to a certain extent hydrolysis which can be presented as follows :—



It has been found that mercuric salts which do not hydrolyse do not mercurate substances. As the mercuric salts of all the oxygen acids are considerably hydrolysed they must be expected to react like mercuric acetate. Of all the salts the mercuric acetate is the best for mercuration. The groups which render bromination easy exert similar influence on mercuration. Mercuration with mercuric acetate can be brought about by the following methods :—

(a) By fusing the substance with mercuric acetate and finally isolating mercuric compound.

(b) By refluxing the compound with mercuric acetate in methyl or ethyl alcohol for several hours.

(c) By refluxing the substance with mercuric acetate in glacial acetic acid for several hours.

(d) By treating the substance with mercuric acetate or mercuric oxide in a solvent under pressure.

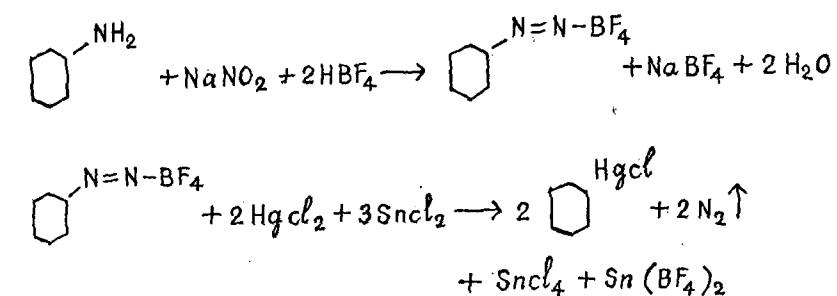
Dimroth (52) has shown that besides the acetate of mercury, the mercuric salts as the sulphate and the nitrate which are hydrolysed by water are capable of acting on aromatic compounds, but mercuric chloride has been found to have very little action, if any, on aromatic compounds.

VIII. Production of organo mercuric compounds by the use of diazonium salts.

Of the various methods employed for the production of aromatic mercury compounds, only two have been made use of for the diazonium salts. McClure and Lowy (53) noticed that on reducing electrolytically a diazonium solution using mercury electrodes, a small amount of mercurial was formed. They were also successful in preparing the corresponding mercury derivatives by stirring the diazonium solution with finely divided mercury produced mechanically. Nes me Janow (54) has succeeded in preparing the mercury derivatives of nuclei containing no group or groups such as alkyl, halogen, hydroxyl etc., by treating the diazonium chloride-mercuric chloride double salt with precipitated copper powder.

Using more stable diazonium compounds such as the diazonium boro fluorides of Balz and Schiemann (55) and by producing very finely divided

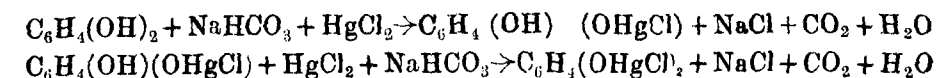
mercury by reduction with stannous chloride directly in the reaction mixture, it was found that some aromatic mercurials could be prepared in better yields. The replacement of the diazonium group with mercury was carried out at room temperature. The probable equations are illustrated by the following :—



IX. Production of organo mercuric salts with mercuric chloride and Sodium bicarbonate.

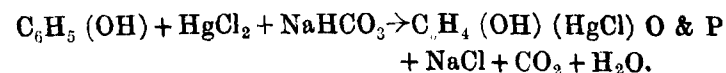
P. Neogi and Manas Prasum Chatterji (56) have shown that mercury derivatives of aromatic compounds can be prepared mostly in the cold by the action of mercuric chloride along with sodium bi-carbonate on these compounds. Neogi and Neogi (57) have recently shown that amongst other substances Glycerol has the property of largely increasing the period of induction in the inter-action of mercuric chloride and Sodium bicarbonate. The above-mentioned authors (P. Neogi and M. P. Chatterji) have prepared organic mercury compounds of aromatic phenols, phenol ethers and amines by adding the organic compound to the mixture of Sodium bicarbonate and mercuric chloride in the presence of Glycerol. The organic compound introduced in the mixture combines with the reactants and forms new compounds. The organic substance and mercuric chloride solution are mixed up together, glycerol is then added followed by the Sodium bicarbonate solution.

The reactions that take place in the case of phenols and phenol ethers are represented by the following equations :—

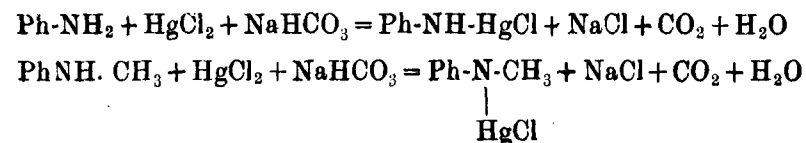


In the case of catechol, quinol, resorcinol, phloroglucinol, guaiacol and orcinol mono and di-oxy and dimercury chlorides of the phenols and phenol ethers are formed as the case may be. In the case of phenol,

however, ortho and para hydroxy phenylene mercury chlorides are formed according to the equation :—



So far as amines are concerned it is to be remembered, that mercuric chloride gives crystalline additive compounds of the type $(\text{C}_6\text{H}_5\text{-NH}_2)_2\text{HgCl}_2$ (58). In the case of primary and secondary aromatic amines, the following equations represent the reaction that takes place.



X. Production of organo mercuric compounds with mercuric nitrate.

This method is similar to mercuration with mercuric acetate and further this is used as an intermediary stage for the production of nitro-phenols. (59).

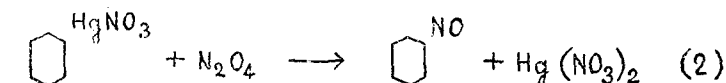
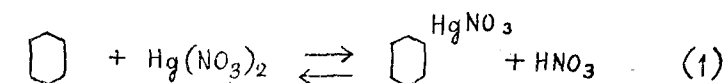
XI. Production of organic mercury compounds with the use of mercury acetamide. (191).

At present mercuric acetamide has been considered to be an effective mercurating agent. It had been studied that mercuric oxide readily dissolved in a aqueous solution of acetamide and the liquid deposited a colourless crystalline compound on evaporation. This observation was made by strecker (192). Since the time of its discovery, mercury acetamide has received attention from Tafel and Enoch (193) and from Seliwanoff (194). In this Thesis, the author has given details of experiments, in which mercuric acetate has been used as the mercurating agent.

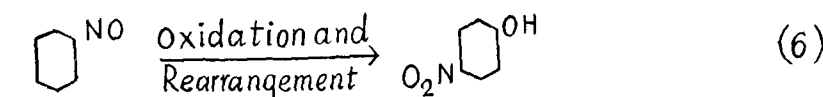
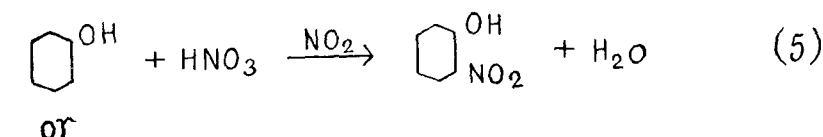
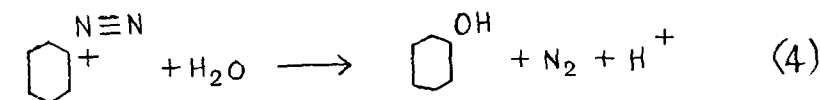
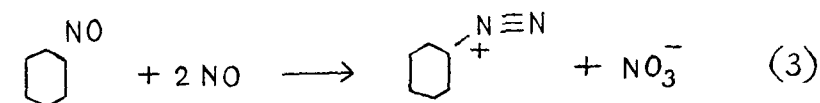
The metallation of substances especially mercuration was used, if not mainly for producing many new organic substances for the production of certain compounds which could not normally be prepared. Beta Bromo Naphthalene was not available till 1876. (60). So Alpha Mercury di naphthyl was first obtained by Otto and Mories in 1888. (61) while endeavouring to synthesise dinaphthyl as Fittig had synthesised diphenyl by the action of Sodium on bromo naphthalene. F. D. Chattaway had investigated in the preparation of beta mercury di naphthyl and beta beta dinaphthyl. (62).

Recently mercuration has been used as a means for the production of nitro-phenols from benzene and other hydro carbons. During the World War II, the National Defence Research Committee initiated the "Oxynitration" process, which increased the over all yield to 85%. F. H. Westhemier Edward Segel and Richard Schramm (63) have explained the mechanism, of the oxynitration of benzene with the mercuric nitrate.

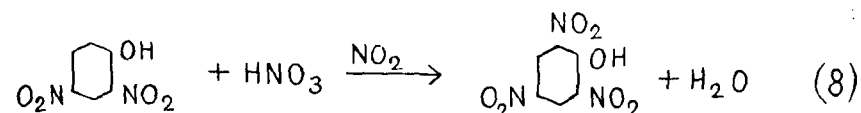
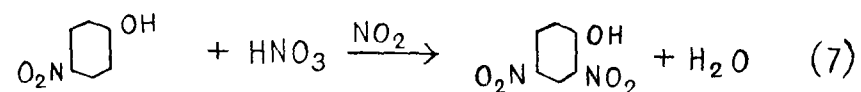
Oxynitration is a process by means of which aromatic hydrocarbons, particularly, benzene can be oxidised and nitrated to nitro phenols in a simple operation. The oxy-nitrating agent consists of a solution of mercuric nitrate in aqueous nitric acid. The various stages by which nitro phenol is got from benzene by this by the above authors are given below :—



The nitroso benzene formed in reaction (2) can then react in either of two ways.



The mono nitro phenol formed either by reaction (5) or by reaction (6) is then further nitrated. (The particular isomers have been chosen only for illustration).



Many mechanisms have been postulated. The intermediates suggested include phenyl mercuric nitrate, diphenyl mercury, (64), tetra nitro diphenyl mercury etc., etc. Prior to this investigation Carmack and his co-workers have shown that mercuration with mercuric nitrate in the presence of ordinary dilute nitric acid gives a small yield of phenyl mercuric nitrate. (65)

The linkage of mercury to carbon is capable of much greater stability than that of any other metal. Mercury compounds of the type of methyl mercuric iodide CH_3HgI resemble the Grignard reagent CH_3MgI in formula only. They differ from the magnesium compounds in not being sensitive to active hydrogen compounds such as water, amines and alcohols. It is true that they are attacked by acids giving the corresponding hydrated halogen acids. The mercury in most organic compounds shows none of the reactions of the ionised mercury.

The change from the organic mercury compound of the type $\text{R}-\text{Hg}-\text{X}$ to the organic compounds R_2Hg is one of the most important general reactions of these substances. Besides the inorganic iodides and sulphides, Sodium thio-sulphate, Sodium Stannite and various alkaline reducing agents, Potassium cyanide, Potassium sulphocyanide and various metals such as copper and sodium, bring about the above-mentioned change. As organic mercury compounds react readily with halogens, many halogen compounds could be got from them, in which the position originally occupied by mercury will be occupied by the halogen. Bromo derivatives could be got wherever bromo compounds are not got easily by the bromination of substances. Mercuration has been highly useful for getting bis compounds, metallic bis compounds, mercury halogeno compounds and halogen compounds. In the mercurated compound in which there is the acetoxy mercury group, the mercury group can be replaced by

a nitro group or by a halogen group and it has been assured that the group thus introduced occupies the same position in the molecule as the mercury it replaces. As such this is also used for the production of nitro compounds in the aromatic series.

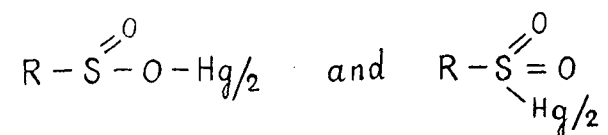
Till the twenties of the 20th century, no theory satisfactorily and completely explained all the existing facts about substitution. The Crum Brown and Gibson's rule of substitution is merely an empirical generalisation which cannot rigidly be applied for a correct interpretation of things and does not suggest the mechanism of reaction. In the past years many theories have been brought forward to explain the orientation in the Benzene nucleus from an electronic point of view. Deserving consideration was attracted by the structural formulae of benzene proposed by Fry (66) and by Vorlander (67). In 1920, Morris S. Kharasch and Lyman Chalkley Jr., took interest in the study of the mercurisation of aromatic compounds and its relation to the various theories that were advanced of substitution in the benzene nucleus.

If the group which supposedly enters the benzene nucleus as a positive group, but upon hydrolysis, is removed as a negative group, e. g., in the case of Tetra nitro phenol (1-OH, 2, 3, 4, 6 NO_2) where the nitro group is in the meta position to the hydroxyl group is removed as potassium nitrite upon boiling the compound with potassium hydroxide solution, it can be assumed that intra-molecular oxidation and reduction has taken place. As this is supposed to be the case whenever a positive group enters ortho or para to a positive group already present in the nucleus, it is desirable to study this postulate, which according to Fry is a very strong point in favour of his theory. A singularly significant fact was revealed by Dimroth (68) that if nitro benzene is mercurated, the mercury enters a position *ortho* to the nitro group. It has been pointed out in Morris S. Kharasch and Lyman Chalkley Jr.'s papers (69) that no organic mercury derivatives have ever been prepared by direct mercurisation of a mono-substituted aromatic compound in which the mercury occupies a position meta to a positive group; whereas mercurisation of mono-substituted compound containing a negative group is not presenting any difficulty, the reaction taking place relatively easily and at a convenient temperature. The position occupied by the mercury is quite in conformity with the Crum Brown and Gibson's rule of substitution and the theories of the electronic structure of benzene on it.

To study the effect of one group upon the entrance of another, Kharasch and L. Chalkley (70) have taken the salt of an element which can be positive under all circumstances. For that they have selected mercury. If there should be intramolecular oxidation and reduction between the mercury and the carbon, the former is immediately thrown

out as metallic mercury. This serves as a point for interpreting the results.

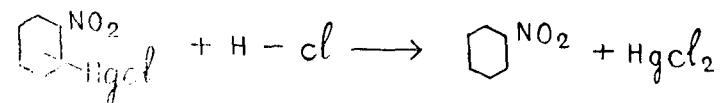
Dimroth (71) in mercurising nitro benzene and upon heating mercury benzoate obtained ortho substituted mercury compounds. He isolated the ortho bromo nitro benzene and ortho bromo benzoic acid respectively by treatment of these compounds with a water solution of potassium per bromide. As this method of fixing up the constitution was doubted much, Kharasch and Chalkely made profitable use of the results recorded by Walter Peters (72) that upon heating a 50% alcoholic solution of benzene sulfinic acid with mercuric chloride, phenyl mercuric chloride was obtained. Similarly para tolyl sulfinic acid, when treated with the same reagent gave para tolyl mercury chloride. Peters, however interested only in the isolation of the structural isomers of the metal and the sulphinic acid



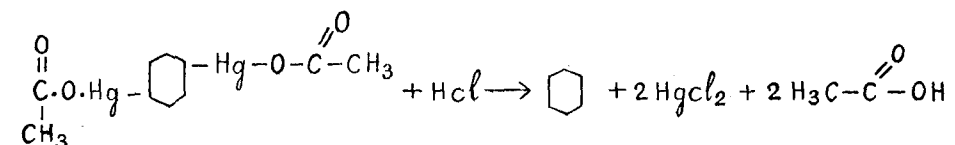
did not realise the full significance of his accidental discovery, since he did not try to find out whether the method was applicable to the meta derivatives as well as to the para. This was found to apply also to ortho and meta derivatives and the three nitro benzene mercury compounds have been prepared by Kharasch and Chalkley by it from the nitro benzene sulfinic acid.

The ortho nitro benzene mercuric chloride prepared by this method was found to correspond with the compound prepared by Dimroth by mercurising nitro benzene. When treated with Potassiumperbromide it gave ortho bromo nitro benzene. When para and meta nitro benzene mercuric chlorides were treated with potassium per bromide they yielded para bromo nitro benzene and meta bromo nitro benzene respectively.

If the 3 nitro benzene mercury compounds are treated with hydrochloric acid, the mercury is replaced by hydrogen.



The above reaction indicates that mercury remains positive when attached to the carbon atom of the nucleus. It has been pointed out that benzene and mercuric acetate when treated at 115° give para phenylene di mercury acetate and that both mercury atoms can be removed from the nucleus by hydrochloric acid. (73)



Similarly picric acid has also been mercurised (74). The authors have taken to prove the limitation to Fry's reaction with above data and also have shown that mercury group is oriented by nitro group to the ortho position and one mercury group orients the other mercury group to the para position.

The mercuration of nitro benzene (75), toluene (76) and ortho nitro toluene (77) have clearly shown that these reactions do not follow the usual laws of substitution. (78). The study of this type of substitution has now been extended to para and meta nitro toluenes. A third substituent enters the para nitro toluene as a rule exclusively in position 2, but the mercuration is "abnormal" in that a large quantity of the compound substituted in the 3 position is formed; in fact this may constitute as much as 80% of the mono substitution products isolated. Therefore as with toluene and ortho nitro toluene the mercuration of para nitro toluene appears to depend mainly on the nature of the entering group. Owing to the antagonistic orienting powers of the methyl and the nitro group in meta nitro toluene, substituents may enter the nucleus in positions 2, 4, 5 and 6. Reissert (79) has obtained derivatives of para nitro toluene mercurated in the side chain. The properties of the 2 and 3 acetoxy mercury 4 nitro toluenes obtained on mercuration were determined by converting the products through the chloro mercury para nitro toluenes into a mixture of 2 and 3 mono nitro toluenes and analysing them thermally. (80). Meta nitro toluene has been found to be more difficult to mercurate than the ortho compound but on heating with mercuric acetate for 12 hours, it gave a mixture of acetoxy mercury, meta nitro toluenes which were converted into the corresponding chloro mercury derivatives. (81). These reactions are studied with all the groups so that it can be easily explained in the case of fluorene derivatives.

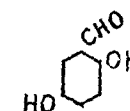
In earlier work (82) it has been found to be impossible to prepare a tri mercury derivative of ortho toluidine $\text{CH}_3\text{-C}_6\text{H}_4\text{-NH}_2$, and in their work,

Luigi Vecchiotti and Anita Ajuto (83) have found that ortho toluidine and mercuric acetate (3 mols) in alcohol did not react at the room temperature. But alcohol solution of ortho toluidine and dilute alcoholic solution of mercuric acetate (3 mols) containing acetic acid heated for 30 minutes at 30°C reacted. The contents were allowed to stand for 48 hours; the precipitate dissolved in dilute ammonia (containing ammonium acetate), filtered, reprecipitated, with glacial acetic acid and the purification repeated three times yielded from glacial acetic acid 2, 3, 4 and 2, 4, 6 Me (AcOHg)₂ C₆H₂ NH₂ (c. f. Veschiotti and Copertini, Loc. Cit.) and on standing 4 to 5 days yield tri aceto mercury ortho toluidine, 2, 3, 5, 6 Me (AcOHg)₃ C₆H-NH₂. Melting point 161°C. (84).

Previously it has been given out that in the mercuration of nitro benzene and the benzoic acids, the mercury group enters the nucleus in the position ortho to the orienting group instead of meta. Thus it will be expected that groups which ordinarily orient to the meta position will cause mercuration in the ortho position. It has been worked out that para toluene sulphonic acid gets mercurated in the position meta to the sulphonic acid group to form 2 hydroxy mercury 4 toluene sulphonic acid. (85). Lee Irvin Smith and F. Lowell Taylor have elaborately studied the substitution of the mercury group into the polymethyl benzenes. They worked with mesitylene, pseudocumene, durene isodurene, prehnitene, and penta methyl benzene, and got the acetoxy mercury, halogeno mercury and bisaryl mercury derivatives and characterised them. (86). Frank C Whitmore and Edmund Burns Middleton (87) have indicated that aromatic aldehydes as a rule cannot be mercurated by mercuric acetate because of its oxidising action. Some mercuric aromatic aldehydes have been got though with much resistance. With potassium iodide the mercurated Salicylaldehydes behave like mercurated phenols, losing mercury in the formation of the unmercurated aldehydes, potassium mercuric iodide, and potassium hydroxide. The instability of the carbon-mercury linkage in these compounds is due to the presence of the phenolic hydroxyl. (F. C. Whitmore and Edmund Burns Middleton). It has been shown that when the latter is protected by the acetyl, methyl or ethyl, the decomposition of iodide follows a different course. Edmund B. Middleton has investigated the reaction between mercuric acetate and alpha, beta unsaturated ketones and has clearly shown the mode of addition of the groups in unsaturated compounds. (88). In a communication (89) Morris S. Kharasch and Frederick W. Stavely have pointed out the fact that mercuric salts of certain aromatic carboxylic acids, when heated split off carbon-di-oxide and the mercury gets attached to the carbon originally bound to the carboxyl group. These reactions have been found to have been applicable only to those aromatic carboxylic acids which split off carbon-di-oxide at their respective melting points or at slightly higher temperatures. In the case of the mercury salts of aromatic

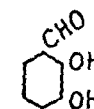
carboxylic acids, which do not split off carbon-di-oxide readily, the mercury usually becomes attached to a carbon of the benzene ring. An alcoholic solution of ortho nitro phenol with mercuric acetate (1 : 1 mol) gives mercurated compound which on bromination gives 4 bromo derivative. Therefore mercury group has entered the 4th position. (90).

If esters of unsaturated cyclic carboxylic acids are treated with mercuric acetate in 98% alcohol, compounds are formed which readily undergo hydrolysis and furnish the corresponding acids containing mercury. Ethyl 1 Haulmoograte was mercurated (91) and alcohol removed under diminished pressure and the product extracted from the residue as a colourless oil containing mercury which when hydrolysed with alcoholic potassium hydroxide furnished a mercury containing Chaulmoogric acid. Extensive work has also been done regarding the influence of nuclear alkyl groups on the mercuration of aniline and its nitrogen substitution products. (92). With regard to the hydroxy aldehydes, it has been found that mercuration is taking place with remarkable rapidity, when alcoholic solutions of 2 : 3; 2 : 4; 2 : 5 or 3 : 4 dihydroxy benzaldehydes are mixed at room temperature with mercuric acetate as shown by the fact that, within a few minutes of mixing, a test portion dissolves completely in aqueous alkali. The result is doubtless due to the well known activating effect on mercuration of phenolic hydroxyl groups, an effect which naturally be enhanced by multiplying these groups. (93).



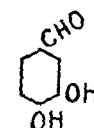
I.

Gentisinaldehyde. In this case it has been shown that mercuration is quickly followed by oxidation with the separation of mercurous acetate.



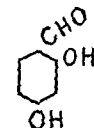
II.

2 : 3 dihydroxy aldehyde.



III.

Proto Catechualdehyde. In these (II and III) two cases sparingly soluble, dark coloured mercuric compounds are obtained, mixed with mercurous acetate and oxide.



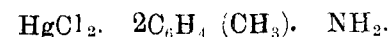
IV.

Resorcyaldehyde. It is normally and readily mercurated with the formation of 3 : 5 diacetoxy mercury 2 : 4 di hydroxy benzaldehyde.

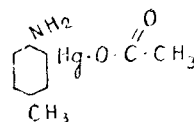
In the mercuration of mono methyl ethers the mono mercury group enters the ortho position to the hydroxyl group when that position is free as in Vanillin and Iso-vanillin. If the ortho position is occupied it goes to the para position.



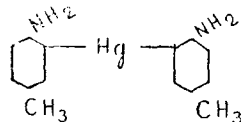
Henry and Sharp have given their observations on the directing of the hydroxyl group in mercuration in their papers. (94). Frank C. Whitmore in his paper (95) has given fuller details regarding the introduction of mercury in the ortho position to various substituted amino groups. Klein mixed solutions of para toluidine and mercuric chloride in ether and obtained crystals to which he assigned the formula



He obtained similar compounds with the bromide and the iodide of mercury. Pesci treated an alcoholic solution of para toluidine with an aqueous-alcoholic solution of mercuric acetate and obtained crystals of mercury (2 amino 5 methyl phenyl) acetate.

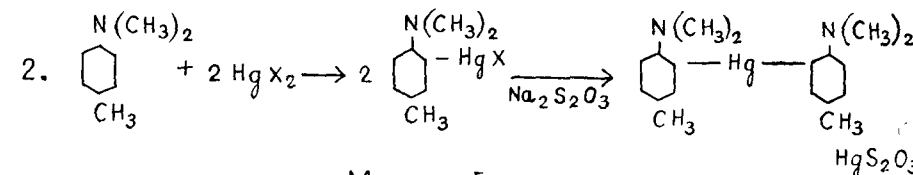
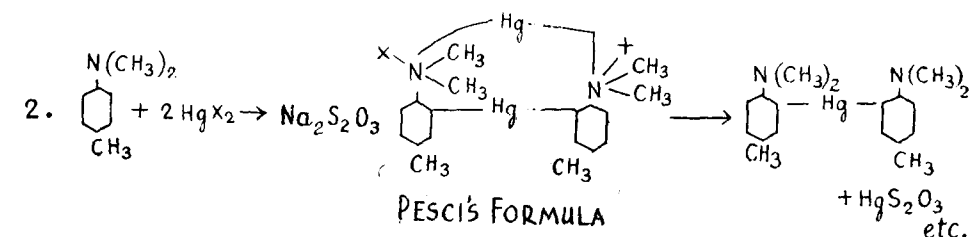


By treating this with concentrated aqueous solution of potassium hydroxide he was able to get the corresponding hydroxide. When the hydroxide was treated with concentrated solution of sodiumthiosulphate, it was changed to mercury di (2 amino 5 methyl phenyl).



Pesci treated dimethyl para toluidine with mercuric acetate and obtained mercury (2 dimethyl amino 5 methyl) acetate from which he made the corresponding hydroxide, nitrate, chloride, bromide and iodide.

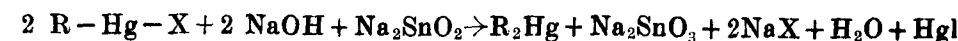
The hydroxide with sodiumthiosulphate yielded the mercury diphenyl derivative, mercury di (2 dimethyl amino 5 methyl phenyl). It has been given out that Pesci has misinterpreted all his reactions. The following equations indicate Pesci's views and the more modern one.



Frank C. Whitmore (96) has started with para bromo dimethylaniline for mercuration. When an aqueous alcoholic solution of mercuric acetate is allowed to stand with alcoholic solution of para bromo dimethylaniline for several days there crystallises out the organo mercuric salt, mercury (2 dimethyl amino 5 bromo) acetate.

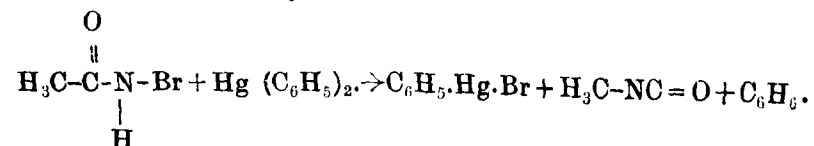
It has been found that mercurous acetate is along with this substance. Therefore it shows that on one side, acetoxy mercury group is introduced into the compound and on the other side, oxidation by mercuric acetate is taking place. The author has brought about the change of the organo mercury acetate or hydroxide to mercury diphenyl derivative by the following two methods.

(a) By treating with alkaline reducing agents like sodium stannite solution,

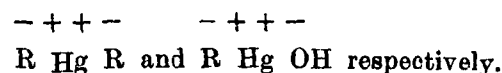


(b) The second method consists of those inorganic salts which form stable complex mercuric ions. Such substances are iodides, sulphides thiosulphates. Pesci usually employed the sulphides and the thiosulphates in preparing the mercury diphenyl compounds.

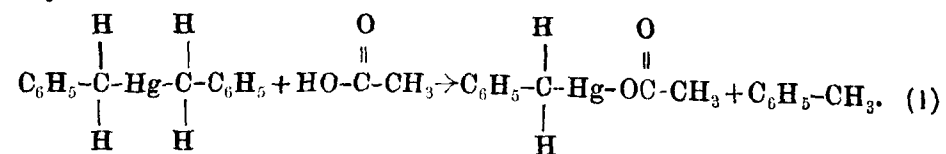
One molecule of Bromine in water or anhydrous media when treated with mercury diphenyl gives phenyl mercury bromide and phenyl bromide (97). When excess of bromine was used the resulting products were mercuric bromide and phenyl bromide. Morris S. Kharasch (98) tried the effect of mercury diphenyl on normal bromo acetamide in sodium dried benzene. Phenyl mercury bromide was obtained.



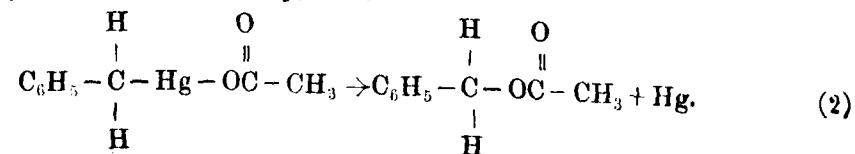
The reaction of mercury diphenyl and the normal bromo amides affords an excellent illustration of the basicity of mercury diaryl compounds. As has been already suggested instead of considering mercuric hydride (which was a supposition) we consider the mercuric hydroxide. Compounds of the type R. Hg. R and R. Hg. OH can well be imagined to be derived from mercuric hydroxide and so can be given the structures.



Jones and Werner (99) heated 15 grams of mercury dibenzyl for 7 hours at 200° and isolated the following products, mercury 7.776 grams, toluene 1.756 grams, benzyl acetate 2.267 grams, dibenzyl 3.05 grams. These represent two stages in the reaction. In the first place metallic mercury and dibenzyl must have formed from a part of the mercury dibenzyl (7.9 grams) and the rest (7.1 grams) into mercury, toluene and benzyl acetate.



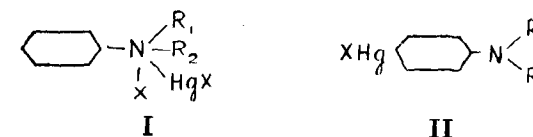
In the benzyl mercuric acetate thus formed, at the high temperature used, the doubly positive mercury atom oxidizes the carbon and we get benzyl acetate and mercury, i. e.,



Kharasch says that there is nothing unusual in this, but simply a case of intramolecular oxidation and reduction.

Apart from the mercury dialkyl derivatives, if the substitution of mercury group is considered in the mercurisation of aromatic compounds, it is found that mercury group always enters the ortho or para positions and never enters the meta position; even if there is meta directing group already present in the molecule. In the case of benzoic acid, benzophenone and nitro benzene, only ortho substituted mercury compounds have been isolated. M. S. Kharasch and I. M. Jacobsohn (100) have given a clear account for the mechanism in mercurisation of aromatic amines. He is pointing out that it proceeds in two stages.

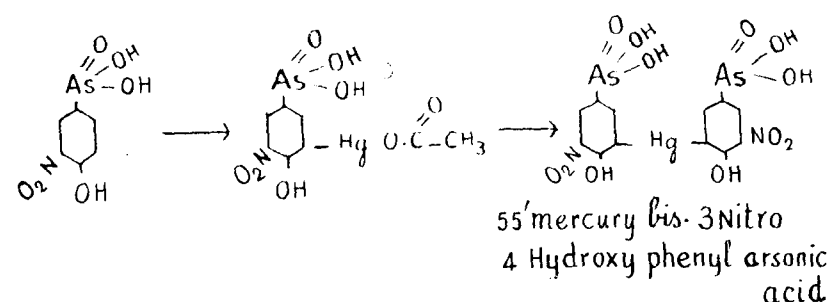
(1) The formation of an ammonium salt with the mercuric acetate or chloride to give a compound of the general type I.



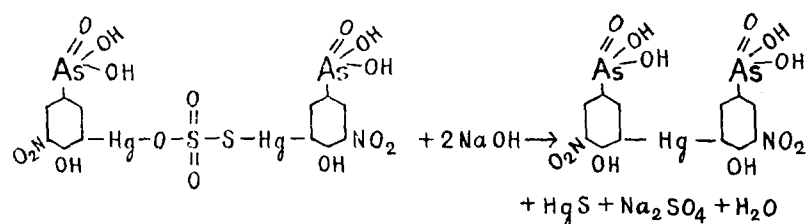
This compound is then re-arranged to the more stable configuration having the mercury radical attached to carbon. If this position is already occupied, the mercury goes to the ortho position. It has been found by Kharasch and Jacobsohn (101) that mercurisation does not take place when para nitro dimethyl aniline is treated with mercuric acetate in alcoholic solution. This was attributed to two facts. (1) Para nitro dimethyl aniline is an extraordinarily weak base. It is precipitated from even concentrated hydro-chloric acid solution as the free base instead of its hydro-chloride. (2) Its ortho and meta isomers form salts more readily. Then they completed the reaction with the isomers in a short time at a low temperature. In the case of para nitro diethyl aniline it was a failure. From these, one of the logical deductions they have brought out is that, of the aromatic amines only those which are capable of forming salts will mercurise.

Julius Stieglitz, Morris Kharasch and Martin Hanke (101) have mercurated 3 Nitro 4 hydroxy phenyl arsonic acid and have proved that the mercury group has entered the position ortho to the hydroxyl. Further

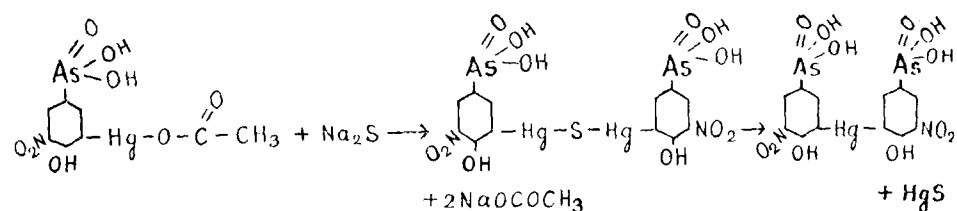
they have isolated the bridged compound also. The scheme is represented below :—



After getting the corresponding hydroxy derivative they treated it with Sodium thio sulphate. Their observations have been explained by the following equations.



If Sodium sulphide (reducing agent) is used :—

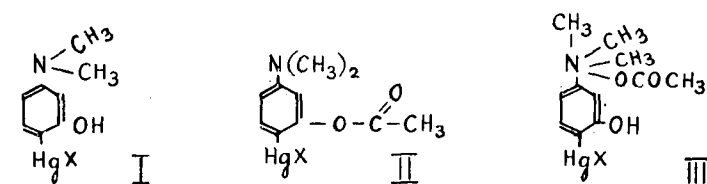


They prepared the corresponding iodo compounds by treatment of the mercury compound with iodine in potassium iodide.

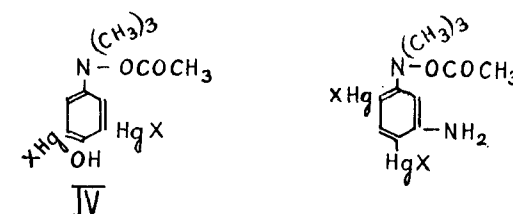
Mandal (103) has published that the mercury salt prepared by the action of mercury and Sym. diphenyl triazene has the formula $(C_6H_5-N=N-NH-C_6H_5)_4 HgX_2$; where X = Cl, Br, NO₂ or C₂H₃O₂. Cecil

M. Knowles and George W. Watt have shown with their exhaustive work that either the salt of the base is formed or molecular compounds which contain one equivalent of the mercury salt combined with the two of the base and not four as claimed by Mandal. (104).

The presence of Amino and hydroxyl groups in a benzene ring enhance the ease of substitution of the para and ortho hydrogen atoms. Therefore any positive group, para or ortho to an amino or hydroxyl group would be more or less labile. This is well demonstrated by the ease of substitution of halogens ortho or para to these negative groups. Lability is more pronounced in the case of iodine than in case of bromine. Chlorine does not seem to be loosened to any extent when ortho or para to one of the two negative groups. In mercury organic compounds the group - HgX is positive. Morris S. Kharasch and Lyman Chalkley Jr. (105) have found that meta dimethyl amino phenyl mercurates with the greatest ease indicating the extremely high degree of lability of the hydrogen atom para to the dimethyl amino group. The above authors have revealed that amino group exercises a much greater labilising effect on the mercury ortho or para to it than the hydroxyl group. Mercurated compound of di methyl amino phenol reacts instantly with hydrogen sulphide, but the acetylated compound reacts much less readily with hydrogen sulphide solution. On the other hand the quaternary ammonium salt does not give test for mercury when treated with hydrogen sulphide solution.

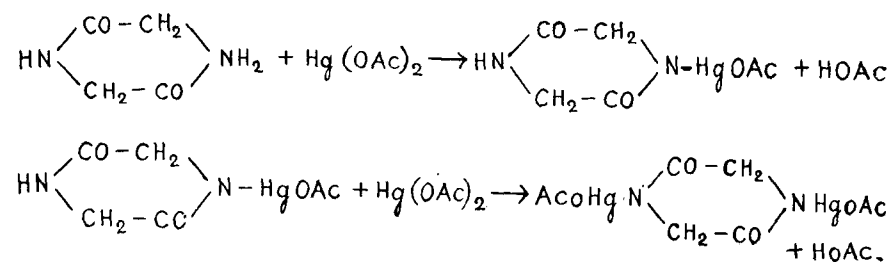


Similarly he prepared the di mercury derivatives of quaternary salt.

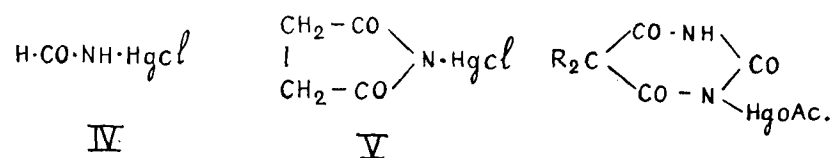


He has found that the amino group increases the lability of the hydrogen atoms or other positive groups para or ortho to it and the fact

glycine and Diketopiperazines. When glycyl glycine was mercurated with aqueous solution of mercuric acetate with a little of acetic acid, mercuric acetate had got completely reduced to mercury. Treatment of 2 : 5 diketo piperazine or 3 : 6 dimethyl 2 : 5 diketo piperazine with the mercuric acetate solution produced in each case white insoluble precipitates containing mercury. No reduction to free mercury had taken place. Those compounds were acetoxy mercury compounds.



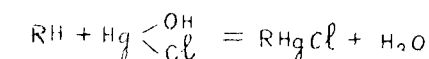
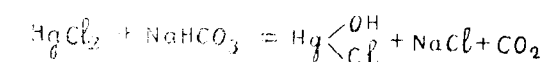
Hydrochloric acid gives the corresponding chloro derivatives. The mercurydiketo piperazines are represented as $=\text{N}-\text{HgX}-$ rather than $\text{C}-\text{Hg}-\text{X}$ or $-\text{O}-\text{Hg}-\text{X}$ derivatives by analogy to mercury derivatives of other amides and imides. The chloro mercury formamide (113) and chloro mercuri succinimide (114) are assigned the $=\text{N}-\text{Hg}-\text{Cl}$ structures IV and V respectively.



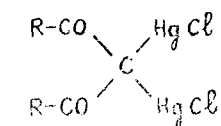
Levy and Schaefer (115) have pointed out that the structure $-\text{Hg}-\text{O}-$ is much less stable than the $\text{Hg}-\text{N} =$ linkage.

K. G. Naik and C. C. Shah (116) have published results regarding the mercuration of the substituted amides of malonic acid with the idea of studying the change in the stability of the carbon-mercury linkage in these compounds and to see whether this throws any light on the effect of the adjoining groups on the reactivity of the two hydrogen atoms of the methylene group situated between the two negative groups, which had been the subject of investigation by Naik and his collaborators (117). Naik and Shah employed the method of Neogi and Chatterji (118), the mercurating agent being mercuric chloride in the presence of sodium bicarbonate and

glycerol. It may be that at first an oxychloride of mercury is formed, which subsequently reacts with the organic compounds giving rise to a mercurated product thus:—



Naik and Shah have mercurated the following compounds (1) Malonamide, (2) Malon dimethyl amide, (3) Malon di ethyl amide, (4) Malon propyl amide, (5) Malon di normal butyl amide, (6) Malon di Isobutyl amide, (7) Malon di iso amyl amide, (8) Malon di amyl amide, (9) Malon di heptyl amide and (10) Ethyl malonate. All the above compounds have been found to have got mercurated by mercuric chloride under the experimental conditions yielding products having the general formula.



Where R is ethoxy, amino, amethyl amino, etc., groups. If aromatic compounds are mercurated with mercuric acetate, it has been found that acetoxy mercury group enters the nucleus (aromatic). So it was observed by K. G. Naik and R. P. Patel (119) that acetoxy mercury group would attack both the methylene group and also the aromatic part of these amides. Contrary to their expectations, it was found that mercuric acetate attacked the methylene group only, leaving the aromatic nucleus unaffected even when mercuric acetate was employed in excess.

In its simplest sense substitution means the replacement of one atom or group by any other atom or group. It has been found as a result of the studies by various authors that the phenomenon of substitution is following a definite course. Substitution depends on the group or groups already present in the molecule. Hydroxyl, alkoxyl, amino, halogeno, alkyl and dialkyl amino groups direct the entering group to the positions which are ortho and para to them; while carbonyl, nitro, carboxyl and sulphonic acid groups direct the entering group to the positions meta to them. Many a scientist, Korner (1874), Hubner (1875), Nolting (1876), Armstrong (1887), Crumbrown and Gibson (1897) and Vorlander (1902) have suggested

various orientation rules pointing out clearly the relation between the orientation and characteristic of the entering group. These scientists have moulded them to a approvable generalization, which has later on resulted in fruitful progress, for which Ingold and collaborators have much to add to their credit.

A systematic examination of the orientation of the various groups in aromatic substitution was made by Holleman in 1895. His analysis shows that the reactivity of the groups is in the following order :

Ortho para directive influence $\text{OH} > \text{NH}_2 > \text{Halogens} > \text{CH}_3$

Meta directive influence $\text{COOH} > \text{SO}_3\text{H} > \text{NO}_2$

Flurcheim's development of the theory of alternating and variable affinity was very valuable for the latter chemists as it gave them food for thought. As a result of Holleman's studies the inevitable conclusion that has been drawn in that ortho para substitution is associated with activation of the benzene nucleus whereas the meta substitution results in the deactivation of the benzene nucleus. The ortho para substitution depends on the nuclear activation with a repulsion of electrons by the directing group and meta substitution depends on nuclear deactivation with attraction of electrons.

If substitution is tried directly into the aromatic molecule, the substituent group will try to take the available position in the aromatic nucleus more readily than in other places. If a mono substituted benzene of the type $\text{C}_6\text{H}_5\text{R}$ is taken for the study of orientation, the second entrant in the nucleus will be governed by the nature of the group "R" present in the molecule. If "R" stands for any of the following groups, F, Cl, Br, I, OH, NH_2 , further substitution takes place largely in the ortho and para positions, while for $\text{R} = \text{COOH}$, CHO , NO_2 , $(\text{CH}_3)_3\text{N}$, SO_3H and so on the substitution takes place largely in the meta position. With the exception of fluorine, chlorine and bromine most of the ortho-para directing substituents activate the molecule so that the second substitution takes place more easily than in benzene itself. The metadirecting substituents produce deactivation. In the compound $\text{C}_6\text{H}_5\text{R}$ if R is in position 1, the electron distribution may be such as to make an excess or deficiency of electrons on the various carbon atoms 2 to 6. In addition to that the distribution of the electrons might be influenced by the approach of the substituent group R (which is called the "Polarization" of the molecule by the group. The two ways in which the charge distribution is affected by the substituent R are one inductive effect and the other resonance effect (tautomeric effect or electromeric effect) Inductive effect results because of the appreciable.

—Contd.

Development of ARIOPHANTA BISTRIALIS. Beck. (Contd.)

PART II

Origin and Differentiation of the Mesoderm

BY

Sri T. S. BALASUBRAMANIAN, M. So.,
Department, of Zoology.

It was mentioned before that the first or early period of development extends for three days and is concerned chiefly with cleavage, gastrulation and formation of the germinal layers and mesodermal differentiation. The following account deals with these aspects of development.

A detailed study of cell-lineage was not attempted by me, but a closely graded series of preparations were made, both as entire mounts and as sections, for observations on the origin of the mesoderm.

The cleavage is total and spiral as in all Molluscs. The blastomeres are more or less equal, the future endodermal cells being only very slightly larger than the ectodermal cells. The blastula (Fig. 1) is characterised by the relatively small size of the blastocoele. The cell 4d is clearly recognisable in sections as well as entire mounts. The two primary mesoderm cells (Fig. 1 Pr. mes) derived from cell 4d. come to lie in the blastocoele. The subsequent history of the mesoderm was traced chiefly in sections.

Gastrulation (Fig. 2. A) is by invagination. By the time the gastrulation commences the mesodermal cells increase in number (Fig. 2. A. Pr. mes. and Fig. 2. B. mes.) and lie as two short bands, one on each side and in close contact with the presumptive endodermal cells. Gastrulation is completed when the embryo is about 36 hours old.

In a later stage (Fig. 3) when the embryo is about 40—45 hours old, the mesodermal cells, which have still further increased in number, form a compact band on each side of the archenteron, extending upwards to some extent and also slightly to the ventral side of the

gut. Anteriorly, the mesodermal bands of the two sides are more or less in contact.

The first indication of the differentiation of the mesoderm is seen in the difference in thickness of the mesodermal band in the different regions. The dorsal part (Fig. 3. mes. 1) of each mesodermal band becomes more or less attenuated, whereas the lower part (Fig. 3. mes. 3) is broad. The middle region (Fig. 3. mes. 2) which at this stage consists only of few cells, is narrower and may be termed the nephroblast, as it gives rise to the larval kidney.

During the third day of development important changes take place in the mesoderm. At the beginning of this stage of development, the mesoderm shows no essential transformation. But a little later (Fig. 4) the mesodermal cells on the two sides form more compact bands, and the basal part is thicker than before. The intermediate cell mass (Fig. 4. mes. 2) or nephroblast shows at this stage a narrow lumen surrounded by a regularly arranged layer of cells. This is the first indication of the larval kidney. This is not as yet separated from the rest of the mesodermal band above and below it. Changes also take place in the ventral part of the mesoderm band which becomes broader than before and extending below the gut, meets its fellow of the opposite side. At the same time, the cells in the dorsal and ventral part of the mesoderm become less compact and more discrete, with irregularly enclosed spaces. This differentiation of the mesoderm does not extend to the posterior region of the embryo.

In a later stage (Fig. 5) the intermediate cell mass or nephroblast (Fig. 5. mes. 2) with its lumen has become altogether separated from the remaining part of the mesoderm, upper as well as lower, and may henceforward be called the larval kidney. The upper part of the mesodermal band becomes broken up and the cells get scattered in the primary body cavity. These scattered cells give rise to mesenchyme and musculature.

Later on in the third day, the rudiment of the larval kidney increases in length as well as thickness by multiplication of its cells. We have already seen that in the anterior region of the mesodermal band, the intermediate cell mass is not differentiated. So the lumen that is developed in the intermediate cell mass behind the anterior region remains closed at its anterior end. These cells (Fig. 6. a. c) at the anterior end of the larval kidney develop pseudopodia like outgrowths and in the fourth day a bunch of cilia (Fig. 7. ci), projecting from the cells into the lumen of the larval kidney. Posteriorly the tube opens

to the exterior through a perforation (Fig. 8 ex. op) in a slightly invaginated part of the ectoderm. Thus, the external opening of the larval kidney is ectodermal, but the remaining part is mesodermal in origin. In later stages of development the cells of the larval kidney (Fig. 7. l k. c.) become vacuolated and the tube itself grows further in length.

Some of the scattered mesenchyme cells extend posteriorly around the endodermal sac (Fig. 9. end.), when that is differentiated. The cells are flattened and elliptic. I have not found any evidence of the mesodermal cells partaking in the formation of the hind-gut, as has been described by Wierzejski (1905) in *Physa*.

In the course of further differentiation (Fig. 9 and 10) the mesoderm appears as a broad band of scattered cells on each side of the gut. Posteriorly it appears as a narrow row of cells extending on each side of the hind gut. Close to the hind gut the mesodermal cells appear as two swollen masses (Fig. 10. mes. p. 1 and mes. p. 2) lying dorsal to the level of the anus. These masses are the ventral ends of the original mesodermal bands. They increase in size by multiplication of these cells as indicated by the presence of several mitotic nuclei.

In Fig. 11, representing the section of an early fourth day embryo, the posterior portions of the mesodermal masses are better differentiated than before. They lie on the sides of the hind gut, and show asymmetrical development, as the right mass (Fig. 11. r. mes) is large and compact, whereas the left one (Fig. 11. l. mes) is now diminished and reduced to a few cells, the rest of the mass having disintegrated. At a still later stage the right cell-mass further increases and constitutes the primordium of the pericardium and definitive kidney.

Discussion and Summary.

In the development and differentiation of the mesoderm there are three features of interest:- (1) the origin of the mesoderm (2) the origin and structure of the larval kidney and (3) the origin of the *Anlage* of the pericardium and definitive kidney. The controversy regarding the origin of the primary mesoderm, whether it is of ectodermal or endodermal origin, which prevailed when the science of embryology was purely a descriptive science, has now lost much significance. Studies in cell-lineage have traced the origin of mesoderm to the cell 4. d. and *Ariophanta* is no exception.

Carrick (1938) has reviewed the literature on the larval kidney, and shown that the larval nephridium is essentially the same as the definitive one, an external ectodermal duct leading into a mesodermal excretory tube, the cavity of which represents the true coelome. My investigations which were made about the same as those of Carrick are in agreement with those of Carrick (1938). The larval kidney of *Ariophanta* is a mesodermal and multicellular structure developed by the differentiation of the intermediate portions of each mesodermal band. The differentiation of the intermediate portion or nephroblast takes place nearly throughout its length except at the anterior end. The larval kidney does not open into the primary body cavity at any stage. Its inner or anterior end is closed from the beginning and the mesodermal cells therein develop pseudopodial processes and later on cilia also. The fully formed larval kidney of *Ariophanta* is a U-shaped structure with its inner end composed of five or six cells with branches of cilia and the lining of the tube is formed of vacuolated apparently excretory cells. Ectoderm contributes to the outer or external end of the larval kidney.

With regard to the origin of the *Anlage* of the pericardium and kidney, the present investigation traces it definitely to mesoderm and to the ventral part of the right mesodermal band. These observations are in conformity with the normal mode of development of the pericardium and kidney in the molluscs which have been critically investigated in recent years. There is no evidence to support Meisenheimer's (1896/98) statement that the primordium of the kidney and pericardium arises from ectoderm.

Figures

1. Transverse section of blastula.
2. (a) T. S. slightly oblique, of an embryo at about the time of gastrulation.
(b) T. S. of a later gastrula stage.
3. T. S. of an embryo, after gastrulation, passing through the middle of the embryo.
4. T. S. of the same embryo, a little posterior to the previous one.
5. T. S. of the third day embryo, a little later.

ORIGIN AND DIFFERENTIATION OF THE MESODERM

6. Frontal section of the third day embryo (higher magnification) passing through the region of the intermediate cell mass or developing larval kidney.
7. Anterior portion of the larval kidney of the fifth day embryo.
8. Frontal section passing through the opening of the larval kidney.
9. Frontal section of the third day embryo at the level of the mouth.
10. Frontal section in the same series, as the previous one, but at an upper level.
11. Horizontal section at the hind end of the fourth day embryo.

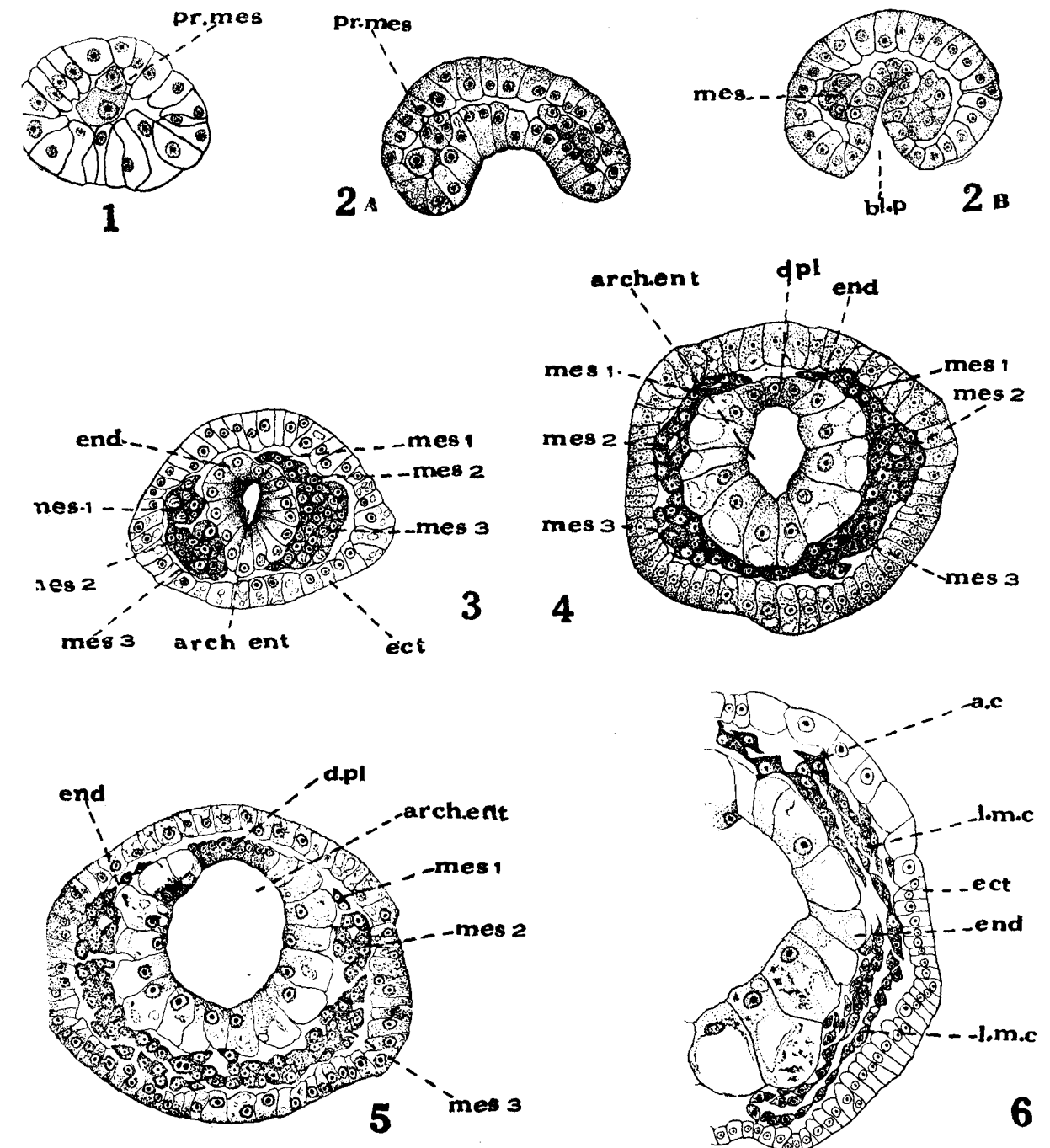
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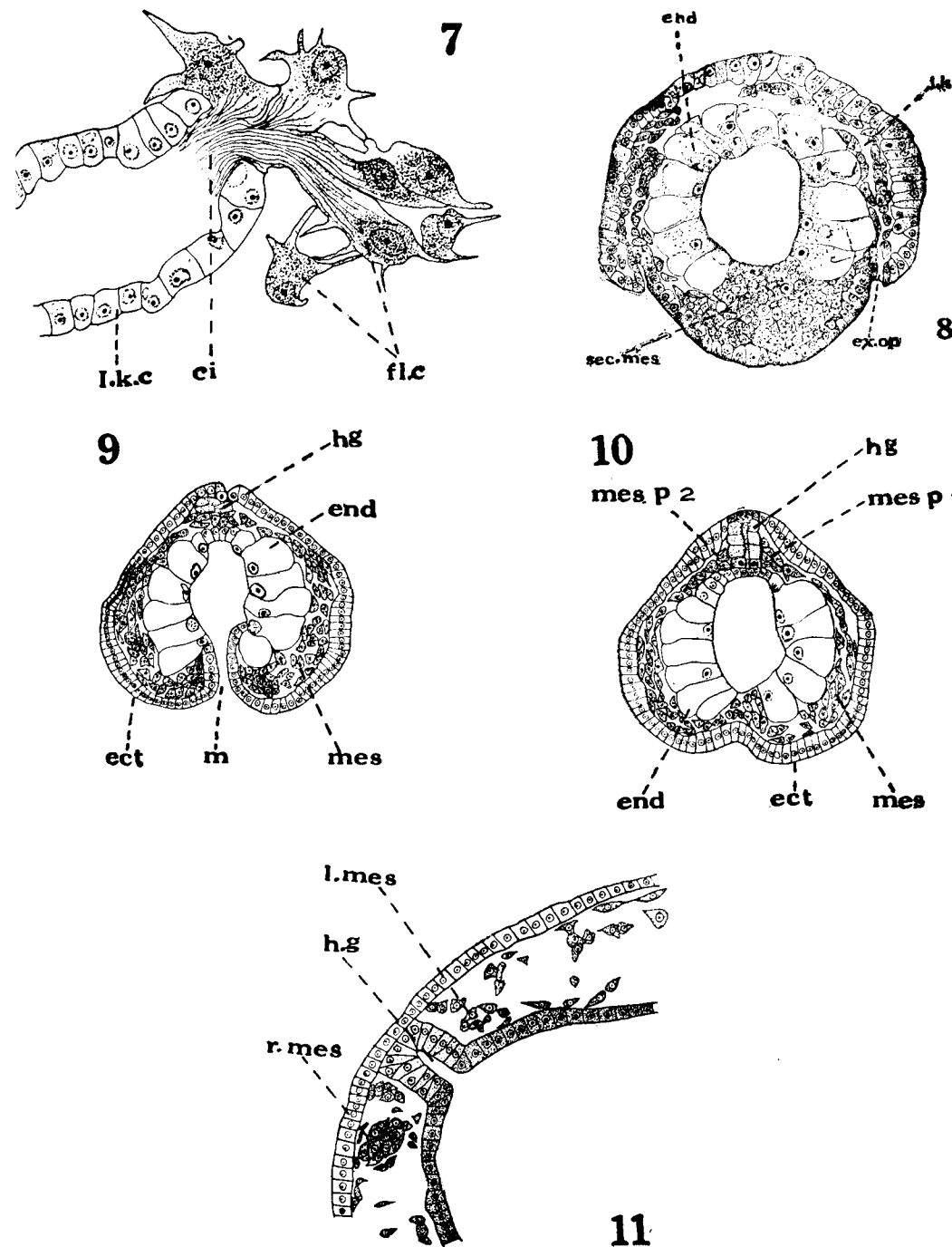
a. c.	amoeboid mesoderm cells.
alb. s.	albumen sac or endodermal sac.
arch. ent.	archenteron.
bl. p.	blastopore.
ect.	ectoderm
end	endoderm
ex. op.	external opening of the larval kidney.
fl. c.	flames cells.
h. g.	hind gut
l. k.	larval kidney.
l. k. c.	larval kidney cells.
l. m. c.	mesoderm cells forming the larval kidney.
l. mes.	posterior end of the mesodermal band on the left side.
m.	mouth.
mes.	mesoderm.

mes ₁ , mes ₂ , mes ₃	upper, middle and lower divisions of the mesodermal band.
mes. p. ₁ , mes. p. ₂	posterior ends of the ventral mesoderm on the sides of the hind gut.
pr. mes.	primary mesoderm.
r. mes.	posterior end of mesodermal band on the right side.
sec. mes.	secondary mesoderm.
sh. gl.	shell gland.

Literature

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Observations on the Teratology of Plants - I

BY

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The abnormalities described here are the outcome of stray observations made from time to time during the past two years on plants growing in the Botanic Garden of the University. These phenomena though very rare are not uncommon in the plant kingdom, and they are being reported, as far as known, for the first time in these species under study. The causative factors for these monstrosities are various. But it is not the purpose of this paper to discuss them here. In the present communication an attempt has been made to give a full morphological description of the phenomena observed.

Abnormalities have been studied in six genera with one species in each distributed over four families.

They are:

<i>Hibiscus schizopetalus</i> Hook.	(Malvaceae),
<i>Callistemon lanceolatus</i> DC.	(Myrtaceae),
<i>Tribulus terrestris</i> Linn.	(Zygophyllaceae),
<i>Coreopsis lanceolatum</i> Linn.	(Compositae),
<i>Tagetes erecta</i> Linn.	(Compositae)) and
<i>Helianthus debilis</i> Nutt.	(Compositae)

Two of these viz. *Hibiscus schizopetalus* Hook. and *Callistemon lanceolatus* DC. display fasciation of the stem. But in the remaining four species abnormalities have been observed in their floral parts only. The teratological details are described separately under each species:

Hibiscus schizopetalus Hook. (Malvaceae)

Normally the stem of the plant is terete. A deviation from this phenomenon was noticed in one of the branches which had got fasciated. To begin with the stem was terete (fig. 1, a) but beyond

two internodes it gradually flattened out and further up, had attained the maximum flatness. In this region the stem was found to have split into two bifurcations; one of the bifurcations (*fig. 1, b*) stopped further linear growth but produced a large number of leaves and vegetative buds around its flat apex in a fan shaped manner. The other bifurcation (*fig. 1, c*), however, appeared to have resumed normal growth by the obvious development of one of its apical buds.

This branch (*fig. 1, d*) after producing a few normal internodes had again got fasciated towards its apical region (*fig. 1, e*), into a very much flattened apex simulating a Japanese fan with their leaves and buds all arrayed in a line on a common node. The growth of this flat apical region, however, seems to have been further continued by the development of one of the peripheral buds into a normal shoot (*fig. 1, f*).

Cross section through *a* (*fig. 2*) exhibits normal structure and development of the various tissues of the stem. But in a cross section through the fasciated region *b* (*fig. 3*) the xylem and the phloem regions of the vascular bundle had comparatively been reduced, and the respective total areas of the pith and the cortex were much greater than those in the normal region of the stem.

Callistemon lanceolatus DC. (Myrtaceae)

The branches of this plant under normal conditions are pendulous with their growing apices pointing downwards thereby exhibiting positive geotropism. A fasciated condition of one of the pendulous branches was noticed wherein to begin with, the stem was terete, but gradually towards its tip it had become extremely thin flat, sharply curving upwards, exhibiting negative geotropism. On a normal stem there is an alternate occurrence of vegetative region intercalated with floral region; whereas in the fasciated specimen there was a complete absence of flowers and was represented by leaves only which were normal in every way. Regions *a* (*fig. 4*), however, are devoid of leaves, presumably these zones represent the floral region, where the flowers may have been aborted.

The phyllotaxy had also been disturbed in the fasciated region where the leaves appear to arise side by side whereas in the normal stem the phyllotaxy is spiral.

In the cross section of the normal stem the different tissues are normally well developed (*fig. 5*). But in the fasciated region a general

reduction of the pith, vascular bundle and the cortical tissues was observed (*fig. 6*).

Tribulus terrestris Linn. (Zygophyllaceae)

Normally the plant produces bisexual, pentamerous flowers having ten stamens in two whorls of five each with a pentacarpellary ovary.

The abnormal flowers were collected from a single plant in which all flowers without exception exhibited various stages of abnormality. The vegetative structures otherwise were quite normal. The abnormalities were confined to the androecium only.

Various stages in the transformation of the stamens into petaloid structures were noticed. As for example, certain flowers were possessed of one or two petaloid stamens whereas in others a complete transformation of the outer whorl of five stamens into petaloid structures was observed (*fig. 7*). Extreme abnormality was met with in flowers where all the ten stamens had become petaloid (*fig. 8*).

In the stamens various stages of petalody were noticed. In certain stamens only a single lobe of the anther had become petaloid whereas in others petalody had come about in both the anther lobes even extending down to the filament (*figs. 12, 13, 14*). In such flowers very often the ovaries remained vestigial represented only by the rudimentary carpellary protuberances (*fig. 10*).

Coreopsis lanceolatum Linn. (Compositae)

The inflorescence is a capitulum having 6-8 sterile and attractive ray florets. Certain capitula were observed to produce secondary capitula on them. The secondary capitulum is borne on a slender stalk produced from inside the corolla tube of the ray floret of the primary capitulum (*fig. 16*). Though the secondary capitulum was of a miniature size its build was on the same plan as the primary one. Three to four such secondary capitula were found to have been produced from a primary capitulum (*fig. 15*). The secondary capitulum differed from the normal capitulum only in the fact that its disc florets were also sterile and hence they never set seeds. However, in all other details they resembled each other.

Tagetes erecta Linn. (Compositae)

Normally in this plant a single capitulum is borne on a peduncle. A few abnormal specimens were found which exhibited various stages

of chorisis of the inflorescence. The distal end of the peduncle bearing the capitulum had become mildly flattened in few specimens and this represented the early stages of chorisis. Other specimens exhibited advanced stages of chorisis where, in the bifurcation of the inflorescence, part of the peduncle was also involved (figs. 17, 18).

Helianthus debilis Nutt. (Compositae)

The inflorescence is a capitulum as in other species of compositae. Abnormalities in this genus were recorded earlier by Singh and Sinha* where the proliferation of the torus had been observed. But the nature of abnormality in the present specimen was quite different and consisted of the chorisis of the capitulum. The peduncle appeared normal almost to the tip of its distal end but in that region it had become slightly flattened and abruptly bifurcated into two short stalks on each of which a normal inflorescence was borne.

The process of chorisis was incomplete in the sense that towards both the distal and proximal ends the tissues were still in organic connection leaving a cordate hollow space between the inflorescences (figs. 19, 20).

It is a great pleasure to record my grateful thanks to Prof. T. C. N. Singh, D.Sc., F.B.S., Professor of Botany, Annamalai University for references and his valuable suggestions and criticisms in the preparation of this paper; and also to the members of the Botany Department Research Club for their critical remarks.

Annamalainagar (South India) }
11th April 1952. }

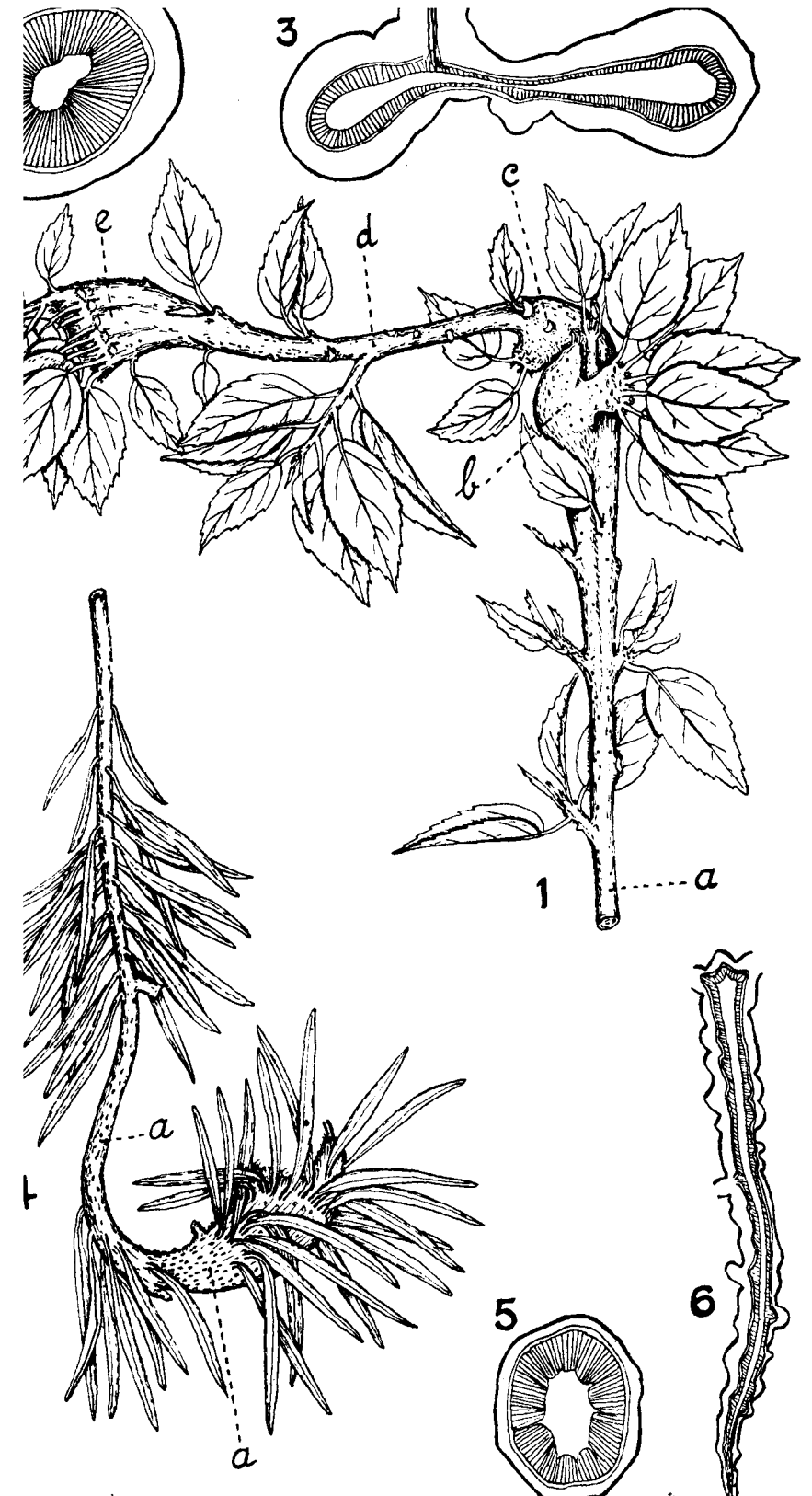
Explanation of the Plates

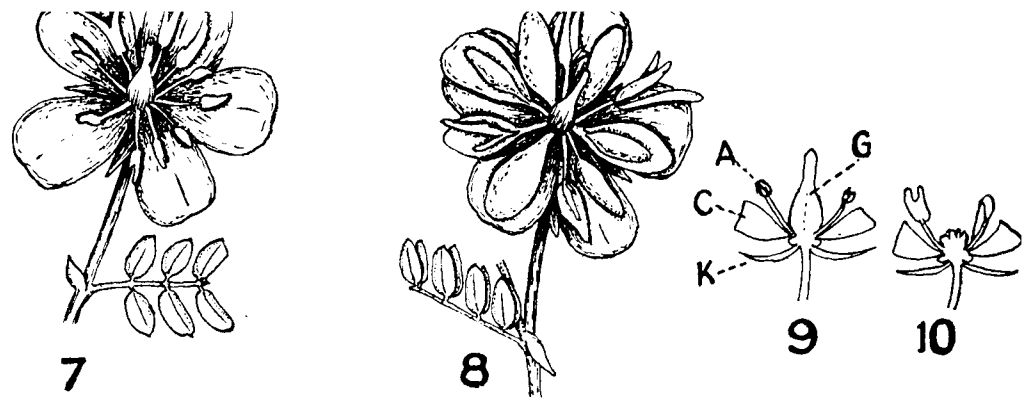
Fig. 1. A fasciated specimen of *Hibiscus schizopetalus* Hook. $\times \frac{1}{2}$
a = normal region; b = one of the fasciated bifurcations which has stopped linear growth; c = fasciated bifurcation which had further headed its growth; d = normal growth; e = distal portion displaying fasciation for a second time; f = a normal shoot produced from a bud in the region e.

* Singh, T. C. N. and Sinha, B. N. (1928): Note on the teratology of certain Angiosperms. *Jour. Ind. Bot. Soc.* Vol. VII, pp. 99—104.

- Fig. 2. *Idem* Transverse section of the stem through the normal region. Note the strongly developed xylem elements. $\times 8$.
- Fig. 3. *Idem*. Transverse section of the stem through the fasciated region showing the flat nature. Note the meagre development of the xylem elements. $\times 8$.
- Fig. 4. A fasciated specimen of *Callistemon lanceolatus* DC. a = regions where the flowers have aborted. $\times \frac{1}{2}$
- Fig. 5. *Idem*. Transverse section of the stem through the normal region showing strongly developed xylem elements. $\times 8$.
- Fig. 6. *Idem*. Transverse section of the stem through the fasciated region showing the flat nature of the stem with xylem elements thinly developed. $\times 8$.
- Fig. 7. *Tribulus terrestris* Linn. An abnormal flower with normal sepals, petals and gynaecium showing petalody of its stamens in various stages of development. $\times 2$.
- Fig. 8. *Idem*. A similar flower as in fig. 7 where all the stamens had undergone extreme form of petalody. $\times 2$.
- Fig. 9. *Idem*. A longitudinal section of the normal showing the positions of the sepals, petals, stamens and gynaecium $\times 2$.
- Fig. 10. *Idem*. A longitudinal section of an abnormal flower where the sepals and petals are normal but the stamens have become petaloid and gynaecium has been completely aborted and is represented by a few denuded processes. $\times 2$.
- Fig. 11. *Idem*. Showing a normal stamen with a ditheous anther. $\times 4$
- Fig. 12. *Idem*. A stamen where one of the thecae has become completely petaloid with a side cleft and the other one is represented as a minute structure at a. $\times 4$.
- Fig. 13. *Idem*. Showing an abnormal stamen where both the thecae have become petaloid and are separate from each other. The petaloid structure on the right has a deep apical cleft. $\times 8$.

- Fig. 14. *Idem*. An abnormal stamen showing an extreme case of petalody, where one of the theca has become enormously big and the other one which is separate from it has a deep cleft. The filament too has become petaloid. $\times 8$.
- Fig. 15. *Coreopsis laceolatum* Linn. An abnormal capitulum showing three secondary capitula arising from a primary capitulum. $\times 1$.
- Fig. 16. *Idem*. A magnified view of one of the secondary capitula shown arising from inside the ray floret of the primary capitulum. $\times 2$.
- Fig. 17. *Tagetes erecta* Linn. An abnormal capitulum showing an early stage in chorisis. $\times 1$.
- Fig. 18. *Idem*. Showing a later stage of chorisis in the abnormal capitulum. $\times 1$.
- Fig. 19. *Helianthus debilis* Nutt. An abnormal capitulum showing chorisis. $\times 1$.
- Fig. 20. *Idem*. A view of the region of chorisis showing that the tissues in the distal and proximal ends are in organic connection leaving a hollow space in between the two inflorescences. $\times 1$.





On Certain Cubic Transformations In Circle Space Associated
With Pedal and Contact Circle Systems *

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SECTION III

Geometry of Pedal and Contact Circle Systems

By

DR. K. RANGASWAMI AIYER, M.A., PH. D.

“ The subject of triangle geometry is conspicuous as much by the richness of its results as by the diversity of the methods which have helped to build it up. Elementary geometry, Synthetic Projective geometry, Inversion geometry, Affine geometry and other miscellaneous ideas have each made their own track in its territory ”. The ideas which we have been developing hitherto, particularly those relating to the cubic transformations of the desmic type furnish the basis for a new and useful approach to the pedal and contact circle theory. This we now propose to examine.

To this end , we adopt the familiar mode of representing circles in the plane by points of a projective 3-space wherein the absolute quadric which determines the measurement in S_3 is the sub-manifold of point circles in the plane. In this representation, the angle between two circles is the projective separation with Q as the absolute quadric of the corresponding points in S_3 . We shall herein follow the usual practice and use the language of three dimensional geometry so that the symbols denote both points in S_3 and the corresponding circles of the plane.

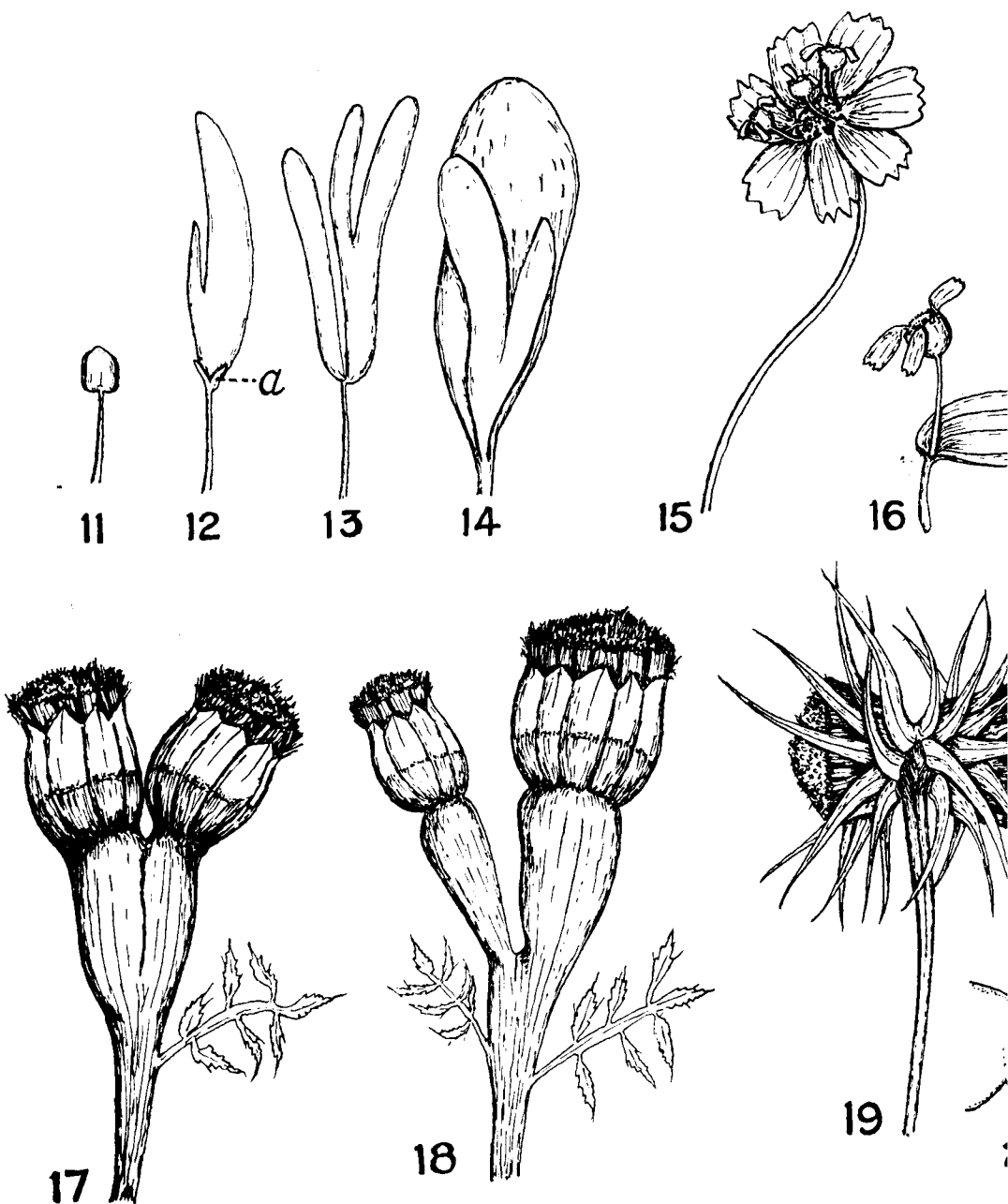
‡ 13. Special Tetracyclic Coordinates of a Circle

The special tetracyclic co-ordinates of a circle are a set of homogeneous co-ordinates† of the representative point in S_3 , in relation to a tetrahedron of reference whose vertices correspond to the four reference circles. It will be found in the investigation to follow on pedal and contact circles of the triangle Δ that the in and ex-circles play a fundamental role ; for this reason

* The notation and terminology of this paper are those used in two other papers by the author, namely, *The Geometry of Infocals*. (Section I) and *On a cubic transformation in circle space associated with pedal and contact circle systems* (section II). This paper will be referred to as section III.

‡ The paragraph numbers in this section are continued from those of section II.

† Vide Coslidge, *Treatise on the circle and sphere* p. 129.



we take these four circles as reference circles. Thus, using areal co-ordinates referred to the triangle Δ , if

$$C_0 \equiv (\sigma_1 x + \sigma_2 y + \sigma_3 z) (x + y + z) - (a^2 y z + b^2 z x + c^2 x y) = 0$$

$$C_1 \equiv (\sigma_0 x + \sigma_3 y + \sigma_2 z) (x + y + z) - (a^2 y z + b^2 z x + c^2 x y) = 0$$

$$(13. 1) \quad C_2 \equiv (\sigma_3 x + \sigma_0 y + \sigma_1 z) (x + y + z) - (a^2 y z + b^2 z x + c^2 x y) = 0$$

$$C_3 \equiv (\sigma_2 x + \sigma_1 y + \sigma_0 z) (x + y + z) - (a^2 y z + b^2 z x + c^2 x y) = 0$$

be taken as the canonical equations of the in and ex-circles then the tetracyclic co-ordinates of the circle X defined by the equation:

$$(13. 2) \quad X \equiv x_0 C_0 + x_1 C_1 + x_2 C_2 + x_3 C_3 = 0 \text{ will be taken as}$$

(x_0, x_1, x_2, x_3) . It will be seen that coordinates of the circle point at infinity Ω_0 are:

$$(13. 3) \quad \Omega_0: (-\sqrt{\sigma_0}, \sqrt{\sigma_1}, \sqrt{\sigma_2}, \sqrt{\sigma_3})$$

Further, the condition $Q = 0$ for a point circle that is the equation to the absolute quadric Q in the coordinates (X) is given by:

$$(13. 4) \quad Q \equiv \frac{x_0^2}{\sigma_0} + \frac{x_1^2}{\sigma_1} + \frac{x_2^2}{\sigma_2} + \frac{x_3^2}{\sigma_3} - \left(a^2 - \frac{2}{\sqrt{\sigma_2 \sigma_3}} \right) x_2 x_3 - \dots - \dots - \left(a^2 - \frac{2}{\sqrt{\sigma_0 \sigma_1}} \right) x_0 x_1 - \dots - \dots = 0$$

and the condition that the circle (X) may be line is

$$(13. 5) \quad x_0 + x_1 + x_2 + x_3 = 0$$

14. Special cosine coordinates of a circle.

We introduce here another system of circle coordinates *which will also be found useful in our investigation. Let A_0, A_1, A_2, A_3 be four oriented circles not having a common orthogonal circle. Then, the cosine coordinates $(\omega_0, \omega_1, \omega_2, \omega_3)$ of a circle X are the ratios of the cosines of the angles at which the circle X oriented in any manner cuts the reference circles A_0, A_1, A_2, A_3 . Now, as we require only the ratios of the coordinates, and the reference circles are oriented, a change in the orientation of X will simply change the signs of all the coordinates simultaneously leaving however their ratios unaltered. Thus $(\omega_0, \omega_1, \omega_2, \omega_3)$ are the cosine coordinates of the non-oriented circle X referred to the oriented circles A_0, A_1, A_2, A_3 .

Suppose in the three space S_3 representing the circles of the plane, B_0, B_1, B_2, B_3 , to be the vertices of the absolute polar tetrahedron of the tetrahedron A_0, A_1, A_2, A_3 . Using the same symbols to represent circles and also their representative points in S_3 , it is obvious that B_0 is the circle cutting orthogonally the circles A_1, A_2, A_3 , etc... Thus the cosine coordinates

* Narasinga Rao, *Studies in circle geometry*, The Maths, studies vol. (8) p. 69.

of B_0, B_1, B_2, B_3 will be respectively $(1, 0, 0, 0)$, $(0, 1, 0, 0)$, $(0, 0, 1, 0)$, $(0, 0, 0, 1)$, so that the cosine coordinates $(\omega_0, \omega_1, \omega_2, \omega_3)$ are a system of tetracyclic coordinates referred to the circles B_0, B_1, B_2, B_3 as reference circles, with one of the equiangular circles (*Vide infra*) being taken as $(1, 1, 1, 1)$.

By Frobenius theorem the cosine coordinates satisfy the identical relation

$$14. 1 \quad \sum_{i=0}^3 \sec^2 a_i \omega_i^2 + 2 \sum_{i,j=0}^3 \cos \theta_{ij} \sec a_i \sec a_j \omega_i \omega_j = 1$$

where a_i is the angle of intersection of the circles A_i and B_i and θ_{ij} is the angle of intersection of the circles B_i and B_j . In the special case when X is a point circle its cosine coordinates are all infinite. Hence the equation to the absolute quadric Q in this system is:

$$14. 2 \quad Q \equiv \sum_{i=0}^3 \sec^2 a_i \omega_i^2 + 2 \sum_{i,j=0}^3 \cos \theta_{ij} \sec a_i \sec a_j \omega_i \omega_j = 0.$$

Now, the net of order quadrics selfpolar to the tetrahedra B_0, B_1, B_2, B_3 and outpolar to the absolute quadric Q as through the eight points which are the vertices of two tetrahedra desmic to each other and to B_0, B_1, B_2, B_3 . It is well-known that these eight points correspond in our representation to the eight circles each of which cuts the four circles A_0, A_1, A_2, A_3 all at equal angles.* Further the four circles that touch A_0, A_1, A_2, A_3 when these belong to a Hart tetrad must correspond to the vertices of one of the two desmic tetrahedra.† Using cosine coordinates *w. r. t.* A_0, A_1, A_2, A_3 it is obvious that the eight circles each of which cuts the four given circles all at the same angle have coordinates $\pm 1, \pm 1, \pm 1, \pm 1$.

Consider now the special case when the circles A_0, A_1, A_2, A_3 are the nine point circle and the line circles. BC, CA, AB , which are the sides of the triangle Δ , with the sides oriented positively oneway round the triangle and the nine point circle oriented negatively. In this case the circles B_0, B_1, B_2, B_3 are respectively the circle point at infinity Ω_0 , and the three circles $\Omega_1, \Omega_2, \Omega_3$ having their centres at A, B, C respectively and cutting orthogonally the nine points circle. Thus, if $\omega_0, \omega_1, \omega_2, \omega_3$ be the cosine coordinates referred to these four special circles, namely, the sides of the triangle and the nine

* Let $S_1, S_2, \dots$ be the eight circles then S_1 cuts all the circles A_0, A_1, A_2, A_3 at the same angle θ_1 , S_2 cuts A_0, A_1, A_2, A_3 all at the same angle θ_2 etc.

† *Vide* Rangaswamy Geometry of Hart Tetrads *loc cit* *Jom. Ind. Math. Soc.* (6) New series p. 134.

Vide. The Geometry of Hart tetrads *loc cit* p 134.

points circle, it follows that the equation (14. 2) to the absolute quadric now becomes

$$(14. 3) \quad Q \equiv \sin 2A \omega_1^2 + \sin 2B \omega_2^2 + \sin 2C \omega_3^2 - 2 \sin A (\omega_0 \omega_1 + \omega_2 \omega_3) - 2 \sin B (\omega_0 \omega_2 + \omega_3 \omega_1) - 2 \sin C (\omega_0 \omega_3 + \omega_1 \omega_2) = 0$$

Further the equations of transformation from the coordinate system (ω) to the system (x) of article 13 are:

$$(14. 4) \quad \begin{aligned} \frac{x_0}{\sqrt{\sigma_0}} &= -\omega_0 + \omega_1 + \omega_2 + \omega_3 \\ \frac{x_1}{\sqrt{\sigma_1}} &= \omega_0 - \omega_1 + \omega_2 + \omega_3 \\ \frac{x_2}{\sqrt{\sigma_2}} &= \omega_0 + \omega_1 - \omega_2 + \omega_3 \\ \frac{x_3}{\sqrt{\sigma_3}} &= \omega_0 + \omega_1 + \omega_2 - \omega_3 \end{aligned}$$

The eight "equiangular circles" with cosine coordinates $\pm 1, \pm 1, \pm 1, \pm 1$ in this special case will correspond to the vertices C_0, C_1, C_2, C_3 of Δ_1 , and four other points $\Omega_0', \Omega_1', \Omega_2', \Omega_3'$ the vertices of another tetrahedron Ω' which together with Δ , and Ω form a desmic system. The coordinates of the vertices of the three desmic tetrahedra in the two systems (x) and (ω) are respectively.

		(x)	(w)
14. 5	$\Omega:$	$\Omega_0 \quad -\sqrt{\sigma_0}, \sqrt{\sigma_1}, \sqrt{\sigma_2}, \sqrt{\sigma_3}$	1 1, 0, 0, 0
		$\Omega_1 \quad \sqrt{\sigma_0}, -\sqrt{\sigma_1}, \sqrt{\sigma_2}, \sqrt{\sigma_3}$	1 0, 1, 0, 0
		$\Omega_2 \quad \sqrt{\sigma_0}, \sqrt{\sigma_1}, -\sqrt{\sigma_2}, \sqrt{\sigma_3}$	1 0, 0, 1, 0
		$\Omega_3 \quad \sqrt{\sigma_0}, \sqrt{\sigma_1}, \sqrt{\sigma_2}, -\sqrt{\sigma_3}$	1 0, 0, 0, 1
14. 6	$\Omega':$	$\Omega_0' \quad \sqrt{\sigma_0}, \sqrt{\sigma_1}, \sqrt{\sigma_2}, \sqrt{\sigma_3}$	1 1, 1, 1, 1
		$\Omega_1' \quad \sqrt{\sigma_0}, \sqrt{\sigma_1}, -\sqrt{\sigma_2}, -\sqrt{\sigma_3}$	1 1, 1, 1, -1
		$\Omega_2' \quad \sqrt{\sigma_0}, -\sqrt{\sigma_1}, \sqrt{\sigma_2}, -\sqrt{\sigma_3}$	1 1, -1, 1, -1
		$\Omega_3' \quad \sqrt{\sigma_0}, -\sqrt{\sigma_1}, -\sqrt{\sigma_2}, \sqrt{\sigma_3}$	1 1, -1, -1, 1
14. 7	Δ_1	$C_0 \quad 1, 0, 0, 0$	1 -1, 1, 1, 1
		$C_1 \quad 0, 1, 0, 0$	1 1, -1, 1, 1
		$C_2 \quad 0, 0, 1, 0$	1 1, 1, -1, 1
		$C_3 \quad 0, 0, 0, 1$	1 1, 1, 1, -1

Again in the pencil of quadrics determined by Q qua locus and its harmonically conjugate quadric w. r. t. Ω there is a quadric H circumscribed to Ω . Thus taking the equation of the absolute given in (14. 3) we see that the quadric H is given by the equation:

$$14. 8 \quad H \equiv \sin A (\omega_0 \omega_1 + \omega_2 \omega_3) + \sin B (\omega_0 \omega_2 + \omega_3 \omega_1) + \sin C (\omega_0 \omega_3 + \omega_2 \omega_1) = 0$$

which passes through the four points C_0, C_1, C_2, C_3 . We have thus verified

the truth of the theorem proved elsewhere that the complimentary Hart tetrad C_0, C_1, C_2, C_3 are the vertices of the tetrahedron inscribed in H and desmic to Ω .

15. The pedal and contact circle systems.

From the definitions of the pedal and contact circles of an infocal conic given in the introduction, it will be easily seen that if the infocal conic is given by the equation

$$15. 1 \quad \Sigma: x_0 \Sigma_0 + x_1 \Sigma_1 + x_2 \Sigma_2 + x_3 \Sigma_3 = 0$$

then its *pedal circle* is given by the equation.

$$15. 2 \quad \sigma_0 x_0 C_0 + \sigma_1 x_1 C_1 + \sigma_2 x_2 C_2 + \sigma_3 x_3 C_3 = 0$$

and its *contact circle* by the equation

$$15. 3 \quad x_0 C_0 + x_1 C_1 + x_2 C_2 + x_3 C_3 = 0$$

Thus in circle space S_3 the tetracyclic coordinates of the pedal circle of the infocal conic Σ whose coordinates are (X_0, X_1, X_2, X_3) referred to the circles C_0, C_1, C_2, C_3 are $(\sigma_0 x_0, \sigma_1 x_1, \sigma_2 x_2, \sigma_3 x_3)$; while the tetracyclic coordinates of the contact circle are (X_0, X_1, X_2, X_3) .

Now as the pedal or contact circles of the infocals $\Sigma_0 \Sigma_1 \Sigma_2 \Sigma_3$ are respectively the four circles C_0, C_1, C_2, C_3 it is clear that the space S_3 may be looked upon alternatively either as the home of infocals or as the home of circles, the points C_0, C_1, C_2, C_3 representing the infocals $\Sigma_0, \Sigma_1, \Sigma_2, \Sigma_3$ in the first case and the in and ex-circles of Δ in the second case. Further the equations.

4. 1 $x_0' = \sigma_0 x_0, x_1' = \sigma_1 x_1, x_2' = \sigma_2 x_2, x_3' = \sigma_3 x_3$ which define the collineation M in S_3 on the space of infocals, are also by (15. 2) and (15. 3) the equations of transformation from the contact circle ($\times$) of an infocal conic Σ to its pedal circle (σ_x) in the space of circles. Remembering that a collineation will be determined by the united points and by the fate of one extra point and noticing that the equations (4. 1) transform the circle point at infinity Ω_0 with coordinates $(-\sqrt{\sigma_0}, \sqrt{\sigma_1}, \sqrt{\sigma_2}, \sqrt{\sigma_3})$ into the polar circle of the anti medial triangle with the coordinates $(-\frac{1}{\sqrt{\sigma_0}}, \frac{1}{\sqrt{\sigma_1}}, \frac{1}{\sqrt{\sigma_2}}, \frac{1}{\sqrt{\sigma_3}})$ we have the following theorem:

(15. 4) *The transformation in circle space which carries the contact circle of an infocal conic into its pedal circle is a collineation which has the in and ex-circles for fixed members and transforms the circle point at infinity into the polar circle of the anti medial triangle of Δ .*

Moreover from (15. 3) we see that the contact circle of the infocal whose coordinates are (x) is the circle with coordinates (x) . Thus the point (x) in S_3

may be looked upon either as representing the infocal or its contact circle. Hence the cubic transformation $\gamma_1, \gamma_2, \gamma_3$ discussed in article 10 in regard to the infocals will furnish analogous results on contact circles. Thus if $\gamma_1, \gamma_2, \gamma_3$ denote the analogous circle transformations in circle space S_3 defined by the three desmic tetrahedra $\Delta_1, \Delta_2, \Delta_3$ where the vertices of Δ_1 correspond to the contact circles of $\Sigma_0, \Sigma_1, \Sigma_2, \Sigma_3$ namely the in and ex-circles, the vertices of Δ_2 correspond to the contact circles of the polar conics *w. r. t.* Δ of the in end ex-centres and the vertices of Δ_3 correspond to the contact circle of the infocals, namely the point pairs BC, CA, AB and the self polar conic of Δ whose centre is at the symmedian point, it follows from (10. 3) that :

(15. 5) The circles (x) and $\left(\frac{1}{x}\right)$ which are transforms in γ_1 are the contact circles of infocals which are *qua loci* harmonically conjugate *w. r. t.* Δ .

16. The Cubic transformations $\Gamma_1, \Gamma_2, \Gamma_3$ associated with pedal contact circles

Let us now consider the cubic transformation Γ_1 in circle space whose singular points are C_0, C_1, C_2, C_3 namely the vertices of Δ_1 in S_3 and whose fixed points are the vertices of the two tetrahedra $\Omega (\Omega_0, \Omega_1, \Omega_2, \Omega_3)$ and $\Omega' (\Omega'_0, \Omega'_1, \Omega'_2, \Omega'_3)$. Now, as a point and its transform in Γ_1 are conjugate points *w. r. t.* all the quadrics circumscribed to the tetrahedra Ω and Ω' it follows from (14. 6) that the circle (x_0, x_1, x_2, x_3) is transformed by Γ_1 into

the circle with coordinates $\left(\frac{\sigma_0}{x_0}, \frac{\sigma_1}{x_1}, \frac{\sigma_2}{x_2}, \frac{\sigma_3}{x_3}\right)$. But by (15. 4) the circle

$\left(\frac{\sigma}{x}\right)$ is the pedal circle of the infocal whose contact circle is (x) . Hence by

(17. 1) if (x) be the contact circle of Σ than $\left(\frac{\sigma}{x}\right)$ is the pedal circle of the harmonically conjugate conic of Σ *qua locus w. r. t.* Δ . Moreover by putting

$(x) = (\sigma y)$ the transformed point $\left(\frac{\sigma}{x}\right)$ becomes $\left(\frac{1}{y}\right)$. Hence by using an

argument similar to the above it is easily seen that the transformation Γ_1 transforms the pedal circle of an infocal conic Σ into the contact circle of the harmonically conjugate conic of Σ *qua locus w. r. t.* Δ . We have thus the following result.

(16. 1) The transformation Γ_1 in circle space carries the contact (pedal) circle of an infocal conic Σ into the pedal (contact) circle of the harmonically conjugate conic of Σ *qua locus w. r. t.* Δ .

Let us consider the quadric H circumscribed Δ_1 and Ω whose equation is

(16. 2) $H : \sin A \left(\frac{x_0 x_1}{\sqrt{\sigma_0 \sigma_1}} + \frac{x_2 x_3}{\sqrt{\sigma_2 \sigma_3}} \right) + \dots = 0$ by equations (14. 5), the equation to this quadric in the coordinate system (ω) is

(16. 3) $H : \sin A (\omega_0 \omega_1 + \omega_2 \omega_3) + \dots = 0$ From (14. 3) and (17. 4) it follows that the quadric H intersects the absolute quadric along its section by the planes

(16. 4) $\sin A \omega_1 + \sin B \omega_2 + \sin C \omega_3 = 0$

(16. 5) $\omega_0 + \cos A \omega_1 + \cos B \omega_2 + \cos C \omega_3 = 0$

of which the first is the tangent plane to Q at Ω_0 , the circle point at infinity, and the second is the polar plane *w. r. t.* Q of the point whose coordinates in the system (ω) are $(1, \sec A, \sec B, \sec C)$, that is the polar circle of the triangle Δ . Thus, the generators of H through Ω_0 are also the generators of the absolute quadric through Ω_0 . Now, since H is a circum quadric of Δ_1 by (5. 1) it is the totality of infocals Σ outpolar to a conic which by (5. 2), (5. 3) and (17. 3) is seen to be

(16. 6) $a^2 b^2 + b^2 m^2 + c^2 n^2 + 2bc \cos A mn + 2ca \cos B nl + 2ab \cos C lm = 0$

namely, the harmonically conjugate conic *qua envelope* of the absolute conic *w. r. t.* Δ . Thus, the harmonically conjugate conic of the infocal Σ *qua locus w. r. t.* Δ is outpolar to the absolute conic and hence is a rectangular hyperbola.

Let X be a circle of the quadric family H and Σ the infocal for which X is the contact circle. Since H is invariant for Γ_1 the transform of X in Γ_1 also belongs to the family H . Hence by (17. 2) the pedal circle of the harmonically conjugate conic of Σ *qua locus w. r. t.* Δ also belongs to H . But the harmonically conjugate conic of Σ *qua locus w. r. t.* Δ is a rectangular hyperbola. It follows therefore that,

(16. 7) The quadratic family H of circles is the aggregate of pedal circles of infocal rectangular hyperbolas.

Let us next consider the transformation Γ_2 whose fixed points are the vertices of Ω and singular points the eight vertices of Δ_1 and Ω' . If X and X_2 be transforms in Γ_2 then X and X_2 are conjugate points *w. r. t.* all the quadrics of the net circumscribed to the two tetrahedra Δ_1 and Ω' . Now the quadrics of the net circumscribed to Δ_1 and Ω' are all outpolar to the absolute quadric Q . In particular the six plane pairs of the net, that is, the six pairs of desmic planes through the edges of the tetrahedron Ω are conjugate planes for Q . Since X and X_2 are conjugate points for each of these plane pairs, it follows that the pairs of planes passing through each edge of Ω and containing the points X, X_2 are harmonic *w. r. t.* the pair of desmic planes through the edge. Remembering that the vertices $\Omega_0, \Omega_1, \Omega_2, \Omega_3$ of Ω represent respectively the circle point at infinity and the three circles with centres at A, B, C and cutting the nine point circle orthogonally and noticing that conjugate points *w. r. t.* Q correspond to orthogonal circles in the plane, it follows that the pairs of desmic planes (consisted as the loci of pairs in S_3) through $\Omega_0, \Omega_1, \Omega_0, \Omega_2, \Omega_0, \Omega_3$, are respectively the pairs of bisectors of the angle ABC of the triangle Δ . Further, since the centre of a circle represented by the point X in S_3 is the point of intersection of Ω_0, X with the

absolute quadric, it is obvious that the pair of planes through the edge $\Omega_0 \Omega_1$ and X, X_2 will project on the plane into a pair of lines through the vertex A and the centres of the circles, equally inclined to the bisectors of the angle A , or, in other words, into a pair of isogonal conjugate lines through A . By parity of reasoning for the edges $\Omega_0 \Omega_2, \Omega_0 \Omega_3$, we see that the centres of the circles X, X_2 are isogonal conjugates w. r. t. Δ . We have thus arrived at the result:

(16. 8) The centres of a pair of circles which are transforms in Γ_2 are isogonal conjugates w. r. t. Δ .

In particular since C_0, C_1, C_2, C_3 are four of the fixed circles of the transformation, their centres are by (16. 8) the self isogonal points. Viz., the in and ex centres of Δ . Further, as the vertices of the third tetrahedron Ω' are in perspective with those of Δ , the centre of perspective being at Ω_0 , it is seen that the centres of the other four fixed circles $\Omega_0^1, \Omega_1^1, \Omega_2^1, \Omega_3^1$ of the transformation are also the in and ex-centres of the triangle.

Let us now proceed to fix the other three pairs of desmic circles through the edges $\Omega_2 \Omega_3, \Omega_3 \Omega_1, \Omega_1 \Omega_2$, of the tetrahedron Ω . The planes corresponding to each pair of desmic circles are those determined by an edge say $\Omega_1 \Omega_2$ of Ω and the two other edges of Δ_1 which meet, $\Omega_1 \Omega_2$. Thus, the plane determined by the edges $\Omega_1 \Omega_2$ and $C_0 C_1$ corresponds to the circle in coaxial system determined by the nine points circle and the side BC and cutting orthogonally the circles C_0 and C_1 . Thus, it is one of the circles which inverts the side BC into the nine points circle and inverts the two circles C_0, C_1 , into themselves. The other five circles are similarly determined.

We now obtain the relation connecting the radii of a pair of circles which are transforms in Γ_2 . Let r and r' be the radii of the circles X, X' which are transforms in Γ_2 whose centres are the pair of isogonal conjugates P, P' ; and let, l, m, n, l', m', n' be the perpendicular distances of P and P' from the sides of Δ respectively. Now, the cosine coordinates of the circles X and

X' are of the form $(\omega_0, \omega_1, \omega_2, \omega_3), \left(\frac{1}{\omega_0}, \frac{1}{\omega_1}, \frac{1}{\omega_2}, \frac{1}{\omega_3}\right)$. Thus, we have the following relations,

$$\begin{aligned} \omega_0 &= \left(r^2 + \frac{R^2}{4} - P N^2\right)/rR & 1/\omega_0 &= \left(r'^2 + \frac{R^2}{4} - P' N^2\right)/r'R \\ \omega_1 &= l/r & 1/\omega_1 &= l'/r' \\ \omega_2 &= m/r & 1/\omega_2 &= m'/r' \\ \omega_3 &= n/r & 1/\omega_3 &= n'/r' \end{aligned}$$

Thus: $\frac{l l'}{r r'} = \frac{m m'}{r r'} = \frac{n n'}{r r'} = \frac{(r^2 - t^2)(r'^2 - t'^2)}{r r' R^2}$

If we put $ll' = mm' = nn' = E^2$ we get,

$$(16. 9) \quad (r^2 - t^2)(r'^2 - t'^2) = R^2 E^2$$

where t and t' are the powers of P and P' w. r. t. the nine points circle and t the radius of the auxiliary circle of the inconic of Δ whose foci are at P and P' and N the nine points Centre.

If we put $r^2 = \infty$, in the above relation (16. 9) we find $r' = t$, that is the circle X' is some circle cutting orthogonally the nine points circle. By putting $r^2 - t^2 = RE$ we find $r' - t'^2 = RE$. Since the transformation Γ_2 transforms* the pedal circle of an infocal rectangular hyperbola into the pedal circle of another infocal rectangular hyperbola we see that the radius of the pedal circle of another infocal rectangular hyperbola with centre at P is given by the relation $r^2 = t^2 + RE$.

It is known that the coaxial system determined by a pair of corresponding circles of Γ_1 , contains, besides, a pair of corresponding circles of Γ_2 and also a pair of corresponding circles of Γ_3 , and further that the parameters of Γ three pairs of circles are mutually harmonic. The circles of the coaxial system can be put into homographic correspondence with their centres. Thus the centres of the two circles which are transforms in Γ_1 separate harmonically the centres of the pairs of circles of Γ_2 and also of Γ_3 . But as the centres of the circles which are transforms in Γ_2 are isogonal conjugates w. r. t. Δ it follows that the centres of other two pairs of circles are cut out on the line of centres by the principal hyperbolas. Thus

(16. 10) The centres of a pair of circles which are transforms in Γ_1 or Γ_3 lie on the same principal hyperbola.

Let X be any circle and X_2 be its transform in Γ_2 . The line $\Omega_0 X$ through Ω_0 is transformed by Γ_2 into the line $\Omega_0 X_2$ through the same vertex of Ω . Since H (16. 3) is invariant for Γ_2 , the lines $\Omega_0 X$ and $\Omega_0 X_2$ meet H in points which are themselves transforms in Γ_2 . Now, if Σ and Σ_2 be the infocals whose pedal circles are X and X_2 it is obvious that the two concentric systems of circles represented by $\Omega_0 X$ and $\Omega_0 X_2$ are respectively the pedal circles of infocals confocal with Σ and Σ_2 . From (16. 8) the points of intersection of the lines with H correspond to the pedal circles of the rectangular hyperbolas in the two confocal systems. We thus have the result:

(16. 11) If the pedal circles of Σ and Σ_2 are transforms in Γ_2 , then the pedal circles of their respective confocal rectangular hyperbolas are also transforms in Γ_2 .

Let Σ and Σ_3 be a pair of infocals whose pedal circles X and X_3 are transforms in Γ_3 . Then the points of intersection, say U, V of $X_2 X_3$ with H correspond by (16. 8) to the pedal circles of the two rectangular hyperbolas in the infocal pencil determined by Σ and Σ_3 . Since H is a quadric

* Since the quadric H (16.3) is a circum quadric of Ω also.

circumscribed to Δ_1 , and Ω , X and X_3 are conjugate points for H . Thus X and X_3 are harmonic w. r. t. U and V . Now, as the infocals are in homographic correspondence with their pedal circles, it is obvious that the parameters of the infocals Σ , Σ_3 are harmonic with those of the rectangular hyperbolas in the pencil. Therefore the F -conic of Σ is Σ_3 is a rectangular hyperbola so that their director circles are orthogonal. We have thus the result:

- (16. 12) The director circles of a pair of infocals whose pedal circles are transforms in Γ_3 are mutually orthogonal.

Since the tetrahedron Ω' is selfpolar for H , we see from (16. 9) and (16. 12) that the director circles of the infocals for which the circles Ω_0' , Ω_1' , Ω_2' , Ω_3' are pedal circles are mutually orthogonal. These four mutually orthogonal circles have their centres respectively at the in and excentres of the triangle and the squares of their radii are $-4Rr$, $4Rr_1$, $4Rr_2$, $4Rr_3$. Now all the circles having their centres at I_0 , the in-centre are infocals and if r' be the radius of this infocal circle, then the radius of its director circle will be $\sqrt{2}r'$. Thus the squares of the radii of the four circles Ω_0' , Ω_1' , Ω_2' , Ω_3' are respectively $-2Rr$, $2Rr_1$, $2Rr_2$, $2Rr_3$, when r , r_1 , ... are the radii of the in & ex circles.

In the coaxal system determined by a pair of circles which are transforms in Γ_1 there are two other pairs of circles which are respectively transforms in Γ_2 and Γ_3 and three pairs of circles are mutually harmonic. As the circles of the coaxal system are in (1 to 1,1) correspondence with the infocals of which there are pedal circles, it follows that the parameters of the three pairs of infocals, say, Σ' , Σ_1' , Σ_2' , Σ_3' , are mutually harmonic, and therefore also of the parameters of their corresponding three pairs of director circles. But as the director circles of Σ''' and Σ_3''' are by (16.12) are orthogonal it follows that

- (16. 13) The director circles of a pair of infocals when pedal circles are transforms in Γ_3 are the circles of antisimilitude of the director circles of the either pair of infocals whose pedal circles are transforms in Γ_1 and Γ_2 contained in the pencil.

SOME NOTES ON CITRUS TAXONOMY - DESCRIPTION AND CLASSIFICATION OF CITRUS SPECIES AND NEAR RELATIVES

By

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INTRODUCTION

These brief notes from part of a study at first hand of the *Citrus* species grown at the Experimental Orchards of the University of California at Los Angeles, in the post-graduate course in citriculture undertaken by the author under the guidance of Professor R. W. Hodgson, Dean of the College of Agriculture, University of California, a recognized American authority on world citrus. I acknowledge here my gratefulness to Professor Hodgson and to Professor Schroeder who was associated in the conduct of the course.

The differential characters of the several species of *Citrus* under study are put up in the form of a tabular statement, (appended), to help towards a comprehensive picture of the classification of *Citrus* species. The size of tree and habit of growth, certain leaf characters, size and form of petiole wings, some of the spine, floral and fruit characters are among the main characters which help to distinguish the species and to identify them. The tabulated statement is based on these characters. In the case of the heading, "separation or union of stamen filaments", it may be stated that the normal situation in a citrus flower is that the filaments are united at the base into groups of three or more i. e. in bundles. Where this situation is altered i. e. the filaments are relatively free or entirely free, this fact in such cases is mentioned in the tabulated statement. Similarly, only in certain *Citrus* species the new growth and lower side of petals are coloured different from normal and in the tabulated statement, where colouration occurs, the fact is mentioned. Though this tabulated statement strictly relates to observations of the trees of *Citrus*

species at the Experimental Orchards of the University of California at Los Angeles, they cover the species under cultivation in India and hence it is hoped would be of deep interest to students and workers connected with Indian Citriculture.

CLASSIFICATION

The botanical classification employed in the tabular statement is mainly that of Swingle with the modifications which are justified by the first hand observations explained in the statement. In this connection it must be pointed out that unanimity in acceptance of any particular classification of citrus as most accurate does not still exist, and it will be yet sometime before it can be achieved. It is to the credit of Swingle, undoubtedly one of the most eminent authorities in the field, that he has very much simplified the classification on most rational lines and brought under recognition only certain variable polymorphic species. But there are horticulturists whose opinions also count, who do not go the whole hog with Tanaka's classification with numerous species, and who agree that a certain amount of simplification is necessary to avoid the naming of countless forms without limit, but who however consider that Swingle has perhaps to some extent over-simplified the matter and that there is lack of a certain amount of consistency in his readjustment of the species. Instances of inconsistencies have been brought out in the tabulated statement and are summarised below.

1. Swingle places all mandarins under one species, *C. reticulata*, but as is evident from the tabular statement, there are differences between the King (*C. nobilis*), the Mediterranean mandarin (*C. reticulata*), and Satsuma (*C. unshiu*), which are too wide to come under one species. The inconsistency here lies in the fact that for much lesser differences such as exist for example between grapefruit and shaddock (pummelo), he has, though rightly, separated them into different species, but for such wider differences, he has not conceded a specific status.

2. In the case of rough lemon, the description in the tabulated statement brings out how different it is from the ordinary lemon, but in spite of this, according to Swingle, rough lemon is brought under ordinary lemon, *Citrus limon*.

3. Sweet lime shows enough distinct morphological differences from acid lime *Citrus aurantifolia* (Swingle), to retain the status of a species *Citrus limetta* (Risso), but according to Swingle, it merges with the acid limes.

4. The description of the two species of *Fortunella* viz. *F. japonica* and *F. margarita* brings out the fact that differences between the species seem too slight to separate them into two different species. There seems to be more a varietal difference than species difference.

5. Swingle claims that *Poncirus* is closely related to *Citrus*. But because of the deciduous character of *Poncirus* and several other features mentioned in the tabular statement, *Poncirus* and *Citrus* seem to have been evolved quite differently. In this respect, *Fortunella* has a greater claim of close relationship to *Citrus*, being evergreen, and similar in stem, twigs, spines, flower and fruit characters.

Among other observations which do not check with Swingle's descriptions are the following:—

The species, *Citrus ichangensis* seen in the orchard does not tally with the description given by Swingle.

According to Swingle, the new growths of *Citrus medica* are coloured purplish, but examination of the trees of this species in the orchard does not reveal that the new growths are so coloured.

Nothing of whatever has been said above is likely to retract from the merits of a classification by a great taxonomist such as Swingle, but in the light of further observations, a revision in however small measure may perhaps be warranted, since in science there is nothing like a last word.

SOME CORRELATIONS

From the observations made of the *Citrus* species, certain interesting inferences can also be drawn, important among which are the following:—

- (1) There seems to be a correlation existing between the colour of the lower side of petal or the colour of the bud and the colour of the new growth. Either colour exists in both or not at all.

- (2) Large fruited varieties seem to have large sized flowers.

- (3) The form of the pistil seems to correlate with the form of the fruit.

GENUS FORTUNELLA

As an addition to the few characteristics of the genus *Fortunella* mentioned in the tabular statement, it may be stated that while *Fortunella* resembles *Citrus* in stem, twig, spine, flower and fruit characters and is also evergreen, it differs from the *Citrus* in that it has (1) only 3 to 7 carpels as against 8 to 18 in *Citrus*, (2) never more than two ovules per carpel as against 4 to 8 in *Citrus*, (3) simple, single-bladed leaves with raised veins on upper surface with darker green colour above and lighter green below, (4) not more than 16 to 20 stamens, and (5) cavernous stigma.

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GENERAL PERFORMANCE OF SOME IMPROVED STRAINS
OF PADDY AT THE UNIVERSITY EXPERIMENTAL
FARM IN 1952-53.

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INTRODUCTION

Of the various methods that can be advocated to step up production of paddy, an important food crop of India, that by improved seed is of the utmost practical importance. Every crop specialist in the Government Department of Agriculture has a number of improved strains in his individual crop, which have done well in different zones of the state and which are capable of yielding from 10 to 30 per cent more than the local strains. This would mean that if all the local seeds which the ryot sows or plants can be replaced by the improved or departmental strains, the production can easily go up by 10 to 30 per cent which is no mean achievement. One of the main lines of work urgently required in this country is a rapid spread of improved strains. Therefore one of the very first things that the Annamalai University Department of Agriculture did was to introduce and try on its Experimental Farm, several improved strains of paddy, of long, medium and short duration, so as to select the best strains suitable for the zone around the Annamalai University. Regular work in this direction was however possible only in the year 1952-53 though some work was also done in 1951-52 the first year of commencement of the Department of Agriculture. Besides experimenting with the strains, the Government Department of Agriculture was supplied

by the University Department with a total of seed paddy enough for nearly 2000 acres for their distribution of improved strain to ryots. Apart from this, the trials of these strains and their cultivation on improved lines were a demonstration of deep interest to the farmers around the University. In this zone, where growing of a single crop has been the rule, the possibilities of growing double crops were also demonstrated.

The present paper summarises observations on the general performance of the improved strains of paddy at the University Experimental Farm in 1952-53.

Site and Soil :

Of the 50 acres of the University Experimental Farm, about 20 acres are low lying which enjoy direct flow irrigation when water is received from channels, while the rest are high level areas which experience difficulty in the matter of irrigation. The soils are clayey loam with different grades of fertility with patches of salinity occurring here and there. Due to continuous cropping without manuring of lands by the tenants, the general poverty of the soil was evidenced by the very low average yields of the plots (900 lb. per acre) prior to the control of such lands by the department.

Season :

Of both the seasons, 1951-52 and 1952-53, 1952-53 was considered to be the worse and in fact the worst for many years, due to the unprecedented failure of monsoons. The arrival of water at channel was also considerably delayed and the supply of water was frequently interrupted. Due to this, the planting operations could not be taken up in time as per schedule as a result of which the seedlings at the nurseries though raised in time had to remain generally for unduly longer period in the nursery. Many a time, the puddled fields had dried up for lack of water. Though the South West Monsoon (1952) commenced in time in the West Coast, its subsequent development was not favourable, with the result this region which used to enjoy showers beneficial for early sown nurseries was completely deprived of this advantage. The North East Monsoon (1952) was also a total

failure and the rains received were far below normal. The rainfall during the dry weather period was also subnormal. In addition, a severe cyclone developed in November 1952 and caused damage to crops in the Chidambaram taluk, in a similar manner to the Tanjore District, though not so intensively. Thus in brief, the seasonal conditions in 1952-53 were quite unfavourable and hindered very much the progress of work. The observations on the strains below have to be evaluated with this background in mind.

Strains tried :

The strains tried were (1) Co. 26 (Blast resistance culture, Nellore samba), (2) Adt. 17 (Muthu samba), (3) Co. 19 (Chingleput Sirumani), (4) Adt. 8 (Vellai Sirumani), (5) Adt. 9 (Poonkar), (6) Adt. 20 (Hybrid Kuruvai), (7) Adt. 3 (Kuruvai). Observations on the performances of these strains are given below.

The following table gives a composite picture of the performance :-

Table showing flowering and duration of Strains.						
	Co. 26 Blast Resistant Nellore Samba	Adt. 17 Isolated from Muthu- samba	Co. 19 Chingle- put Siru- mani	Adt. 9 Poonkar	Adt. 20 Hybrid Kuruvai	Adt. 3 Kuruvai
Sown on ..	15- 8-52	20- 8-52	28- 8-52	14- 7-52	18- 7-52	27- 7-52
Transplanted on ..	25- 9-52	24-10-52	31-10-52	11- 8-52	18- 8-52	24- 8-52
Initial flowering ..	29-12-52	24-12-52	5- 1-53	3-10-52	30- 9-52	5-10-52
Peak flowering ..	1- 1-53	1- 1-53	..	8-10-52	3-10-52	13-10-52
Harvest ..	16- 2-53	24- 2-53	11- 3-53	5-11-52	27-10-52	7-11-52
Average yield per acre in lb. ..	1572	840	887	2543	2452	1324
Maximum yield per acre in lb ..	2130	..	..	3600	3000	1500
Duration in days ..	186	188	196	115	102	104
Duration assigned to these strains, by the Govt. Agri. Dept. in days. ..	200	165	190	120	105	95

SHORT DURATION STRAINS.

1. *Adt. 9 (Poonkar)* :

This is an improved strain isolated from *Poonkar*. It was grown in 4 acres. Seeds were sown on 14-7-52 in wet nurseries and transplanted on 11-8-52. Seedlings were thus 29 days old at the time of planting. Slight difficulty was experienced in pulling out the seedlings from the nurseries at this age. The plots received manurial treatment of 10 cart loads of Municipal compost prior to planting and 100 lb. of ammonium sulphate 25 days after transplanting. The transplanted seedlings quickly established and initial flowering was recorded on 3-10-52, 82 days after sowing or 54 days after transplanting. The flowering was very uniform, and general flowering was recorded on 8-10-52. In many places the crop showed a tendency to lodge, though this variety is classed as a non-lodging variety by Government Department of Agriculture. Harvest of the crop came on 5-11-52 and throughout the period of growth, no disease or insect attack was noticed. Rat damage was observed prior to the flowering, probably due to the succulent nature of the shoots. This was controlled by the use of zinc phosphide. The duration of *Adt. 9* at the farm was recorded as 115 days as against 120 days assigned by the Government Agricultural Department. While the average yield of the strain works out to 2543 lb. of grain per acre, one of the plots gave a yield of 3600 lb. of grain per acre.

2. *Adt. 20 (Hybrid Kuruvai)* :

This is a cross between *Adt. 3*, and *Adt. 2 (Kuruvai, Sirumani)*. It is valued for its earliness and round shaped grains. It was transplanted in 7 acres. Seeds were sown on 18-7-52 in wet nurseries and transplanted on 18-8-52. and the age of the seedlings at the time of transplanting was 32 days. The plots received a general treatment of 10 cart loads of Municipal compost per acre and 100 lb. of ammonium sulphate applied as stated under strain *Adt. 9* above. Initial flowering was recorded on 30-9-52, 75 days after sowing or

44 days after transplanting. General and peak flowering was recorded on 3-10-52, and the crop came to harvest on 27-10-52, and the duration of the crop works out to 102 days as against 105 days assigned to this strain by the Government Department of Agriculture. Seedlings were pulled and no difficulty was experienced in pulling them. When the crop was 53 days old, lodging was noted, even before the set of grains in the penicle, though this type is also classed as a nonlodging variety by the Government Department of Agriculture. While the average yield of this strain works out to 2452 lb. of grains per acre, one of the plots gave a maximum yield of 3000 lb. of grain per acre.

3. *Adt. 3 (Kuruvai)* :

This is isolated *Kuruvai*. Seeds were sown on 27-7-52 and transplanted on 24-8-52, the age of the seedlings being 29 days. The manurial treatment of the main fields was as in the case of the other strains dealt with above. By the time, the seedlings could be planted, difficulties of water supply in the channel began to operate and planting operations were interrupted several times, delaying the completion of planting. Subsequently the transplanted fields also began to be affected by lack of water. In general, consequently, the stand of the crop was not uniform and there was not much of tiller formation and the flowering was protracted. Initial flowering was recorded on 5-10-52, 71 days after sowing, and general flowering was recorded on 13-10-52. Harvest was taken up on 7-11-52, the duration of the strain being 104 days as against 95 days assigned by the department. The average yield worked out to 1324 lb. of grain per acre.

LONG DURATION STRAINS

1. *Co. 26 (Blast resistant. Nellore Samba)* :

Seeds were sown in wet nurseries on 15-8-52 and the transplanting was taken up on 25-9-52, the age of the seedlings being 42 days. The main fields received manurial treatment of 20 cartloads of municipal compost and 100 lb. of ammonium sulphate per

acre, the former applied prior to planting and the latter $2\frac{1}{2}$ months after planting. Initial flowering was recorded on 29-12-52, 137 days after sowing. Peak flowering was recorded on 1-1-53. Harvest was taken up on 16-2-53, and the duration was calculated to be 186 days as against 200 days assigned by the Government Department of Agriculture. Minor incidence of *anaikombu* was observed. The seedlings at the nursery were completely free from attack of pests and diseases. In general, the stand of the crop was good, despite the adverse seasonal conditions and has recorded a maximum of 2130 lb. of grains per acre and the general average for the strain works out to 1572 lb. of grains per acre.

2. *Adt. 17 (Muthusamba)*:

This strain was isolated from Muthusamba. Seeds were sown in wet nurseries on 20-8-52 and seedlings were transplanted 66 days later on 24-10-52. Initial flowering was recorded on 24-12-52 and the peak flowering was recorded on 1-1-53. The seedlings at the nursery were affected very badly by thrips. The crop was harvested on 24-2-53 and the duration was calculated to be 188 days against 165 days assigned to this by the Government Department of Agriculture. The stand of the crop was very sparse and there was no tiller formation. The plots received no basal manure but only 100 lbs. of ammonium sulphate $2\frac{1}{2}$ months after planting. It recorded an average yield of 840 lb. grains per acre.

3. *Co. 19 (Chingleput Sirumani)*:

This strain was isolated from Sirumani of Chingleput district. Seeds were sown in wet nurseries on 28-8-52, and the 65 days' old seedlings were transplanted on 31-10-52. The seedlings at the nurseries were not healthy and were attacked by thrips. Flowering was recorded on 5-1-53, 131 days after sowing. The stand was not uniform and the duration was calculated to be 196 days as against 190 days assigned to this by the Government Department of Agriculture. The average yields from the plots, though manured with 100 lb. of

groundnut cake and 100 lb. of ammonium sulphate per acre has worked out to be only 887 lb. of grains per acre, because of the bad season.

MEDIUM DURATION STRAINS

While growing of medium duration strain *Adt. 8* was attempted to fit in with thaladi, this had to be abandoned due to lack of water and subsequent cyclones. But this strain in 1951-52 season gave 1500 lb. per acre on the average, but even in that year, the first year of starting the work, planting had to be delayed.

Discussion:

From these general observations it is seen that time of sowing and transplanting have got a great influence on the behaviour of the crop. This observation is evidenced by the fact that the early sown short duration nurseries were completely free from pests and diseases and the transplanted crop having been transplanted in time did exceedingly well in giving good returns; and the double cropping trials indicate that the short duration varieties respond better to manuring than the long term varieties. From this experience and observation, it can be safely advocated that in this zone, for short duration, it is safer to go in for *Adt. 20* in view of its earliness and round shape of grains for double cropped areas, instead of *Adt. 9* or *Adt. 3*.

It was also possible to observe in the case of long term varieties tried here that the final yield depended upon the duration permitted for the crop in the main field. Good yields are recorded only when planting is done early enough and the growing period is at least four months. Though this condition could not be given fully for the long duration varieties at the farm, in 1952-53, the conditions offered for *Co. 26* in certain plots were more or less near the optimum conditions mentioned above and these plots recorded a yield of 2130 lb. grain per acre, in spite of general adverse conditions. Very poor yields were recorded in the case of other long duration varieties, since the growing period was considerably lessened due to their unduly long life in the

nursery, forced on account of lack of water to transplant in the main fields. In such extremely adverse season, it was clearly seen that Co. 26 resisted it better than other long duration strains tried.

These general observations have indicated the importance of manures to raise the yield. Ammonium sulphate in combination with any organic matter, compost in our case, has been most efficacious for paddy as evidenced by increased yields in the short duration varieties and in the long duration variety Co. 26. It is an unfounded prejudice entertained by several ryots against the use of chemical manures on the wrong impression that they bring about the depletion of soil fertility. Using them in judicious combination with organic manures is bound to step up yields. During the year water facilities did not exist for growing and incorporating green manures.

Summary :

By the trials of paddy strains in the University Farm in 1952-53,

(1) by the use of short duration varieties, introduction of double cropping system to enhance yields and increase receipts has been demonstrated,

(2) suitability of strains for the kuruwai has been tested and certain recommendations have been possible,

(3) beneficial responses of paddy to manurial treatments have also been demonstrated,

(4) strains likely to resist adverse conditions of water supply have been mentioned.

Some Preliminary Observations on Zinc Phosphide for Rat Control in the University Agricultural Extension Farm

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In the new Agricultural Extension Scheme at the Annamalai University, 43 farmers have been allocated an average of 4 acres of lands per head for practical training in scientific agriculture and one of the responsibilities of the University Department of Agriculture is to train the 'Extension Farmers' in combating pests and diseases. This year some time after the sowing of samba paddy nurseries, the 'Extension Farmers' noticed severe attacks of rats on the tender seedlings and requested the University Department of Agriculture assistance in controlling the rats. Sixteen of the farmers who had acute trouble were supplied with Zinc Phosphide and in each of the nurseries the method of its use was demonstrated. 5 parts of zinc phosphide were mixed with 95 parts of puffed rice by weight and the poisoned puffed rice was sprinkled in the nurseries on the bunds. The bait was also put in specially made straw boats and was kept in corners of the fields, along the bunds and in the portions where the damages were noted. This was done in the evening, and dead rats were carefully traced in the area treated and its vicinity the next morning, and counted. This treatment was repeated for six days from 11-9-52 to 16-9-52, and the following table shows the counts of dead rats on each of the days individually for the 16 'Extension Farmers'.

Dates on which the poison was used with puffed rice as bait.
Month : September.

Extension Farmers S. No.	11th	12th	13th	14th	15th	16th	Total.
1	18	7	3	2	...	1	31
2	7	...	2	1	2	1	13
3	30	7	...	...	...	...	37
4	5	3	1	1	2	2	14
5	15	...	...	...	...	...	15
6	5	...	...	...	...	...	5
7	9	1	1	1	...	...	12
8	3	...	...	...	...	...	3
9	14	...	...	...	...	...	14
10	9	5	1	1	1	...	17
11	3	1	1	...	...	...	5
12	4	...	...	...	...	...	4
13	7	...	...	...	...	...	7
14	17	...	...	...	...	...	17
15	2	...	...	...	...	...	2
16	15	...	...	10	...	...	25

As the data indicate, within the very first day subsequent to treatment, the maximum number of rats had been killed. In 10 out of 16 cases, on the second day, no dead rats were traceable. In 9 out of 16 cases, from the third day through the subsequent three days of the experiment, counts of dead rats were nil. In all these cases, the baits were undisturbed, leading to the conclusion that either there were no more rats in the vicinity of the field or the rats would no longer come near it. However it has been found that in all these sixteen cases as far as experience in the University Extension farm is concerned, the rats trouble declined steeply after the very first day of application of zinc phosphide as noticed on the succeeding days. At any rate after continuous use of baits for 5 or 6 days, the nurseries no longer suffered from the attack of rats.

It is planned to continue further detailed observations of the use of zinc phosphide for rat control at the University Experimental Farm. It is also of interest to report that by the use of 50 baits per acre over an area of 15 acres of kuruvai paddy at the University Experimental Farm which is different from the University Extension Farm, on the very first day of application of zinc phosphide, 258 rats were counted as killed and little trouble was seen later from rats.

தொல்காப்பியம்—நன்னூல், எழுத்ததிகாரம் புணரியல்

திரு. க. வெள்ளைவாரணாசர்

மொழிகள் புணர்தற்குரிய கருவியின் இயல்புணர்த்தினமையின் இது புணரியல் எனும் பெயர்த்தாயிற்று. மேற்கூறப்படும் புணர்மொழிச் செய்கைகளுக்கு இன்றியமையாத சிறப்புக் கருவிகள் இதன்கண் கூறப்படுகின்றன.

எ.உ. மூன்றுதலையிட்ட முப்பதின் நெழுத்தின்
இரண்டுதலையிட்ட முதலா இருபல்
தறுநான் கீறெடு நெறின் றியலும்
எல்லா மொழிக்கும் இறுதியு முதலும்
மெய்யே யுயிரென் றுயி ரியல்.

இது மொழி மரபில் விரித்துக்கூறிய மொழி முதலெழுத்துக்கள் மொழிக்கீற மெழுத்துக்கள் என்பவற்றைத் தொகுத்துணர்த்துகின்றது.

(இ - ள்) மேற்கூறப்பட்ட முப்பத்துமூன் நெழுத்துக்களுள் இருபத்திரண் டெழுத்துக்களை முதலாகக்கொண்டும் இருபத்துநான்கெழுத்துக்களை இறுதியாகக் கொண்டும் வழக்குநெறிக்கண் நிலபெற்று நடக்கும் எல்லா மொழிகளுக்கும் இறுதியும் முதலுமாவன மெய்யும் உயிருமாகிய அவ்விரண்டியல்பினையுடையன - எ - று.

(உ - ம்) மரம், இலை, ஆல், விள என மெய்யும் உயிரும் முதலும் ஈறும் ஆயின.

பன்னிரண்டாயிரம் க த ந ப ம ச வ ரு ய என்னும் ஒன்பது மெய்களும் நுந்தையென்புழி நகரமெய்யின்மேல் வரும் குற்றுரமும் ஆகிய இருபத்திரண் டெழுத்துக்களும் மொழிக்கு முதலில் வரும் எழுத்துக்களாகும். பன்னிரண்டாயிரம் ரு ண ந ம ன ய ர ல வ ழ ள என்னும் பதினொரு மெய்களும் ஈற்றுக்குற்றிய லுரமும் ஆக இருபத்துநான்கெழுத்துக்களும் மொழிக்கு ஈறும் எழுத்துக்களாம்.

எ.ச. அவற்றுள்

மெய்யீறெல்லாம் புள்ளியொடுநிலையல்.

இது மேற்குத்திரத்திற் கூறியவாற்றால் தனிமெய்யும் மொழிக்கு முதல்வரும் என எய்திய கருத்தினை விலக்குதலின் 'எய்தியது விலக்கல் நுதலிற்று' என்பர் உரையாசிரியர்.

(இ - ள்) மேல் மெய்யும் உயிரும் என்று கூறிய இரண்டனுள் மொழிக்கு ஈருகிய மெய்யெல்லாம் புள்ளிபெற்று நிற்கும் என்பதாம்.

எனவே மொழிக்கு முதலில்வரும் மெய்யெல்லாம் புள்ளியிழந்து உயிரோடு கூடிநிற்கும் என உய்த்துணர வைத்துத் தனிமெய் மொழிக்கு முதலாகாதென விலக்கினாராயிற்று.

மொழிமுதல் மெய் புள்ளியொடு நிலைதென்னது ஈறெல்லாம் புள்ளியொடு நிலையல் என ஈற்றின்மேல் வைத்துக் கூறிய அதனால் அவ் வீற்றின்மெய் உயி முதன்மொழி வந்தவிடத்து அஃதேற இடங்கொடுக்குமென்பது பெறப்பட்ட தென்பர் இளம்பூரணர். இக்கருத்தினை நன்னூலார்,

204. உடல்மே லுயிர்வந் தொன்றுவ தியல்பே.

என்ற குத்திரத்தால் விளங்கக் கூறியுள்ளார்.

“மெய்யினியற்கை புள்ளியொடு நிலையல்” (நூன்-கரு) என்புழித் தனிமொபதினெட்டும் புள்ளிபெற்று நிற்குமெனக் கூறி, உயிரேறுங்கால் அவை புள்ளியிழந்து நிற்குமென உய்த்துணர வைத்தார். ஈண்டு மெய்முதல் மெய்யிற்று எவ்வகுத்துரைக்குங்கால் மொழிமுதல் மெய்களும் புள்ளிபெறுமோ என்னும் ஐயமகற்றுதல்வேண்டி. இச்சூத்திரத்தால் மொழிக்கு ஈரூய மெய்களே புள்ளிபெறுவன எனக்கூறி மொழிக்கு முதலாயினமெய்கள் புள்ளிபெறு என்பதனை உய்த்துணர வைத்தாராதலின் இச்சூத்திரம் கூறியது கூறலன்மையுணர்க.

என. குற்றிய லுகரமும் அற்றென மொழிப.

இது மேல் மொழியீற்றின் மெய்க்குக் கூறிய விதியினை மொழியீற்றில் வருப குற்றியலுகரத்திற்கும் மாட்டெறிந்து கூறுகின்றது.

(இ - ள்) குற்றியலுகரவீறும் மெய்யீற்றின் தன்மையை யுடையதாமென்பர். எ - று.

மெய்யீற்றின் தன்மையாவன புள்ளிபெறுதலும் புள்ளியிழந்து உயிரேற இடங்கொடுத்தலுமாம். அவ்விரண்டினுள் புள்ளிபெறுதலை விலக்கி உயிரேற இடங்கொடுத்தலாகிய ஒன்றைமட்டும் குற்றியலுகரத்திற்கு இயைத்துக் கூறுதலின் ‘இம்மாட்டேறு ஒருபுடைச் சேறலென வுணர்க’ என்றார் இளம்பூரணர்.

‘ஒற்றெழுத்தியற்றே குற்றியலிகரம்’ (செய் ௩௨௩) எனவரும் செய்யுளியற் குத்திர வரையுள் “எழுத்தோத்தினுள் ‘மெய்யீறெல்லாம் புள்ளியொடு நிலையல்’ எனக் கூறிக் ‘குற்றியலுகரமும் அற்றென மொழிப’ எனக் குற்றுகரத்திற்குட் புள்ளி பெறுதலுங் கூறினான்” எனப் பேராசிரியர் கூறுதலால் குற்றியலுகரத்திற்குப் புள்ளியிட்டெழுதும் வழக்கம் பேராசிரியர் காலத்தில் நிலவியதெனத் தெரிகிறது. ஆனால் இளம்பூரணர் காலத்தில் இவ்வழக்கம் நிலபெற்றிருக்க வில்லை. குற்றியலுகரத்திற்குப் புள்ளியிட்டெழுதும் வழக்கம் இளம்பூரணர் காலத்தில் நிலவியிருப்பின் ‘குற்றியலுகரமும் அற்று’ என்னும் இம்மாட்டேற்றினை முழுவதுஞ் சேறலாகவே கொண்டு பொருள் கூறியிருப்பர். அவர் அங்ஙனங் கூறுமையின் அவர் காலத்தில் குற்றியலுகரத்திற்குப் புள்ளியிட்டெழுதும் வழக்கம் இல்லையென்பது புலனாகும். அன்றியும் குற்றியலுகரமும் புள்ளி பெறும் என்பதொன்றே இச்சூத்திரக் கருத்தாயின் ‘மெய்யினளபே யரையென மொழிப’ என்பதனையடுத்து ‘அவ்வியல் நிலையும் ஏனைமூன்றே’ என மாட்டெறிந்தாற்போல ‘மெய்யினியற்கை புள்ளியொடு நிலையல்’ எனவும் ‘எகரவொகரத்தியற்கையும் அற்றே’ எனவும் வருஞ் சூத்திரங்களை யடுத்துக் ‘குற்றியலுகரமும் அற்றென மொழிப’ என இச்சூத்திரத்தையுங் கூறியிருப்பர். அங்ஙனங் கூறுது புணரியலாகிய இவ்வியலிற் கூறுதலால் குற்றியலுகரமும் மெய்யீறுபோல உயிரேற இடங்கொடுக்குமென்பதே தொல்காப்பியனார் கருத்தென்பது நன்கு துணியப்படும்.

இங்ஙனமன்றிக் குற்றியலுகர வீற்றின்மூன் உயிர்முதன் மொழி வருங்கால் நிலைமொழியீற்றுக் குற்றுகரம் கெடுமெனக் கொண்டார் வீரசோழிய நூலார். ‘ஆவியின்தோன்றக் கெடும் குற்றுகரம்’ என்பது வீரசோழியம். இக்கருத்தினை யொட்டியே

164. ‘உயிர்வரின் உக்குறன் மெய்விட் டோடும்
யவ்வரின் இய்யாம் முற்றுமற் றெரோவழி’

எனச் சூத்திரஞ் செய்தார் பவணந்தி முனிவர்.

இவ்வாறு குற்றுகரவீற்றின்மூன் உயிர்முதன்மொழி வருங்கால் நிலைமொழியீற்றுக் குற்றுகரங்கெட நின்ற வொற்றின்மேல் வருமொழி முதலுயிர் ஏற்றி நென்று கொள்ளுதல் கூடாதென்றும், நாகரிது என்புழி முன்னர்க் குற்றுகர வோசையும் பின்னர் உயிரோசையும் பெற்று அவ்விரண்டுங்கூடி நின்றல்லது அப் பொருளுணர்த்தலாகாமையின் நாகு என்பதின் இறுதி நின்ற குற்றியலுகரம் கெடாது நின்றே அரிது என்னும் வருமொழி முதலிலுள்ள அகரவுயிர்க்கு இடந்தந்து அவ்வுயிரோடுங்கூடி நிற்குமென்றும் நச்சினுர்க்கினியர் இச்சூத்திரவுரையுள் தெளிவாக விளக்கிக் கூறி உரையாசிரியர் கொள்கையை வலியுறுத்தியுள்ளார்.

தொல்காப்பிய முதற் சூத்திரவிருத்தியுள் ‘எழுத்தெனப் படுப’ என்னுந் தொடர்க்குப் புணர்ச்சிவிதி கூறுங்கால் “இனியாசிரியர் ‘நூறென்கிளவியொன்று முதலொன்பாற் -கீறுசினையொழிய வினவொற்றுமிகுமே’ எனவும் ‘ஆறன் மருங்கிற் குற்றியலுகரம் ஈறுமெய்யொழியக்கெடுதல் வேண்டும்’ எனவும் நூறு என்னும் எண் மூன்னும் ஆறு என்னும் எண் மூன்னும் முறையே ஒன்று முதலிய எண்களும் ஆயிரமும் வந்து புணரின் குற்றியலுகரங்கெட நின்ற ஒற்றின்மேல் உயிர்வந்து ஒன்றி முடியுமென்றார். எனவே ஒன்றினமுடித்தலென்பதனால் ஏனைக்குற்றியலுகரவீறும் உயிர்முதன்மொழி வந்து புணர்வுழிக் குற்றியலுகரங்கெட்டு நின்றவொற்றின்மேல் உயிர்வந்து ஒன்றிமுடியுமென்பதூஉம் பெறப்பட்டதாகலின் ஈண்டும் அவ்வாறே குற்றியலுகரங்கெட நின்ற தகர வொற்றின்மேல் எகரவுயிர் வந்து ஒன்றி ‘எழுத்தெனப்படுப’ என முடிந்தது” எனச் சிவஞானமுனிவர் விதி கூறியுள்ளார்.

“நூறென்கிளவியொன்று முதலொன்பாற்-கீறுசினையொழிய இவ்வொற்று மிகுமே” என்னுஞ் சூத்திரம் நூறென்னுங் குற்றுகரவீற் றெண்ணுப்பெயர் முன் ஒன்று முதல் ஒன்பது வரையுள்ள எண்ணுப்பெயர்கள் வந்து புணரின் நிலைமொழியீற்றிலுள்ள குற்றுகரமும் அதனால் ஊரப்பட்ட நகரமெய்யும் கெடாது நிற்ப அவ்வொற்றுக்கு இனமாகிய நகரம் மிக்குமுடியும் என்னும் விதியைக் கூறுவதாகும். இதன் பொருளை உரையாசிரியர் இனிது விளக்கியுள்ளார். இச்சூத்திரத்தில் ‘ஈறுசினையொழிய’ என வருந்தொடர்க்கு ‘ஈற்றிலுள்ள சினையாகிய குற்றியலுகரங்கெட’ எனப்பொருள் கொள்வர் சிவஞானமுனிவர். அங்ஙனங்கூறின் நூற்றுமூன்று, நூற்றுநான்கு என ஈற்றுக்குற்றியலுகரம் கெடாது நிற்பன இச்சூத்திரத்துள் அடங்காவாம். இச்சூத்திரத்து ‘ஒன்றுமுதல் ஒன்பாற்கு’ என ஆசிரியர் வரையறுத்துக்கூறிய வருமொழிகளுள் மூன்றும் நான்கும் அடங்குமாதலின் அவை வருமொழியாக வருமிடத்தும் நூறு என்பதன் ஈற்றுக்குற்றியலுகரம் கெடுதல்வேண்டும். அங்ஙனங்கெடாமையின் இச்சூத்திரத்திற்குச் சிவஞான முனிவர் கூறும் பொருள் தொல்காப்பியனார் கருத்துக்கு முரணாதல் தெளியப்படும். ஆகவே இச்சூத்திரத்தில் ‘ஈறுசினையொழிய’ என்னுந்தொடரிலுள்ள ஒழிய என்னுஞ்சொல்லுக்கு, ‘அகமென்கிளவிக்குக் கைமுன் வரினே—முதனிலை யொழிய முன்னவை கெடுதலும்

பொருள்கொண்டு 'சுற்றெழுத்தாகிய குற்றியலுகரமும் அதனொரப்பட்ட மெய்யாகிய சிணையும் விகாரமின்றி எஞ்சிநிற்ப அவ்விடத்து இனமாகிய நகர வொற்று மிக்குமுடியும்' எனப் பொருளுரைப்பதே ஆசிரியர் கருத்துக்கு ஏற் புடையதாமென்க.

குற்றியலுகரப் புணரியல் 32-ம் குத்திரத்தில் ஒன்றுமுதல் ஒன்பதீராகச் சொல்லப்படுகின்ற எண்ணுப்பெயர்களின் முன் பத்து என்பது வருமொழியாய் வரின் நிலைமொழிகளுள் ஆறு என்னுஞ்சொல் நீங்கலாகவேய எண்ணுப்பெயர் களின் இறுதிக்குற்றியலுகரம் மெய்யொடுங்கெடுமென்றும், 35-ம் குத்திரத்தில் மூன்று ஆறு என்பவற்றின் முதலிலுள்ள கெட்டெழுத்துக்கள் குறுகுமென்றும் கூறிய ஆசிரியர், ஒன்றுமுதல் ஒன்பான்களின்முன் ஆயிரம் வந்து புணருங்காலும் 32-முதல் 38 வரையுள்ள குத்திரங்களால் முன்வரக்கூறிய விதிகளை அவ்வாறே வைத்துக்கொண்டு அவற்றின் மேலுளவாம் திரிபுகளை 58 முதல் 63 வரையுள்ள குத்திரங்களால் கூறுகின்றாரென்பது அச்சுத்திரங்களின் கிடக்கை முறையால் நன்கு விளங்கும். எனவே "ஆறன்மருங்கிற் குற்றியலுகரம், ஈறுமெய்யொழியக் கெடுதல் வேண்டும்" என்னுமிச் குத்திரத்தாற் குறிக்கப்பட்ட ஆறு என்பது முன்னர் 32, 35 ம் குத்திரங்களிற் சொல்லியவண்ணம் 'அறு' எனத்திரிந்த வடிவத்தையே குறித்ததெனக் கொள்ளுதல்வேண்டும். இங்ஙனம் அறு எனத் திரிந்துவின்றகாலத்து அதன் இறுதி நின்ற உகரம் முற்றுகரமாகவும் அவ்வாறு திரிதற்கு முன்னுள்ளது குற்றியலுகரமேயாதலின் அவ்வாறு குற்றியலுகரத்திரிய நின்ற உகரம் அதுவென்பார் 'ஆறன்மருங்கிற் குற்றியலுகரம்' என்றார் ஆசிரியர். இங்ஙனங் கூறியது திரிந்ததன் திரிபு அறு என்னங் கருத்தினுலென்பதனை இளம் பூரணரும் நச்சினுர்க்கினியரும் நன்கு தெளிவுபடுத்தியுள்ளார்கள். எனவே இச் குத்திரத்துக் குற்றியலுகரமெனக் கூறப்பட்டது ஆறு என்னங் குற்றுகரவீற்றின் திரிபாகிய அறு என்பதன் இறுதிநின்ற முற்றுகரமாதலின் அவ்வுகரம் ஆயிரம் எனவரும் வருமொழி முதலிலுள்ள ஆகாரவுயிர்க்கு இடந்தந்து ஒருங்குநிற்கும் ஆற்றலின்றித் தான் ஏறிய நகர மெய்யை விட்டுக்கெட அம்மெய்யின்மேல் வரு மொழி ஆகாரவுயிரேறி அடியாய் என முடிவதாயிற்று. ஆகவே இச்சுத்திரத் தில் ஈறுமெய்யொழியக் கெடுமெனக் கூறிய விதி ஆறு என்னுஞ்சொல்லின் இறுதியிலுள்ள குற்றியலுகரத்திற் சுற்றெழுத்தும் அதன் திரிபாகிய அறு என்பதி லுள்ள முற்றுகரத்திற்கே யுரித்தென்பதும் பகுத்துணர்ந்து கோடல் வேண்டும். இங்ஙனமன்றி ஆயிரம் என்னும் சொல் வருமொழியாய் வர ஆறு என்னும் நிலை மொழியிறுதிக் குற்றுகரம் கெடுமென்பதே தொல்காப்பியனார் கருத்தாயின் ஆறு என்பதன்முன் உழக்கு என்னும் உயிர்முதல்மொழி வருமிடத்தும் குற்றியலுகரம் கெடும் எனக்கூறியிருப்பார். அங்ஙனங்கூறுது 'ஆறென் கிளவி முதல் நீடும்மே' (குற்றியலுக-52) என்ற அவைவே கூறிப்போதலின் ஆறு என்பதன் ஈற்றுக் குற்றியலுகரம் உயிர்முதல்மொழி வருமிடத்துக் கெடாதென்பதே தொல்காப்பி யனார் கருத்தென்பது நன்கு தெளியப்படும். ஆகவே மேலெடுத்துக்காட்டிய 'நூறென்கிளவி' (குற்-66; 'ஆறன்மருங்கின்' (குற்-63) என்னும் இவ்விரு குத்திரங்களுக்கும் சிவஞான முனிவர் கூறிய பொருள்கள் தொல்காப்பியனார் கூறிய இப்பொருள்களை யடிப்படையாகக்காட்டி 'ஏனைக்குற்றியலுகர வீறும் உயிர்முதல்மொழி வந்து புணர்வுறிக் குற்றியலுகரங்கெட்டு நின்ற ஒற்றின்மேல் உயிர்வந்தொன்றி முடியுமென்பதும் பெறப்படும்' என ஒன்றினமுடித்தல் என்பதனாற் கொள்ளுதற்கு இடமில்லையென்பதும் நன்கு தெளிவாதல் காண்க.

அஃது, இஃது, உஃது எனவரும் ஆய்தத் தொடர்க் குற்றியலுகரத்தின் முன் உயிர் முதல் மொழி வருங்கால் ஆய்தங்கெடாது நிலைபெறுமெனவும் மெய்முதல்

மொழி வருங்கால் ஆய்தங் கெடுமெனவும் கூறிய தொல்காப்பியனார் அச்சொற்க ளின் இறுதிக்கண் நின்ற குற்றியலுகரம் கெடுமெனக் கூறுமையானும், குற்றிய லுகரவீற்றுச் சொற்களுக்கு அம், அக்கு, அன், இன், ஏ முதலிய சாரியைப் பேறு கூறிய ஆசிரியர் உயிர் முதலாகிய அச்சாரியைகள் வந்து புணருங்கால் நிலைமொழி யீற்றுக் குற்றுகரங் கெடுமென யாண்டும் கூறுமையானும், குற்றுகரவீற்று எண் ணுப் பெயர்களுளொன்றாகிய ஒன்பது என்னுஞ் சொல் நிலைமொழியாய் நிற்க அதன்முன் அளவுப் பெயரும் நிறைப் பெயரும் ஆயிரம் என்னும் எண்ணுப் பெய ரும் வந்து புணருங்கால் அது தன் வடிவு நிலை திரியாது இன்சாரியை பெறும் எனக் குற்றியலுகரப் புணரியலின் 53, 64 ம் குத்திரங்களில் ஆசிரியர் கூறுதலா லும் குற்றியலுகரவீறு உயிர் முதல்மொழி வருமிடத்துக் கெடாது நின்று மெய் யிறுபோல உயிரேற இடங்கொடுக்குமென்பதே ஆசிரியர் தொல்காப்பியர் கருத் தென்பது இனிது புலனும்.

இனி, "நாகரிது என்புழி முன்னர்க் குற்றுகரவோசையும் பின்னர் உயிரோ சையும்பெற்று அவ்விரண்டுங் கூடிநின்றல்லது அப்பொருளுணர்த்தலாகாமையின் குற்றியலுகரத்திறுதி முன்னும் உயிர்முதல் மொழிவந்தால் புள்ளியிறுபோல அவ்வுயிரேறி முடியுமென்பார்க்குக் கதவழகிது கனவழகிது என்புறியும் முன்னர் முற்றுகரவோசையும் பின்னர் உயிரோசையும் கூடியல்லது அப்பொருளுணர்த்த லாகாமையின் முற்றுகரத்தின்மேல் உயிரேறி முடிந்ததெனக் கூறல்வேண்டும். அவ்வாறன்றி முற்றுகரங்கெட நின்ற ஒற்றின்மேல் உயிரேறி முடியுமென்பதே எல்லார்க்கும் ஒப்பமுடிந்ததாகலானும் குற்றியலுகரத்திற்கும் உயிரென்னுங் குறி யீடு கொண்டமையின் ஒற்றின்மேலன்றி உயிரின்மேல் உயிரேறுதல் பொருந்தா மையானும் நாகரிதென்புழி இதழ் சிறிது குவிதலாகிய முயற்சி ஆண்டுப் பெறப் படாமையிற் குற்றியலுகரவோசை ஆண்டுண்டென்றல் பொருந்தாமையானும் 'ஆறன்மருங்கின்' என்றற்றெடக்கத்துச் குத்திரங்களோடு முரணுதலானும், யகரம் வரும் வழி யிகரங்குறுகி யுகரத்தின்மேல் உயிரேறிமுடியுமென்னுது 'இகரங்குறுகும்—உகரக்கிளவி துவரத்தோன்றுது' என்றாராகலானும் அவர் கூற்றுப் பொருந்தாதென்பர் சிவஞான முனிவர்.

கதவழகிது, கனவழகிது என்புழிக் கதவு கனவு எனவரும் முற்றுகரங்களை நுந்தை யென்னுஞ் சொல்லிற் போலக் குற்றுகரமாக ஒலித்தமையால் அவை குற்றியலுகரத்திற்குரிய செய்கைபெற்றுத் திரிந்தவவன்றி இயல்புபுணர்ச்சி பெற் றனவல்லவாதலானும் திரிபுடைய இவற்றைக்காட்டிக் குற்றியலுகரவீறுகள் எல்லாவற்றுக்குமுரிய உயிரேறி முடிதலாகிய சிறப்பியல்பினை விலக்குதல் பொருந்தாமையானும் கதவழகிது என்புழி வகரத்தின்கண் முற்றுகரவோசை யின்மையும் நாகரிது என்புழிக் ககரத்தின்கண் குற்றுகரவோசை நுண்ணியநிலையி லுண்மையும் இவ்விரு தொடர்களையும் ஒலித்துக்காண்போர்க்குச் செவிகருவியாகப் புலனுதலானும், குற்றியலுகரத்திற்கு உயிரென்னுங் குறியீடுண்டெனினும் அக் குறியீடொன்றே பற்றி எல்லாவகையானும் குற்றியலுகரம் உயிரியல்பே பெறு மெனக் கோடல் பொருந்தாமைக்கு அது மெய்யின் தன்மை பெறுமென விதித்த 'குற்றியலுகரமும் அற்றென மொழிப' என்னும் இச்சுத்திரமே சான்றாக லானும், குற்றியலுகரத்திற்கு இதழ்குவிதலாகிய முயற்சி புலப்பட்டே வருமென ஆசிரியர் கூறுமையானும், மெய்யிறுபோல உயிரேற இடங்கொடுத்தலாகிய புணர்ச்சிவேறுபாடுமுதலாயின கருதியே குற்றுகரவீற்று விதிகளை உயிர் மயங்கிய லிற் கூறுது குற்றியலுகரப் புணரியல் எனத் தனியியல் வகுத்துக்கூறினார் ஆசிரிய ராதலானும் குற்றுகரவீறும் முற்றுகர வீறும் புணர்ச்சி வகையான் ஒத்தன வென்பது தொல்காப்பியர் கருத்தாயின் அவற்றை இருவேறியல்களிற் பிரித் துரைக்கவேண்டிய இன்றியமையாமையின்மையானும் 'ஆறன்மருங்கின்' என்றற்

றெடக்கத்துச் சூத்திரங்களோடு முரணமை மேற்காட்டினுமாதலானும் 'யகரம் வரும்வழி இகரங் குறுகும்' உகரக்கிளவி துவரத் தோன்றது' எனவருஞ் சூத்திரம் குற்றியலுகரவீற்றின்முன் யகரமுதன்மொழிவரின் அயகரத்தோடு குற்றியலுகரத்திற்கு மயக்கவிதியின்மையால் குற்றியலுகரங்கெட அதுநின்ற நிலைக்களத்து இகரத்தோன்றிக் குறுகிநிற்குமெனக் கூறியதல்லது குற்றியலுகரத்தின் முன் இகரம் வரக் குற்றியலுகரம் கெடுமெனக் கூறியதன்றாகலானும் சிவஞான முனிவர் கூறுமாறு குற்றியலுகரம் உயிர்முதன்மொழி வரிற் கெடுமென்றல் தொல்காப்பியனார் கருத்தன்றென்க.

* இனி 'குற்றியலுகரமுற்று' எனவரும் புணரியல் மூன்றுஞ் சூத்திரத்தினைப் 'புள்ளியீற்றுமுன் உயிர் தனித்தியலாது' எனவரும் இவ்வியல் முப்பத்தாறஞ் சூத்திரத்தோடு மாட்டெறிந்து உரையாசிரியரை யுள்ளிட்டோர் பொருள் கூறின ரெனவும் 'அவற்றுள், மெய்யீறெல்லாம் புள்ளியோடு நிலையல்' என்னுஞ்சூத்திரத்தால் அவ்வீற்றின்மெய்யுயிர் முதன்மொழிவந்தால் அஃதேற இடங்கொடுத்து நிற்குமென்பதுங் கூறினாயிற்றேல் 'புள்ளியீற்றுமுன்' எனச் சூத்திரஞ்செய்தது கூறியது கூறலென்னுங் குற்றந் தங்குதற்கோவெனக்கூறி மறுக்கவெனவும் சங்கர நமச்சிவாயரும் சிவஞான முனிவரும் உரையாசிரியருரையிற் குற்றங் கூறினர். அவர்கள் கூறியபடி இம்மூன்றுஞ் சூத்திரத்தைப் பின்வரும் முப்பத்தாறஞ் சூத்திரத்துடன் உரையாசிரியர் மாட்டெறிந்து பொருள்கொள்ளவில்லையென்பதும் இதன் மூன்றுள்ள. இரண்டாறஞ் சூத்திரத்துடன் தான் மாட்டெறிந்து பொருள் கூறியுள்ளாரென்பதும் இச்சூத்திரத்திற்கு உரையாசிரியர் எழுதிய வுரையினை ஒரு முறை நோக்குவார்க்கும் இனிது புலனும். அன்றியும் 'அவற்றுள், மெய்யீறெல்லாம் புள்ளியொடு நிலையல்' என்னும் இச்சூத்திரத்தாற் கூறப்பட்ட பொருளும் 'புள்ளியீற்றுமுன் உயிர் தனித்தியலாது' மெய்யொடுஞ் சிவனு மவ்வியல் கெடுத்தே' எனவருஞ் சூத்திரத்தாற் கூறப்பட்டபொருளும் ஒன்றுபின்னே கூறியது கூறலென்னுங் குற்றந் தங்குவது? 'மொழிக்கீறியமெய்யெல்லாம் புள்ளியொடு நிற்கும்' எனக்கூறி அவை உயிர்முதன்மொழி வந்தவிடத்து உயிரேற இடங்கொடுக்குமென்பதனை யுய்த்துணரவைப்பது 'மெய்யீறெல்லாம் புள்ளியொடு நிலையல்' என்னுஞ் சூத்திரமாகும் இது நிலைமொழிபற்றிய விதி. இனி 'மெய்யீற்றின்முன் உயிர் தனித்து நடவாது தான் தனி நின்ற இயல்பை விடுத்து நிலைமொழியீற்றுமெய்யொடுங்கூடும்' என்பதனைக் கூறுவது 'புள்ளியீற்றுமுன்' எனவரும் இவ்வியல் 36-ம் சூத்திரமாகும் இது வருமொழிபற்றிய விதி. இங்ஙனம் நிலைமொழிக்கருவியும் வருமொழிக்கருவியுமாக இவ்விரு சூத்திரப் பொருளையும் பகுத்துணருங்கால் கூறியதுகூறலென்னுங் குற்றந் தங்குதல் யாண்டையதெனமறுக்க.

இதுகாறுங் கூறியவாற்றால் குற்றியலுகரம் உயிர்முதன் மொழிவரிற் கெடுமென வீரசோழிய நூலாசிரியரும் நன்னூலாரும் சங்கரநமச்சிவாயர் சிவஞான முனிவர் முதலிய பிற்கால உரையாசிரியர்களும் கூறும் கொள்கை பொருந்தாதென்பதும் குற்றியலுகரம் மெய்யீறுபோலக் கெடாதுநின்று உயிரேற இடங்கொடுக்குமென உரையாசிரியரையுள்ளிட்டோர் கூறும் கொள்கையே தொல்காப்பியனார் கருத்தென்பதும் குற்றுகரத்திற்கு முன்னர்வந்த உயிரேறிமுடிய அரை மாத்திரையாய் நின்றலும் முற்றுகரத்திற்கு முன்னர்வந்த உயிரேறிமுடிய மையுந் தம்முள் வேற்றுமை யென நச்சினூர்க்கினியர் காட்டிய இலக்கணமே குற்றியலுகரவீறுகளெல்லாவற்றின்கண்ணுஞ் செல்லுமென்பதும் நன்கு வலியுறுத்தப்பட்டமை காண்க.

எஃக. உயிர்மெய்யீறும் உயிரீற்றியற்றே.

இது, மேல் 'மெய்யேயுயிரென்றாயிரியல்' என்ற வழி நிகழ்வதோர் ஐயம் அகற்றுகின்றது.

(இ-ள்) உயிர்மெய்யீற்று மொழியும் மெய்முன்னும் உயிர் பின்னுமாக ஒலித்து நின்றவாற்றால் உயிரீற்றின் தன்மையை யுடைத்து-எ-று.

ஈறும் என்ற உம்மையால் இடையில் நின்ற உயிர்மெய்யும் உயிரின் இயல்பை யுடைத்தென்றும் 'ஈறும் இடையும் உயிருள் அடங்குமெனவே முதல் மெய்யுள் அடங்குமென்பதாயிற்று' என்றும் கூறுவர் இளம்பூரணர்.

இதனால் விள முதலிய உயிர்மெய்யீறெல்லாம் அகரவீறு முதலிய உயிரீற்றுள் அடங்கிப் புணர்ச்சி பெறுவனவாயின, வாகு என்புழி இடைநின்ற ரகரஉயிர் மெய் அகரமாய் உயிர்த்தொடர்மொழி யெனப்பட்டது. எனவே ஒற்றுமை நயத்தான் ஒன்றென வழங்கும் உயிர்மெய்யெழுத்தினை வேற்றுமை நயத்தால் மொழிகளின் ஈறும் இடையும் உயிர் என ஒரெழுத்தாயும் முதலில் மெய்யென ஒரெழுத்தாயும் ஆசிரியர் பிரித்துரைத்தமை நன்கு பெறப்படும்.

முன்னர் "மெய்யின் வழிய துயிர்தோன்று நிலையே" (தூன்-கஅ) என்றது உயிர்மெய்யாகிய தனியெழுத்திற்குக் கூறியது, ஈண்டு 'உயிர்மெய்யீறும் உயிரீற்றியற்றே' என்றது மொழியிறுதி நின்ற உயிர்மெய் யெழுத்திற்குக் கூறியது. ஆதலின் கூறியது கூறலன்மையுணர்க.

* இத்துணையும் ஒருமொழியிலக்கணங் கூறலின் மொழிமரபின் ஒழிபாயிற்று' என்பர் உரையாசிரியர்.

எஃக. உயிரிற்று சொன்முன் உயிர்வரு வழியும்
உயிரிற்று சொன்முன் மெய்வரு வழியும்
மெய்யீற்று சொன்முன் உயிர்வரு வழியும்
மெய்யீற்று சொன்முன் மெய்வரு வழியுமென்
நிவ்வென வறியக் கிளக்குங் காலை
நிறுத்தசொல்லே குறித்துவரு கிளவியென்
றூயீ ரியல் புணர்நிலைச் சட்டே.

இது மேற்கூறும் புணர்ச்சி நிறுத்தசொல்லும் குறித்துவருகிளவியு மாகிய இருமொழிப் புணர்ச்சியாமல்லது மும்மொழிப்புணர்ச்சியாகாதென்பதும் அப் புணர்ச்சி உயிரீற்றின்முன் உயிர், உயிரீற்றின்முன் மெய், மெய்யீற்றின்முன் உயிர், மெய்யீற்றின்முன் மெய் என எழுத்துவகையால் நான்காமென்பதும் உணர்த்து கின்றது.

(இ-ள்) உயிரீற்றுச் சொல்முன் உயிர் முதன்மொழி வருமிடமும், உயிரீற்றுச் சொல்முன் மெய்முதன்மொழி வருமிடமும், மெய்யீற்றுச்சொல்முன் உயிர் முதன் மொழி வருமிடமும், மெய்யீற்றுச்சொல்முன் மெய்முதன்மொழி வருமிடமும் என அப்புணர்ச்சி இத்துணைய என்று வரையறுத்துச் சொல்லுங்காலத்து அவை ஒன்றோடொன்று புணரும் நிலைமையாகிய கருத்தின்கண் புணர்வதற்கென நிறுத்த சொல்லாகிய நிலைமொழியும் அதன்பொருண்மையைக் குறித்து வருசொல்லாகிய வருமொழியும் என்று சொல்லப்பட்ட அவ்விரண்டியல்பினையுடையவாம் எ-று

(உ-ம்) ஆவுண்டு (உயிரீற்றின்முன் உயிர்)
ஆவலிது (உயிரீற்றின்முன் மெய்)
ஆலிலை (மெய்யீற்றின்முன் உயிர்)
ஆலீழ்ந்தது (மெய்யீற்றின்முன் மெய்)

நிலைமொழியை நிறுத்தசொல்லென்றும் வருமொழியைக் குறித்து வருகின்ற யென்றும் இச்சூத்திரத்துத் தொல்காப்பியனார் வழங்கியுள்ளமை காண்க. விளவினைக்குறைத்தான் என்றவழி விள என்பதனைச் சார்ந்த இன் சாரியையும் ஐயுருபும் நிலைமொழியாயே நிற்குமென்பது நோக்கி அதனை நிறுத்த சொல்லென்றும், குறைத்தான் எனவரும் முடிக்குஞ் சொல்லைக் குறித்துவருகின்ற யென்றுங் கொள்ளுதல் ஆசிரியர் துணிபாம்.

எஅ. அவற்றுள்,

நிறுத்தசொல்லின் ஈறுகெழுத்தொடு
குறித்துவருகின்ற முதலெழுத் தியையப்
பெயரொடு பெயரைப் புணர்க்குங் காலும்
பெயரொடு தொழிலைப் புணர்க்குங் காலும்
தொழிலொடு பெயரைப் புணர்க்குங் காலும்
தொழிலொடு தொழிலைப் புணர்க்குங் காலும்
மூன்றே திரிபிடன் ஒன்றே யியல்பென
ஆங்கந் நான்கே மொழிபுண ரியல்பே.

இது மேற்கூறும் புணர்ச்சி சொல்வகையான் நான்காமென்பதும், புணர்ச்சி வகையான் நான்காமென்பதும், புணர்வது எழுத்தும் எழுத்துமே யாவதன்றிச் சொல்லுஞ்சொல்லு மன்றென்பதும் உணர்த்துகின்றது.

(இ-ள்) நிலைமொழி வருமொழியெனப்பட்டவற்றுள் நிறுத்த சொல்லாகிய நிலைமொழியின் ஈறுகின்ற எழுத்தொடு குறித்துவருசொல்லாகிய வருமொழியின் முதலெழுத்துப் பொருந்தப் பெயர்ச்சொல்லோடு பெயர்ச்சொல்லைப் புணர்க்குங் காலத்தும் பெயர்ச்சொல்லோடு வினைச்சொல்லைப் புணர்க்குங்காலத்தும் வினைச் சொல்லோடு பெயர்ச்சொல்லைப் புணர்க்குங்காலத்தும் வினைச்சொல்லோடு வினைச் சொல்லைப் புணர்க்குங்காலத்தும் மொழிகள் தம்மிற புணருந் தன்மை திரிபு மூன்றும் இயல்பு ஒன்றும் என அந்நான்கேயாம்—எ-று.

இடைச்சொல்லும் உரிச்சொல்லும் பெயர் வினைகளைச் சார்ந்தல்லது தாமாக நிலைமையின் பெயர் வினைகட்கே புணர்ச்சி விதி கூறினார்.

எஅ. அவைதாம்.

மெய்பிறி தாதல் மிகுதல் குன்றலென்
றிவ்வென மொழிப திரியு மாறே.

இது மேலைச் சூத்திரத்திற் கூறப்பட்ட மூன்று திரிபாவன இவை யெனக் கூறுகின்றது.

(இ-ள்) முன்னர்த் திரிபு எனச் சொல்லப்பட்ட அவைதாம் ஓரெழுத்து மற் றென்றாய் வடிவு வேறுபடுதலும், அங்கு இல்லாத எழுத்து, புதிதாய்த் தோன்று தலும், உள்ளஎழுத்து கெடுதலும் ஆகிய மூன்று கூறுபாடுடைய எனச் சொல்லுவர் திரியும் நெறியினை—எ-று.

திரியும் நெறி மூன்றெனவே இம் மூன்றுமல்லாதது இயல்பு புணர்ச்சியெனக் கொள்க.

(உ-ம்) பொற்குடம் (மெய்பிறிதாதல்)
யானைக்கோடு (மிகுதல்)
மரவேர் (குன்றல்)
குவளைமலர் (இயல்பு)

மெய்யையும் உயிரையும் முதலும் ஈறுமாகவுடைய பகாப்பதம் பகுபதம் என்னும் இரண்டு பதங்களும் தன்னொத்தானும் பிறிதொடு பிறிதுமாய் அல்வழிப் பொருளினாலாவது வேற்றுமைப் பொருளினாலாவது பொருந்துமிடத்து நிலை மொழியும் வருமொழியும் இயல்போடும் விகாரத்தோடும் பொருந்துவது புணர்ச்சியாமென்றும், தோன்றல், திரிதல், கெடுதல் என மொழியிடத்துத் தோன்றும் விகாரம் மூன்றென்றும் அம்மூன்றும் இல்லாதது இயல்பென்றும் பவணந்தி முனிவர் கூறியுள்ளார்.

151. ‘மெய்யுயிர் முதலீ ருமிரு பதங்களும்
தன்னொடும் பிறிதொடும் அல்வழி வேற்றுமைப்
பொருளிற் பொருந்துழி நிலைவரு மொழிகள்
இயல்போடு விகாரத் தியைவது புணர்ப்பே.’

153. ‘விகாரமனைத்தும் மேவலத்யல்பே.’

154. ‘தோன்றல் திரிதல் கெடுதல் விகாரம்
மூன்று மொழி மூவிடத்துமாகும்’

எனவரும் நன்னூற் சூத்திரங்கள் புணர்ச்சியின் இலக்கணத்தினை விரித் துரைப்பனவாம்.

ஆசிரியர் தொல்காப்பியனார் ‘நிறுத்தசொல்லின் ஈறுகெழுத்தொடு குறித்து வருகின்ற முதலெழுத்தியை’ என்பதனால் புணர்வன எழுத்தும் எழுத்துமே என்பதனைத் தெளிவாக அறிவுறுத்தியுள்ளார். இங்ஙனம் தொல்காப்பியர் எழுத்தின் தனிநிலையும் மொழிக்கண் நிற்குங்கால் அதன் தன்மையும் நேர்முறையில் உணர்த்தினாராகவும், நிலைமொழியும் வருமொழியும் இயல்போடும் விகாரத் தோடும் பொருந்துவது புணர்ச்சி என மொழிமேல் வைத்துக் கூறுவர் பவணந்தி முனிவர். மொழிகள் ஒன்றோடொன்று புணர்வதே புணர்ச்சியிலக்கணமாமெனின் புணர்ச்சியிலக்கணம் சொல்லதிகாரத்திற் சேர்க்கப் பெற்றிருத்தல்வேண்டும். தொல்காப்பியனார் எழுத்திலக்கணம் சொல்லதிகாரத்திலும் சொல்லிலக்கணம் எழுத்ததிகாரத்திலும் விரவி மயங்காதபடி அவற்றைத் தனித்தனியே பிரித் துணர்த்தினாராதலின் நிலைமொழியும் வருமொழியும் தம்மிற புணர்வதே புணர்ச்சி யென்றல் அவர் நூற்போக்கின் முறைக்கு மாறுபட்டதாகும். சொற்கள் ஒன்றோ டொன்று புணரும் புணர்ச்சியை புணர்த்துதல் ஆசிரியர் கருத்தாயின் இச்சொல், இச்சொல்லைக்கொண்டு முடியும் என்றரூப்போன்று சொல்முடிபும் பொருட்டொ டர்பும் விரித்துக் கூறியிருப்பர். அவ்வாறு கூறுது நிலைமொழி வருமொழிகளை உயிற்று, உயிர்முதல், மெய்யீறு, மெய்முதல் என எழுத்து வகையால் நான்காக வகுத்துக்கொண்டு நிலைமொழியீற்றுயிர் வருமொழி முதலிலுள்ள உயிரோடும் மெய்யோடும் இயைந்து புணரும் எழுத்துப்புணர்ச்சியை உயிர் மயங்கியல் எனப் பெயர் தந்து அவ்வியலிற் கூறுதலானும், அவ்வாறே நிலைமொழியீற்று மெய்களும் குற்றியலுகரமும் வருமொழி முதலிலுள்ள மெய்யும் உயிருமாகிய எழுத்துக்க ளோடு புணருமியல்பினை முறையே புள்ளிமயங்கியல், குற்றியலுகரப் புணரியல் எனப் பெயர்தந்து கூறுதலானும், மொழிகள் நிலைமொழியும் வருமொழியுமாகப் புணருங்கால் அவற்றின் ஈறும் முதலுமாகிய எழுத்துக்கள் தம்மோடு இயை தலால் உண்டாம் நிலையினையே புணரியல் முதலிய இயல்களால் ஆசிரியர் கூறு

கின்றமை புலனாம். எழுத்தாற் சொல்லாமாறு கூறும் மொழியாக்கப்பகுதி, மொழியியல்பினை நேர்முகமாய் உணர்த்தாமல் மொழிக்கு உறுப்பாகிய எழுத்துக் களின் இலக்கணத்தினைக் கூறுமுகமாக அவ்வெழுத்துக்களாலாகிய மொழியின் நிலைமையையும் உய்த்துணரவைக்கு மியல்பிற்றாதலின் அதுவும் மயங்கா மரபின் எழுத்திலக்கண முணர்த்தியதெனவே கொள்ளப்படும்.

எஃ. நிறுத்த சொல்லும் குறித்துவரு கிளவியும்
அடையொடு தோன்றினும் புணர்நிலைக் குரிய.

இஃது எய்தியதன்மேற் சிறப்பு விதி கூறுகின்றது.

(இ-ள்) நிலை மொழியாக நிறுத்தின சொல்லும் அதனைக் குறித்து வருமொழி யாக வருஞ் சொல்லும் தாமே புணராது ஒவ்வொரு சொல்லை அடைமொழியாகப் பெற்றுவரினும் புணர்த்தற் குரியவாம்—எ-று.

எனவே நிலைமொழி அடையடுத்தும் வருமொழி அடையடுத்தும் அவ்விரு மொழியும்அடையடுத்தும் புணர்த்தற்குரியன என்பது பெறப்படும். அடைமொழி களாவன உம்மைத்தொகைப் பொருள்படவும் இருபெயரொட்டுப் பண்புத் தொகைப் பொருள் படவும் நிலைமொழி வருமொழிகளை யடுத்து நிற்கும் சொற் களாம்.

உ-ம், பதினாயிரத்தொன்று (நிலைமொழி அடையடுத்து வந்தது)
ஆயிரத்தொருபஃது (வருமொழி அடையடுத்து வந்தது)
பதினாயிரத்திருபஃது (இருமொழிகளும் அடையடுத்து வந்தன)

எயாக. மருவின் ரெகுதி மயங்கியல் மொழியும்
உரியவை யுளவே புணர்நிலைச் சுட்டே.

இது மருஉ மொழிகளும் நிலைமொழி வருமொழிகளாக வைத்துப் புணர்க்கப்படுமென்கின்றது.

(இ-ள்) தலைதொழுக மயங்கின இயல்பையுடைய மருஉவழக்கும் புணரும் நிலைமைக்கண் உரியன உள.—எ-று.

சுண்டு மருஉ வென்றது இலக்கணத்தொடு பொருந்தின மருஉ மொழிகளை. நிலை யென்றதனால் இலக்கணத்தொடு பொருந்திய மருஉ வழக்கல்லா மருஉ வழக்கும் புணர்க்கப்படுமெனக் கொள்க என்பர் இளம்பூரணர்.

(உ - ம்) மிகண், முன்றில் எனவரும்.

எஃஉ. வேற்றுமை குறித்த புணர்மொழி நிலையும்
வேற்றுமை யல்வழிப் புணர்மொழி நிலையும்
எழுத்தே சாரியை யாயிரு பண்பின்
ஒழுக்கல் வலிய புணருங் காலை.

இது மேற்கூறிய மொழிபுணரியல்பு நான்கனுள் மிகுப் புணரும் புணர்ச்சி இத்தன்மைத்தென்பதும் நால்வகைப் புணர்ச்சியும் பொருள்வகையான் அல்வழி வேற்றுமையென இருவகைப்படுமென்பதும் உணர்த்துகின்றது.

(இ - ள்) சொற்கள் புணருங்காலத்து வேற்றுமைப் பொருளைக் குறித்த புணர்மொழியினது தன்மையும் வேற்றுமையல்லாத அல்வழியிடத்துப் புணரும் மொழியினது தன்மையும் எழுத்து மிகுதலும் சாரியை மிகுதலுமாகிய அவ்விதம் டிலக்கணத்தினாலும் நடத்தலைத் தமக்கு வலியாகவுடைய-எ-று.

(உ - ம்) விளங்கோடு (எழுத்துப்பெற்றது)
மகவின்மை (சாரியைப்பெற்றது)
அவற்றுக்கோடு (எழுத்துஞ் சாரியையும் உடன்பெற்றது)
இவை வேற்றுமை.

விளக்குறிது (எழுத்துப்பெற்றது)
பணியின்குறை (சாரியை பெற்றது)
கலத்துக்குறை (எழுத்துஞ் சாரியையும் உடன்பெற்றது)
இவை அல்வழி.

பணியின் குறை—பண குறைந்தது. கலத்துக்குறை—கலம் குறைந்தது. பணியென்பது ஓரளவு. 'பணத்துணையாக் கொள்வர்' (திருக்குறள்) என்பது காண்க.

வேற்றுமையல்லாதது அல்வழியாதலின் வேற்றுமையை முற்கூறினார். வற்றுமையாவது ஐ முதலிய ஆறுருபும் இடையே மறைந்தும் விரிந்தும் வரச் சூற்றன் பொருந்தும் தொடர்ச்சியாம். அவ்வேற்றுமையுருபுகள் தொக்கும் விரிந்தும் நிலாத நிலையிற் சொற்கள் புணருந் தொடர்ச்சி அல்வழிப் புணர்ச்சி யெனப்படும். நன்னூலாரும் "மெய்யுயிர் முதலீரூமிரு பதங்களும்.....அல் வழிவேற்றுமைப் பொருளிற் பொருந்துழி" (நன்-151) எனப் புணர்ச்சியைப் பொருள் வேற்றுமையால் இரண்டாக அடக்கினமை முன்னர்க் கூறப்பட்டது.

எஃஉ. ஐ ஒடு கு இன் அது கண் ணென்னும்
அவ்வாறென்ப வேற்றுமை யுருபே.

இது மேல் வேற்றுமையென்று சொல்லப்பட்டவற்றின் பெயரும் முறையும் தொகையுங் கூறுகின்றது.

(இ-ள்) வேற்றுமை உருபுகளாவன ஐ, ஒடு, கு, இன், அது, கண் என்று சொல்லப்படும் அவ்வாறுருபும் என்று சொல்லுவர்—எ-று.

இவை யாறும் அல்லாதனவெல்லாம் அல்வழி யெனப்படும். அவை எழுவாய், விளி, உவமத் தொகை, உம்மைத் தொகை, பண்புத் தொகை, இருபெயரொட்டுப் பண்புத் தொகை, வினைமுற்றுத் தொடர், பெயரெச்சத்தொடர், வினையெச்சத் தொடர், இடைச் சொற்றொடர், உரிச் சொற்றொடர் என்பனவாம்.

வேற்றுமையும் அல்வழியும் இவையென விளக்கப்போந்த நன்னூலார்,

152. வேற்றுமை ஐம்முதலாரும் அல்வழி
தொழில்பண் புவமையும்மை யன்மொழி
எழுவாய் விளியிரெச்ச முற்றிடையுரி
தழுவு தொட ரடுக் கெனவீ ரேழே.

என்பதனால் வேற்றுமைப் புணர்ச்சியைத் தொல்காப்பியனார் கூறியவாறு ஆறாகப் பகுத்தும் அல்வழிப் புணர்ச்சியை வினைத் தொகை, பண்புத் தொகை, உவமத் தொகை, உம்மைத் தொகை, அன்மொழித் தொகை யென ஐந்து தொகை நிலையும் எழுவாய், விளி, பெயரெச்சம், வினையெச்சம், தெரிநிலை வினைமுற்று, குறிப்பு வினைமுற்று, இடைச்சொற்றொடர், உரிச்சொற்றொடர், அடுக்கு என ஒன்பது தொகாநிலையும் ஆகப் பதினாக்கெனப்பகுத்தும் கூறினார்.

பெயர்ப் பொருளை வேற்றுமை செய்தலால் வேற்றுமை யெட்டெனச் சொல் லதிகாரத்திற் கூறிய தொல்காப்பியனார் எழுவாய்க்கும் விளிக்கும் பெயரும்

பெயரது விகாரமுமன்றி, வேறு உருபின்மையின் அவ்விரண்டினையும் நீக்கித் தமக் கென உருபுடைய இரண்டாம் வேற்றுமை முதல் ஏழாம் வேற்றுமையீராகவுள்ள ஆறையுமே இவ்வெழுத்திற்காரத்து வேற்றுமையாகக் கொண்டு அவ்வாறென்ப வேற்றுமையுருபே எனத் தொகுத்துரைத்தார். எனவே ஐ முதலிய ஆறுருபும் தொக்கும் விரிந்தும் இடை நிற்கச் சொற்கள் புணருந் தொடர்ச்சியே எழுத்து வகையில் வேறுபாடுடைய வேற்றுமைப் புணர்ச்சியென்பது ஆசிரியர் கருத்தாதல் நன்கு புலனும் எழுவாயும் விளியும் எழுத்துவகையானன்றிச் சொற் பொருள் வகையான் வேறுபாடுடையவாகலின் சொல்லதிகாரத்து அவ்விரண்டையும் கூட்டி வேற்றுமை யெட்டென்றார். எழுத்ததிகாரத்து எழுத்திலக்கண அமைதியொன்றே கருதி வேற்றுமையாற்றென்றும், சொல்லதிகாரத்து, எழுத்திலக்கண அமைதியோடு சொல்லிலக்கண அமைதியும் உடன் கருதி வேற்றுமை யெட்டென்றும் ஆசிரியர் தொல்காப்பியனார் கூறிய இயல்பினைப் பகுத்துணர்தல் வேண்டும்.

எயிஃ. வல்லெழுத்து முதலிய வேற்றுமை யுருபின் கொல்வழி யொற்றிடை மிகுதல் வேண்டும்.

இது மேற்கூறப்பட்ட வேற்றுமையுருபுகளாறும் பெயர்ப்பின் வந்து புணருங் கால் இயல்பாகப் புணர்தற்குரிய ஐ, ஒடு இன், அது என்னும் உயிர் முதலுருபுகளை யொழித்துத் திரியுமியல்புடைய வல்லெழுத்தை முதலாகவுடைய கு, கண் என்னும் இரண்டுருபிற்கும் உருபியலை நோக்கியதோர் கருவி கூறுகின்றது.

(இ-ள்) வல்லெழுத்தை முதலாகவுடைய கு என்னும் நான்காம் வேற்றுமை யுருபிற்கும் கண் என்னும் ஏழாம் வேற்றுமையுருபிற்கும் பொருந்தியவழி வல் லொற்று இடையே மிகுதல்வேண்டும்—எ - று.

இன்னவற்றின்முன் என நிலைமொழியை வரைந்து கூழுமையின் உயிற்று மெய்யீராகிய இரண்டினையும் கொள்க.

(உ - ம்) மணிக்கு, மணிக்கண்
வேய்க்கு வேய்க்கண்

எனவரும்.

ஒற்று மிகுதல்வேண்டும் எனப் பொதுப்படக்கூறவே வல்லொற்றும் மெல் லொற்றும் மிகுதல் பெற்றும் எனக்கொண்டு தங்கண், நங்கண் என மெல் லெழுத்துமிக்கன என்று உதாரணங்காட்டினர் உரையாசிரியர். மெல்லொற்று மிகுதலையுஞ் சேர்த்துரைத்தல் ஆசிரியர் கருத்தாயின் வல்லொற்றும் கிளையொற் றும் மிகும் எனப் பிரித்துரைப்பர். 'வல்லெழுத்து வருவழியொற்று இடை மிகுதல் வேண்டும்' எனவே அவ்விடத்துமிகுவது வல்லொற்றையாதல் தேற்றம். ஒற்றுமிகும் எனப் பொதுப்படக்கூறும் வழியெல்லாம் வந்த ஒற்றுமிகுதலையே கூட்டிச் செல்லுதல் ஆசிரியர் கருத்தாகும். வந்த ஒற்றுக்குக் கிளையான எழுத்து மிகுமையின் அதனைக் கிளந்துரைத்தலும் அவரியல்பாம், தங்கண், நங்கண் என் புழித் தாம் நாம் என்பன தம் நம் எனக்குறுகி "மகரவிறுதி வேற்றுமையாயின், துவரக்கெட்டு' (புள்ளி-கரு) என்றபடி மகரங்கெட்டு, "படர்க்கைப் பெயரும் முன்னிலைப் பெயரும், தொடக்கங்குறுதும் பெயர்நிலைக்கிளவியும், வேற்றுமை யாயின் உருபியல்நிலையும், மெல்லெழுத்து மிகுதல் ஆவயினான" (புள்ளி-உரு) என்பதனால் வல்லெழுத்து வருவழி மெல்லெழுத்து மிக்கன ஆகலான் அவையின் டட்டங்கா.

இனி, தங்கண், நங்கண் என்ற சொற்களை இடைச்சொற் சந்தியெனக் கொண்டு வேற்றுமைக்குக் கூறிய மெல்லெழுத்து மிகுதி அதன்கண் அடங்கா

தெனக்கூறின் தங்கண், நங்கண் என்பன அல்வழியாயின் தம் நம் என்பவற்றின் கண் வரும் இறுதி மகரம் 'அல்வழியெல்லாம் மெல்லெழுத்தாகும்' (புள்ளி-கூக) என்பதனால் வருமெழுத்தின் கிளையெழுத்தாகத் திரிந்து நின்றதெனக்கொள்வ தன்றி 'வல்லெழுத்து முதலிய வேற்றுமையுருபிற்கு, ஒல்வழியொற்றிடைமிகுதல் வேண்டும்' என்னும் இசுகுத்திரத்தால் மெல்லெழுத்து மிக்கு நின்றதெனக் கொள்ளுதல் பொருந்தாது. உயிரீறும் இங்ஙனந்திரியுமியல்புடைய மகரவிறல் லா மெய்யீறும் ஆகியவற்றின் முன்வரும் கு கண் என்னும் உருபுகளின்முன் மெல் லெழுத்து மிகாமையும் நோக்கத்தக்கது.

இனி, 'ஒல்வழி' யென்றதனால் நம்பிகண், நங்கைகண் என இகர ஐகார விற்பின்கண்ணும் தாய்கண், அரசர்கண், என யகர ரகரவிற்பின்கண்ணும் ஏழா முருபு வருமிடத்து ஒற்றுமிகாமை கொள்க.

எயிடு. ஆறனுருபின் அகரக் கிளவி
யீரககரமுனைக் கெடுதல் வேண்டும்.

இஃது ஆறாவதற்குத் தொகைமரபினை நோக்கியதோர் கருவி கூறுகின்றது.

(இ-ள்) அதுவென்னும் ஆறனுருபின்கண் நின்ற அகரமாகியவெழுத்து, நெடு முதல் குறுகு மொழிகட்கு "ஈருகு புள்ளி அகரமொடு நிலையும்" (எழுத்து-எஃக) என விதித்ததனானதாகிய அகரத்தின் முன்னர்த் தான் கெடுதல் வேண்டும். எ-று

(உ-ம்) தமது, நமது, நுமது, தனது, எனது, நினது எனவரும்.

"நினைவகூறுவ லெனவகேண்மதி" என்றற்போல ஆறாவதற்குரிய அகரவுரு பின் முன்னரும் நின, என என்றங்கு ஓர் அகரவெழுத்துப்பேறு நிலைமொழிக் கண் வருதலுளதாக ஆசிரியர் கருதினாராதலின், ஆறனுருபும், நான்கனுருபும், நெடு முதல் குறுகு மொழிகளோடு புணருமிடத்து அவ்விரண்டற்கும் பொது வாக நிலைமொழிக்கண் அகரப்பேறு விதித்தார். அங்குப் பெற்றுநின்ற அகரத் தின் முன்னர் அதுவென்னும் ஆறனுருபின் அகரம் கெடுகவென இங்கு விதித்தார். இவ்வாறு நெடுமுதல் குறுகு மொழிகள் ஈற்றில் அகரம் பெறுமென விதியாது அதுவென்னும் உருபின் அகரம் ஏறி முடியுமென நன்னூலார் கொண்டனர். நினவ, எனவ என்றற் றெடக்கத்துச் சொற்களில் ஆறாவதன் அகரவுருபின் மேலும் நிலைமொழியீற்றில் வேறோர் அகரம்காணப்படுதலால் தொல்காப்பியனார் கொண்ட முறையே பொருத்தமுடையதென்பது பெறப்படும்.

எயிஃ. வேற்றுமை வழிய பெயர்புணர் நிலையே.

இது, வேற்றுமையுருபு பெயர்க்கண் நிற்குமாறு கூறுகின்றது.

(இ-ள்) வேற்றுமையுருபு பெயரோடு புணரு நிலைமைக் கண் பெயர்களின் பின்னிடத்தன (எ-று.)

(உ-ம்) சாத்தனை, சாத்தனோடு எனவரும்.

மேல் "உருபுநிலை திரியாது ஈறு பெயர்க்காகும்," என்கின்றாரன்றோ வெனின் பெயரோடு பெயர் முதலிய நால்வகைப் புணர்ச்சியையும் வேற்றுமை, அல்வழி யென இரண்டாக அடக்கலின் வினைவழியும் உருபு வருமென்பதுபட நின்ற தாகலின் வினைவழி வேற்றுமை யுருபு வாராதென விலக்குதற் பொருட்டு ஈண்டு இது கூறப்பட்ட தென்பர் உரையாசிரியர்.

எயிள். உயர்திணைப் பெயரே யஃறிணைப் பெயரென் றுயிரண்டென்ப பெயர்நிலைச் சுட்டே.

இது வேற்றுமை யுருபொடு புணரும் பெயர்கட்குப் பெயரும் முறையுந் தொகை யுங் கூறுகின்றது.

(இ-ள்.) பொருளை யொருவர் கருதுதற்குக் காரணமான நிலைமையையுடைய பெயர்கள் உயர்திணைப்பெயரும் அஃறிணைப்பெயரும் என இருவகைப்படு மென்பர் ஆசிரியர்,

(உ-ம்) ஆடுஉ. மகடுஉ என்பன உயர்திணைப் பெயர்கள்.
ஒன்று, பல என்பன அஃறிணைப் பெயர்கள்.

விரவுப் பெயர் சாத்தன் வந்தான், சாத்தன் வந்தது எனப் புணர்ச்சிக்கண் பெரும் பான்மையும் ஒரு திணைப்பாற் படுதலின் அதனையும் இவ்விரண்டனுள் அடக்கிக் கூறினர்.

எயிஅ. அவற்றுவழி மருங்கிற் சாரியை வருமே.

இது மேல் மிக்குவரும் புணர்ச்சியுட் சாரியை வருமிடங் கூறுகின்றது.

(இ-ள்.) மேற் சொல்லப்பட்ட உயர்திணை, அஃறிணையாகிய இருவகைப் பெயர்களின் பின்னிடத்தே சாரியைச் சொற்கள் வரும். (எ-று)

(உ-ம்) ஆடுஉ வின்கை, மகடுஉ வின்கை, பலவற்றுக்கோடு எனவரும்.

வேருகிளின்ற இருமொழியும் தம்மீற் சார்தற் பொருட்டு இயைந்து நிற்பது சாரியை யெனப்படும்,

எயிகூ. அவைதாம்

இன்னே வற்றே யத்தே யம்மே
ஒன்னே யானே யக்கே யிக்கே
அன்னென் கிளவி யுளப்படப் பிறவும்
அன்னவென்ப சாரியை மொழியே.

இது சாரியைகட்குப் பெயரும் முறையும் கூறுகின்றது.

(இ-ள்) மேற்சொல்லப்பட்ட சாரியைகள்தாம் இன், வற்று, அத்து, அம், ஒன், ஆன், அக்கு, இக்கு. அன் என ஒன்பதும் பிறவுமாம்-எ-று.

ஆன், இன் என்பன சாரியையாயின் வேற்றுமையுருபேற்று முடிதலும் வேற்றுமையுருபாயின் வேறுபு ஏலாமையும் தம்முள் வேற்றுமையாம்.

பிற என்றதனால் தம், நம், நும், உம், ஞான்று, கெழு, ஏ, ஐ யென்பனவுங் கொள்ளப்படும். இவற்றுள் ஞான்று ஒழிந்தன ஏழினையும் தொல்காப்பியரே எடுத்தோதலின் இவையும் அவர்காலத்துச் சாரியைகளாக வழங்கப்பெற்றன என்பது பெறப்படும்.

எயிஉ. அவற்றுள்

இன்னி நிகர மாவி னிறுதி
முன்னர்க் கெடுத ழூரித்து மாகும்.

இஃது, இன்சாரியை முதல் திரியுமாறு கூறுகின்றது.

(இ-ள்) இன்சாரியையது இகரம் ஆ என்னும் ஒரெழுத்தொருமொழி முன் னர்க் கெட்டு முடியவும் பெறும். எ-று.

உரித்துமாகுமெனவே கெடாது நிற்கவும் பெறுமென்றபடி. இஃது ஒப்பக் கூறலென்னும் உத்தி.

‘இன்னின் இகரம் மாவின் இறுதி’ எனப் பிரித்துக் கூறுதற்கும் இச்சுத்திரம் இடந்தருதலின் மா என்னும் ஒரெழுத்தொருமொழி முன்னும் இன்சாரியையின் இகரம் கெடுதல் கொள்க.

(உ-ம்) ஆனை, ஆவினை, மானை மாவனை, எனவரும்.

கஉக. அளவாகு மொழிமுதல் நிலையு உயிர்மிசை னஃகான் றஃகா னாகிய நிலத்தே.

இன்சாரியை ஈறு திரியுமாறு கூறுகின்றது.

(இ-ள்) அளவுப் பெயராய்ப் பின்னிற்கும் மொழிக்கு முன்னர் நின்ற எண் ணுப் பெயர்களின் ஈற்றிலுள்ள குற்றுகரத்தின் மேல்வந்த இன்சாரியையது னகரம் றகாரமாய்த் திரியும் நிலையையுடைத்து-எ-று.

(உ-ம்) பதிற்ககல், பதிற்குழக்கு, எனவரும்.

இவற்றைப் பத்து என நிறுத்தி ‘நிறையுமளவும், (குற்-ஈ.க) என்னுஞ் சூத்திரத் தால் இன்சாரியை கொடுத்துக் ‘குற்றியலுகரமெய்யொடுங் கெடுமே’ (குற்-உஅ) என்றதனால் குற்றுகரத்தை மெய்யொடுங்கெடுத்து வேண்டுஞ் செய்கைசெய்து ‘முற்றவின் வரும்’ என்பதனால் ஒற்றிரட்டித்து முடிப்பர் நச்சினுர்க்கினியர்.

‘நிலைத்து’ என்றதனால் பிறவழியும் இன்னின் னகரம் றகரமாதல் கொள்வர் உரையாசிரியர்.

(உ-ம்) பதிற்கொன்று, பதிற்கேழு எனவரும்.

இங்ஙனம் இன்சாரியை ஈறுதிரிந்ததனை இற்றுச் சாரியையாகக் கொண்டார் நன்னூலார். (கு. 244)

கஉஉ. வஃகான் மெய்கெடச் சுட்டுமுதல் ஐம்முன் அஃகா னிற்ற லாகிய பண்பே.

இது வற்றுச் சாரியை முதல் திரியுமாறு கூறுகின்றது.

(இ-ள்) சுட்டெழுத்தினை முதலாகவுடைய அவை, இவை, உவை என்னும் ஐகார வீற்றுச் சொல்முன்னர் வற்றுச்சாரியை வருங்காலை அவ் வற்றுச் சாரியை யினது வகரமாகிய ஒற்றுக்கெட அவ்வொற்றின்மேல் ஏறிய அகரம் கெடாது நிற்கல் அதற்குளதாகிய பண்பாம்-எ-று.

ஆகிய பண்பு என்றதனால் எவன் என்பதனைப் படுத்தலோசையாற் பெயராக நிறுத்தி வற்றுச்சாரியையும் உருபும் கொடுத்து வற்றுமிசை பொற்றென்று வகரங்கெடுத்து அகரவுயிர் முன்னர் வற்றின் வகரங்கெடுமெனக் கெடுத்து, எவற்றை எவற்றொடு எனப் புணர்ப்பர் நச்சினுர்க்கினியர்.

கஉங. வஃகான் றஃகா னுன்க னுருபிற்கு.

இது னகர வீற்றுச் சாரியைகளின் னகரம் திரியுமாறு கூறுகிறது.

(இ-ள்) இன், ஒன், ஆன், அன் என்னும் நான்கு சாரியைகளின் சுற்றிலுள்ள னகரம் நான்காமுருபுவருமிடத்து நகரமாய்த் திரியும்—எ-று

(உ-ம்) விளவிற்கு, கோலற்கு, ஒருபாற்கு, அதற்கு என வரும்.

கஉச. ஆனி னகரமு மதனோ ரற்றே
நாள்முன் வருஉம் வன்முதற் றொழிற்கே.

இஃது ஆன்சாரியையின் ஈறு பொருட் புணர்ச்சிக்கண் திரியுமென்கிறது.

(இ-ள்.) நாட்பெயர்முன்னர்வரும் வல்லெழுத்தை முதலாகவுடைய தொழிற் சொற்கு இடையே வரும் ஆன் சாரியையின் னகரமும் நான்கனுருபின்கண் வரும் ஆன் சாரியையின் னகரம் போல நகரமாய்த் திரியும்—எ-று.

(உ-ம்.) பரணியாற் கொண்டான், என வரும், ஆனின் னகரமும் என்ற உம்மையால் நாளல்லவற்றின் முன்வரும் வன்முதற்றொழிற்கண் இன்னின் னகரமும் நகரமாகத் திரியுமெனக்கொண்டு பனியிற் கொண்டான், பறம்பிற் பாரி என உதாரணங் காட்டுவர்நச்சினூர்க்கினியர்.

கஉரு. அத்தி னகர மகரமுனை யில்லை.

இஃது அத்துச் சாரியை முதல் திரியுமாறு கூறுகின்றது.

(இ-ள்.) அத்துச் சாரியையின் அகரம் அகரவிறுச் சொல் முன்னர் நிலைத்து கெடும்—எ-று.

(உ-ம்) மக + அத்து + கை = மகத்துக்கை என வரும். (மக--குழந்தை)

கஉசா. இக்கினி கர மிகரமுனை யற்றே.

இஃது இக்குச் சாரியை முதல் திரியுமாறு கூறுகின்றது.

(இ-ள்.) இகரவிறுச் சொல்முன்னர் வரும் இக்குச் சாரியையின் இகரம் முற்கூறிய அத்துச்சாரியையின் அகரம் போலக் கெடுதலாகிய அவ்வியல்பில் நிற்கும்—எ-று.

(உ-ம்) ஆடி + இக்கு + கொண்டான் = ஆடிக்குக் கொண்டான் எனவரும்.

கஉஎ. ஐயின் முன்னரும் அவ்வியல் நிலையும்,
இதுவும் அது.

(இ-ள்.) மேற்கூறிய இக்குச் சாரியையின் இகரம் ஐகாரவிறுச் சொல்முன் னரும் முற்கூறியபடி கெடுதலாகிய நிலையை யடையும்—எ-று.

(உ-ம்) சித்திரை + இக்கு + கொண்டான் = சித்திரைக்குக் கொண்டான் என வரும். இவ்வாறு இக்குச் சாரியையின் இகரம் கெடுதல் கருதி இதனைக் குகரச் சாரியையாகக் கொண்டார் நன்னூலார்.

கஉஅ. எப்பெயர் முன்னரும் வல்லெழுத்து வருவழி
அக்கி னிறுதிமெய்ம் மிசையொடுங் கெடுமே
குற்றிய லுகர முற்றத் தோன்றாது.

இஃது அக்குச் சாரியை ஈறு திரியுமாறு கூறுகின்றது.

(இ-ள்.) எவ்வகைப்பட்ட பெயர்முன்னும் வல்லெழுத்து வருமிடத்து இடைநின்ற அக்குச் சாரியையின் இறுதிக் குற்றியலுகரம் முடியத் தோன்றாது

அக்குற்றுக்கரத்தாற் பற்றப்பட்ட வல்லெழுத்தாகிய மெய் தனக்குமேல் நின்ற மெய்யோடும் சேரக் கெடும்—எ-று.

(உ-ம்.) குன்று + அக்கு + கூகை = குன்றக் கூகை. மன்று + அக்கு + பெண்ணை = மன்றப் பெண்ணை என வரும். இங்ஙனம் அக்குச் சாரியையின் அகரமட்டும் நிற்கப், பின்னின்ற எல்லாவெழுத்துங் கெடுதலால் இதனை அகரச் சாரியையாகக் கொண்டார் நன்னூலார்.

கஉகா. அம்மி னிறுதி கசதக் காலைத்
தன்மெய் திரிந்து ங, ஞ, ந வாகும்.

இஃது அம்சாரியை ஈறு திரியுமாறு கூறுகின்றது.

(இ-ள்.) அம்மினிறுதியாகிய மகர வொற்று, க, ச, த என்பன வருமொழியாக வந்தவிடத்துத் தன்வடிவதிரிந்து ங, ஞ, ந க்களாகும்.—எ-று.

(உ-ம்) புளி + அம் + கோடு = புளியங்கோடு, செதிள், தோல், எனவரும்.

தன்மெய் யென்றதனால் அம்மின் இறுதி மகரமே யன்றித் தம் நம் நும் உம் என்பவற்றின் இறுதி மகரமும் திரியும் எனக் கொண்டார் உரையாசிரியர்.

(உ-ம்.) எல்லார்தங் கையும், எல்லாரநங் கையும்; எல்லீர் நுங்கையும், வான வரிவிலுந் திங்களும் என வரும்.

கஉஃ. மென்மையும் இடைமையும் வருஉங் காலை
இன்மை வேண்டு மென்மனார் புலவர்.

இஃது அம்மீறு இயல்புகணத்தின்முன் கெடுமென்கின்றது.

(இ-ள்.) மென் கணமும் இடைக் கணமும் வரு மொழியாய் வருங்காலத்து அம்முச் சாரியையின் இறுதிமகரம் கெட்டு முடிதல் வேண்டுமென்று கூறுவர் புலவர்—எ-று.

(உ-ம்.) புளி + அம் + ஞெரி = புளிய ஞெரி என வரும். இவ்வாதே நுனி, முரி, யாழ், வட்டு என்பவற்றையும் ஒட்டிக் காண்க.

கஉக. இன்னென வருஉம் வேற்றுமை யுருபிற்
கின்னென் சாரியை யின்மை வேண்டும்..

இன்சாரியை முழுவதும் கெடுமிடம் கூறுகின்றது.

(இ-ள்) இன்னென்று சொல்லவரும் வேற்றுமை யுருபிற்கு இன்னென்னும் சாரியை இன்றி முடிதல் வேண்டும்.—எ-று.

(உ-ம்.) மயின் இழிந்தான் என வரும். பாம்பினிற் கடிது தேள் எனச் சிறுபான்மை இன்சாரியை கெடாது நிற்கு மென்பர் உரையாசிரியர்.

நா.உ. பெயருந் தொழிலும் பிரிந்தொருங் கிசைப்ப
வேற்றுமை யுருபு நிலைபெறு வழியுந்
தோற்றம் வேண்டாத் தொகுதிக் கண்ணும்
ஒட்டுதற் கொழுகிய வழக்கொடு சிவணிச்
சொற்சிதர் மருங்கின் வழிவந்து விளங்கா
திடை நின்றியலுஞ் சாரியை யியற்கை
உடைமையு மின்மையும் ஒருவயி னென்கும்.

இது சாரியைகட் கெல்லாம் பொது வாயதோர் இலக்கணங் கூறுகின்றது.

(இ-ள்.) பெயர்ச்சொல்லும் வினைச்சொல்லும் பெயரும் வினையுமாய்ப் பிரிந்தும் பெயரும் பெயருமாய்க் கூடியும் இசைப்ப, வேற்றுமை யுருபு தொகாது நிலைபெற்ற விடத்தினும், அவ்வேற்றுமை யுருபுகள் தோற்றுதல் வேண்டாது தொக்கவிடத்தும் தாந்தாம் பொருந்துதற் கேற்ப நடந்த வழக்கொடு பொருந்திச் சாரியைபெறும் புணர்மொழிகளைப் பிரித்துக் காணுமிடத்து அவற்றின் பின்வந்து விளங்காது அவற்றிடையே நின்று நடக்கும் சாரியையின் இயல்பு. அச்சாரியைகள் உண்டாதலும் இல்லையாதலும் ஒருவருபினிடத்து ஒத்துவரும் என்பதாம்.

“சொற் சிதர் மருங்கின் வழி வந்து விளங்காது
இடை நின்றியலுஞ் சாரியை இயற்கை,

யென்றதனால் புணர்மொழியினிடையே சார்ந் தியைந்து நிற்கு மியல்புடையது சாரியை யென அதன் பெயர்க் காரணமும் கூறினாயிற்று. ஒட்டுதற் கொழுகிய வழக்காவது நிலைமொழியையும் வருமொழியையும் தனித்தனியே இருவேறு மொழிகளாக நிறுத்திப் புணர்த்தற்குரிய சொல் நடை. இவ்வாறன்றி நிலாக்கதிர், நிலாமுற்றம் என ஒரு மொழி போல் நடப்பன ஒட்டுதற்கொழுகிய வழக்காகா என்பர் உரையாசிரியர்.

பூவினெடு, பூவொடு என ஒரு வுருபு சாரியை பெற்றும் பெருதும் வந்தது. எல்லா நம்மையும் என்புழி உம் சாரியை ஈற்றினும் வருதலின் ‘இடை நின்றியலும்’ என்றது பெரும்பான்மைபற்றிக் கூறியதெனக் கொள்க.

நா.உ. அத்தே வற்றே யாயிரு மொழிமேல்
ஒற்றுமெய் கெடுதல் தெற்றென்றற்றே
அவற்றுமுன் வருஉம் வல்லெழுத்து மிகுமே.

இஃது அத்தும் வற்றும் வருமிடத்து நிலைமொழியினும் வருமொழியினும் உளவாம் செய்கை கூறுகிறது.

(இ-ள்.) அத்தும் வற்றுமாகிய அவ்விருமொழிமேல் நின்ற ஒற்றுத் தன்வடிவு கெடுதல் தெளியப்பட்டது. அவ்விரு சாரியை முன்னும் வரும் வல்லெழுத்து மிக்குமுடியும். எ-று.

(உ-ம்) கலம் + அத்து + குறை = கலத்துக்குறை எனவும் அவ் + வற்று + கோடு = அவற்றுக்கோடு எனவும் வரும். புள்ளியிற்றல்வழி விகார வகையால் நின்றனவும் வற்றின்மிசை யொற்றென்று கெடுக்கப்படும். அவை + வற்று + கோடு =

அவற்றுக்கோடு என வரும். அத்துச் சாரியையும் வற்றுச் சாரியையும் பெற்று வரும் மகர வகர ஈறுகளுக்கு ஈற்று வல்லெழுத்து இல்லாமையால் அச்சாரியைகளின்பின் வல்லெழுத்து விதிக்கப்பட்டது. வல்லெழுத்துமிகாது திரிந்து முடிவன ணகர னகர லகர ளகர ஈறுகளாம். அதவத்துக்கண், விளவத்துக்கண் என அத்தின் அகரங் கெடாது நின்றல் ‘தெற்றென்றற்று’ என்றதனாற் கொள்ளப்படும்.

நா.உ. கரமுங் கரமுங் காணெடு சிவணி
நேரத் தோன்று மெழுத்தின் சாரியை,

இஃது எழுத்துச் சாரியைகளாமாறு கூறுகின்றது.

(இ-ள்.) காரம், கரம், கான் என்பன எல்லாவாசிரியரானும் உடம்படத் தோன்றும் எழுத்தின் சாரியைகளாம்—எ-று.

நேரத்தோன்றும் என்றதனால் நேரத் தோன்றாதனவும் உளவென்பது பெற்றும். அவை ஆனம், ஏனம், ஓனம் என இவையென்பர் உரையாசிரியர்.

நா.நு. அவற்றுள்,
கரமுங் காணும் நெட்டெழுத்திலவே.

இஃது அவற்றுட் சில சாரியை சிலவெழுத்தோடு வாராவென விலக்குகின்றது.

(இ-ள்.) மேற் சொல்லப்பட்டவற்றுள் கரமும் காணும் ஆகிய சாரியைகள் இரண்டும் நெட்டெழுத்திற்கு வாரா—எ-று. எனவே காரச் சாரியை நெட்டெழுத்திற்குண்டென்பதாம்.

(உ-ம்.) ஆகாரம், ஈகாரம் எனவரும்.

நா.கூ. வரன்முறை மூன்றுங் குற்றெழுத் துடைய.

இஃது ஐயமகற்றுக்கின்றது.

(இ-ள்.) வரலாற்று முறைமையையுடைய மூன்று சாரியைகளையும் குற்றெழுத்துடையவாம்—எ-று.

(உ-ம்.) அகாரம், அகரம், அஃகான் எனவரும். வரன்முறை யென்றதனால் அஃகான் என ஆய்தம் மீக்கு முடிதலுங் கொள்க என்பர் உரையாசிரியர்.

நா.உ. ஐகார ஓளகாரங் காணெடுந் தோன்றும்

இஃது ‘அவற்றுட் கரமுங் காணும்’ என்பதற்கு ஓர் புற நடை கூறுகிறது.

(இ-ள்.) நெட்டெழுத்துக்களில் ஐகாரமும் ஓளகாரமும் முன் விலக்கப்பட்ட கான் சாரியையோடும் வரும் என்றவாறு.

(உ-ம்.) ஐகான் ஓளகான் எனவரும்.

மேற்கூறிய நான்கு குத்திரங்களாலும் எடுத்துரைக்கப்பட்ட எழுத்தின் சாரியைகளை,

126. ‘மெய்க ளகரமும் நெட்டுயிர் காரமும்
ஐ ஓள, க்கானும் இருமைக் குறிலிவ்
விரண்டொடு கரமுமாஞ் சாரியை பெறும் பிற,

என்ற ஒரு குத்திரத்தால் தொகுத்துக் கூறினார் நன்னூலார்.

மெய்கள் அகரச் சாரியை பெறுமென்பது “மெய்யினியக்கம் அகரமொடு சிவணும்” என்ற குத்திரப்பொருளைத் தழுவியதாகும். உயிர்மெய்நெடில் சாரியை பெறு தென்பார் நெடிலெனப் பொதுப்படக்கூறுது நெட்டுயிர் காரச் சாரியை பெறுமென்றார்.

111. புள்ளியிற்றின்முன் உயிர்தனித் தியலாது
மெய்யொடுஞ் சிவணும் அவ்வியல் கெடுத்தே.

இஃது உயிர் முதன்மொழி புள்ளியிற்றின்முன் வருங்காற் பிறப்பதோர் வரு மொழிக் கருவி கூறுகின்றது.

(இ-ள்) புள்ளியிற்றுச் சொல்முன் வரும் வருமொழிமுதலில் நின்ற உயிர் தனித்து நடவாது; தான் தனித்து நின்ற அவ்வியல்பினைக்கெடுத்து நிலைமொழி யிற்றிலுள்ள அம்மெய்யொடு கூடும் என்றவாறு.

(உ-ம்) பாலரிது, பாலாழி என வரும்.

ஒன்றின முடித்தலால் இயல்பல்லாத புள்ளிமுன் உயிர்வந்தாலும் இவ்விதி கொள்கவென்பர் உரையாசிரியர்.

(உ-ம்) நாடுரி என வரும்.

இக்குத்திரப் பொருளை,

(204) “உடன்மே லுயிர்வந் தொன்றுவதியல்பே,

என்ற குத்திரத்தாற் கூறினார் நன்னூலார்.

இவ்வியல் மூன்றாஞ் குத்திரத்தால் குற்றியலுகரவீறும் புள்ளியிற்றுபோலும் என ஆசிரியர் மாட்டேற்றிக் கூறுதலின் குற்றியலுகரவீற்றின் முன்வரும்உயிர்க் கும் இவ்விதி பொருத்தமுடையதாகும் என்பது அக்குத்திரவுரையுள் விரிவாக விளக்கப்பட்டது.

112. மெய்யுயிர் நீங்கிற் றன்னுரு வாகும்.

இது புணர்ச்சியிடத்து உயிர்மெய் உயிர்நீங்கியவழிப் படுவதோர் விதி கூறு கின்றது. புணர்ச்சியுள் உயிர்மெய்யெழுத்தை மெய்யும் உயிரும் என வேறு

பிரித்துச் செய்கை செய்தல் இன்றியமையாத தாதலின் இவ்விதி ஈண்டுக் கூறப் பட்டது.

(இ-ள்) மெய் தன்னோடு கூடிநின்ற உயிர் புணர்ச்சி யிடத்து நீங்கிய வழித் தன் பழைய வடிவாகிய புள்ளியைப்பெறும்—எ-று.

(உ-ம்) ஆவிலை - ஆல் + இலை, அதனை-அதன் + ஐ என வரும்,

113. எல்லா மொழிக்கும் உயிர் வருவழியே
உடம்படு மெய்யீ னுருபுகொளல் வரையார்.

இஃது உயிரீறு உயிர்முதன்மொழியொடு புணரும்வழி சிதழ்வதோர் கருவி கூறுகின்றது.

(இ-ள்) எவ்வகை மொழிக்கும் உயிர்முதன்மொழி வருமிடத்து உடம்படு மெய்யினது வடிவை இடையே கொள்ளுதலை விலக்கார் ஆசிரியர்—எ-று.

உடம்படு மெய்யாவன யகரமும் வகரமுமென்பது “உடம்படு மெய்யே யகார வகாரம், உயிர்முதன்மொழிவருஉங் காலையான” என வரும் பழைய குத்திரத்தாற் புலனும்.

“இகரவீறும், ஈகாரவீறும், ஐகாரவீறும் யகர உடம்படுமெய் கொள்வன. அல்லனவெல்லாம் வகரமெய்கொள்வன” என்பர் உரையாசிரியர். ஏகாரம் யகர மும் வகரமும் கொள்ளும் என்பர் நச்சினுர்க்கினியர், இவ்விருவகைப்பொருளும் அடங்க

162. “இ ஈ ஐவழி யவ்வுமேனை
உயிர் வழி வவ்வும் ஏழுனிவ்விருமையும்
உயிர் வரின் உடம்படு மெய்யென்றாகும்”

எனச் குத்திரஞ் செய்தார் நன்னூலார்.

வரையார், என்றதனால் உடம்படுமெய்கோடல் ஒருதலையன் றென்பது கொள்ளப்படும்.

கிளி அரிது. மூங்கா இல்லை என உதாரணங் காட்டுவர் இளம்பூரணர்,

114. எழுத்தோரன்ன பொருள்தெரி புணர்ச்சி
யிசையிற் றிரிதல் நிலையு பண்பே.

இஃதெழுத்துக்கள் ஒன்று பலவாதல் கூறுகின்றது,

(இ-ள்) எழுத்து ஒருதன்மைத்தான பொருள்விளங்கிற்கும் புணர் மொழிகள் எடுத்தல் படுத்தல் நலித லென்கின்ற ஓசை வேற்றுமையாற் புணர்ச்சி வேறுபடுதல் நிலைபெற்ற பண்பாம்.—எ-று.

(உ-ம்) செம்பொன் பதின்னொடி, செம்பருத்தி, நாகன் நேவன் போத்து, தாமரைக்கணியார், குன்றேறமா என இவை இசையிற்றிரிந்தன.

இதனைச் சொல்லதிகாரத்தில்

(391) “எழுத்தியல் திரியாப் பொருள்திரி புணர்மொழி
இசைத் திரி பாற்றெளி வெய்து மென்ப”

என்ற பொதுவியற் குத்திரத்தாற் கூறினார் நன்னூலார்.

ஈசுஉ. அவைதாம்

முன்னப் பொருள புணர்ச் சிவாயின்
இன்னவென்னு மெழுத்துக்கட னிலவே.

இது மேலதற்கோர் புறனடை கூறுகின்றது.

(இ-ள்) பலபொருட்குப் பொதுவென்ற புணர்மொழிகள்தாம் குறிப்பா னுணரும் பொருண்மையினை யுடையன. புணர்ச்சியிடத்து இத்தன்மைய வெனும் எழுத்துமுறைமையை யுடையன வல்ல வென்றவாறு.

எனவே “செம்பொன்பதின் றொடி” என்ற தொடர் பொன்னாராய்ச்சி யுள்ள வழி செம்பொன் + பதின்னொடி யெனப்பிரிந்து நின்றும், செம்பாராய்ச்சி உள்வழி செம்பு + ஒன்பதின் றொடி எனப் பிரிந்துநின்றும் குறிப்பாற் பொருளுணர்த்து மெனக் கூறப்பட்டது. இசையிற் றிரித் தென்பது ஒலி யெழுத்திற்கெனவும், எழுத்துக் கட னில வென்றது வரிவடிவீற் கெனவும் இளம்பூரணர் கூறுவர்.

தேவாரப் பண் ஆராய்ச்சி

3. பண் சாதாரீ

திரு. வி எஸ். கோமதிசங்கர ஐயர்,
வினை விரிவுரையாளர்.

நீமிழ் மறையாகிய தேவாரத்தில் “பண்சாதாரீ” என்ற சிறந்த இராகம் ஒன்று உளது. இந்தப் பண்ணில் உள்ள தேவாரப் பாசுரங்களை தேவார ஆசிரியர்கள் தற்பொழுது பந்துவராளி என்ற இராகத்தில் பாடி வருகின்றனர். ஆனால், நட்ட ராகம் என்ற பண்ணையும் பந்துவராளி இராகத்திலேயே தேவார ஆசிரியர்கள் வழிவழியாய்ப் பாடி வருகின்றனர், இரண்டு பண்களையும் ஒரே இராகத்தில் பாடுவதன் காரணமென்ன? என்றால் அதற்குத்தக்க ஆதாரங்களும் அவர்களிடமிருந்து கிடைப்பதாயில்லை, நட்ட ராகம் என்ற கட்டுரையில் “பண் நட்ட ராகம்” என்பது பந்துவராளி இராகத்தையே குறிப்பிடும் என்பதை அவர்கள் பரம்பரையாகப் பாடி வருகின்ற காரணத்தைக் கொண்டும், பிற காரணங்களாலும் விளக்கியுள்ளோம் இனி “பண்சாதாரீ” என்பது எந்த இராகத்தைக் குறிக்கின்றது என்பதை ஆராய்வோம்.

பண்சாதாரீ—என்ற இராகத்தை, சோமசுந்தரக் கடவுளே பாடினதாகத் திருவிளையாடற் புராணம் கூறுகின்றது. அஃதாவது தன் பக்தனான பாண பத்திரனைக் காத்தற்பொருட்டு. சோமசுந்தரக் கடவுளே விறகுத் தலையனாய் வந்து கானஞ் செய்ய, அதில் மயங்கிய வடநாட்டு வித்துவானாகிய ஏமநாதன், அன்றிரவே யாரிடத்தும் சொல்லிக் கொள்ளாமல் தனதுருக்கு ஒடிப்போய் விட்டானென்று விறகு விற்ப் படலத்திற் கூறப்பட்டுள்ளது. அதிற் காணப் படும் சில குறிப்புகளையும் எமது அனுபவத்திற் கண்ட இசை நுட்பங்களையுங் கொண்டு சாதாரீப் பண் என்பது இக்காலத்து வழங்கிவரும் இராகங்களில் யாதாக இருக்கலாமென ஆராயத் தொடங்குகின்றோம்.

முதலாவதாக, திருவிளையாடற் புராணத்திலுள்ள விறகு விற்ப் படலத்திற் கூறப்பட்டிருக்கும் கதைச் சுருக்கத்தைக் காண்போம்.

கதைச் சுருக்கம் வருமாறு.

ஆலவாய்ப் பெருமான் அடிகளால் சிவலோகங் காட்டப்பெற்ற வரகுண பாண்டியன் பாண்டிவள நாட்டை ஆண்டு வருங்கால், இசைப் புலமையிற் சிறந்த ஏமநாதன் என்னும் வடநாட்டு யாழ்ப்பாணன் ஒருவன், மதுரையம்பதியை யடைந்து மன்னவன் முன்னிலையில் தன் இசைத் திறமை காட்டிப் பரிசு பல பெற்று ஆங்கு உறைவானாயினன். இயல் இசை நாடகம் என்னும் முத்தமிழ்ச் சங்கம் நிலைபெற்ற மதுரை மன்னவன்பால் தான் பரிசுகள் பெற்றமையாலும் பிற நாடுகளிற் பெற்ற விருதுகளாலும் தனக்கு நிகராவார் யாருமில்லையென்ற எண்ணத்தால் அவனுக்கு மிக்க செருக்கு உண்டாயிற்று. ஏமநாதன் நிலையை யுணர்ந்த வரகுண பாண்டியன் தன் அரசவை இசைப் புலவனுன பாணபத்திரனை

யழைத்து ஏமநாதனோடு பாடவல்லாயோ என்று வினவினான். பாணபத்திரன் தங்களுடைய ஆதரவையும் இறைவன் திருவருளையும் துணையாகக்கொண்டு பாடுவேன் என்றான். மன்னவன் நாளை வந்து பாடுவாயாக என்று கூறியனுப்பினான்.

அடுத்த நாளில் வந்து பாடுதற்கு இசைந்த பாணபத்திரன் தன் இல்லத்தில் இருக்குங்கால், நகரின் பல பாகங்களிலும் பாடிக்கொண்டிருக்கும் ஏமனாதனுடைய மாணக்கரது இசைத் திறத்தைக்கேட்டு, இவர்களே இவ்வாறு பாடுவார்களாயின் அவ்வேமநாதனுடைய இன்னிசை எவ்வளவு சிறந்திருக்குமோ? அவனோடு நாளைக்குப் பாடி வெல்வது எவ்வாறு? எனக்கருதிச் சோமசுந்திரர் திருக்கோயிலுக்குச் சென்று வழிபட்டு "ஐயனே" நின் திருவருள் துணையெய்யவேண்டுமென வேண்டிக்கொண்டு தம் இல்லஞ் சார்ந்திருந்தான். அன்பனுடைய வருத்தத்தைத் தீர்க்கக் கருதிய சோமசுந்திரப் பெருமான் விறகு வெட்டி வந்து விற்று வயிறு வளர்க்கும் ஒரு கிழவனைப்போல் வேடந்தரித்து காட்டிலிருந்து விறகைச் சுமந்துகொண்டு விலக்குக் கேட்போர் யாருக்கும் கொடாமல் அன்று மாலை நேரத்தில் ஏமநாதன் தங்கியிருக்கும் வீட்டு வெளித் திண்ணையில் அருகில் விறகுக்கட்டை ஊன்றி விட்டுத் தாம் அத்திண்ணையிலமர்ந்து கொண்டு மெல்லிய குரலில் இசைபாடிக்கொண்டிருந்தார். அவ்விட்டினுள்ளேயிருந்த ஏமநாதன் அவ்விசையின் இனிமையைக்கேட்டு வெளியில் வந்து பார்த்து நீ யார் என்றான். ஐய, இந்நகரில் பாணபத்திரன் என்னும் இசை ஆசிரியர் ஒருவரிருக்கின்றார். அவரிடம் பல மாணவர்கள் இசை பயில்கின்றனர். இசை மீதுள்ள ஆர்வத்தால் யானும் அவர்பாற் சென்று இசை பயிலத்தொடங்கினேன். என்னுடைய உடல் மெலிவையும் முதுமையையுங் கண்டு நீ இசைக் கற்றற்குத் தகுதியற்றவன் உனக்கு இசை வாராது என விலக்கி விட்டனர். ஆதலின் யான் விறகு வெட்டி வந்து விற்றுப் பிழைக்கின்றேன் என்றனர். அப்போது ரைவளந்தெரிந்த ஏமநாதன் விறகுவெட்டியைப் பார்த்து நீ முன்பு பாடிய இசையை இன்னும் சற்று விரித்துப் பாடுகவென்றான். விறகுத்தலையராக வந்த இறைவனார் தம் தோளிற் கிடந்த வீணையிற் சுருதி கூட்டி,

"வயிறுது குழிய வாங்க லமுமுகங் காட்டல் வாங்குந்
செயிற்று புருவ மேறல் சிறநடுக் குறல்கண்ணாடல்
பயிற்று மிட்டு வீங்கல் பையென வாயங் காத்தல்
எயிறுது காட்டல்" முதலிய உடற் குற்றங்களும்,

"வெள்ளைகாகுளிகேழோசை வெடிகுர னுசியின்ன
எள்ளிய வெழாலின் குற்ற மெறிந்துநின் நிரட்டலெல்லை
தள்ளிய கழிபோக்கோசை யிழைத்தனெட் டுயிர்ப்புத்தள்ளித்
துள்ளல்" முதலாகப் பாடுங்கால் உண்டாகும் மிடற்றோசைக்

குற்றங்களையின்றி, எழுது சித்திரம்போல் அசைவற்றிருந்து மலையின் உச்சியிலிருந்து வீழும் அருவியின் ஓசையும், மத்தளவோசையும், வெண்கலத்தாற் செய்யப்பட்ட தாளத்தின் ஓசையும், வலம்புரிச்சங்கின் ஓசையும், வண்டின் ஈங்காரமும் போல இனிய சுவையுடையதாய், மூங்கில் இலை உதிர்ந்து விழுங்கால் காற்றில் மிதந்து அசைந்தசைந்து நிலத்தைச் சார்தல் போலவும், மீன்கொத்திப் பறவை மீனைக்கொத்துதற்கு நீரில் மூழ்கி விரைந்தெழுந்து மேலே செல்லுதல் போலவும் பாடும் முறையைத் தழுவி, மந்தரம், மத்திமம் தாரம் என்னும் நிலைகள் மூன்றினோடு கூடி அமுதனைய தமிழ்ப்பாட்டும் அதற்கு இசைந்த இன்னிசையும் முன்செல்ல, பருந்தைப் பின்பற்றிச் செல்லும் நீழலைப்போல யாழ் நரம்பிலுண்டாம் இசை அவற்றைத் தொடர்ந்து செல்ல, மிடற்றோசைக்கும் வீணையிசைக்

கும் வேற்றுமை தோன்றாதவாறு சாதாரி இராகத்தில் அமைந்த பாடலைப் பாடினார். தேவர் மக்கள் விலங்கு பறவை ஒரறிவுடைய மரம் முதலிய சராசரங்களும் அவ்விசையின்பத்தில் ஈடுபட்டு மயங்கி நின்றன.

சாமவேதம் பாடிய கண்டத்திலிருந்து வெளிப்பட்ட முல்லைப்பண்ணாகிய இத் தேவகானம் ஏமநாதனுடைய உள்ளத்தையும் உடலையும் உயிரையும் உருக்கி விட்டது. ஐம்பொறிகளையும் செவிகளாகக் கொண்டு அவ் இசையின்பத்தை அனுபவித்துக் கொண்டிருந்தான். இந்நிலையில் அங்கு விறகு விற்போனாக வந்து பாடிக்கொண்டிருந்த சிவபிரான் விறகுச் சுமையோடும் அவ்விடத்திலிருந்து மறைந்தார். அதன்பின் தன்னுணர்வு வரப்பெற்ற ஏமநாதன் இவ்விறகு வெட்டி பாடிய சாதாரிப் பண், யான் அறிந்த சாதாரியன்று. இவ்வுலகத்தில் இத்தன்மையான சாதாரிப் பண் ஒன்று உண்டென்று பிறர் சொல்லவும் நான் கேட்டதில்லை. இது தேவகானமாயுள்ளது. இப் பண்ணை இவனுக்குக் கற்பித்தவன் கடவுளாக இருக்கவேண்டுமேயன்றி நம் போன்ற ஒரு மனிதனாக இருக்கமுடியாது. இசைக் கற்பதற்குத் தகுதியற்றவனென்று விலக்கிவிடப்பட்ட இவ் விறகு வெட்டியின் இசைத்திறமையே இவ்வாறிருக்குமானால் அப் பாணபத்திரனுடைய இசைப் புலமை எவ்வாறிருக்குமோ அறியேன். நாளை அரசன் முன்னிலையில் அப் பாணபத்திரனோடு பாதிட்டுப் பாடி அவனை வெல்ல முடியாது. ஆதலால் இன்றிரவே இவ்விடத்தைவிட்டுப் போய்விடுதல் நல்லதென எண்ணித் தன்னுடன் வந்த மாணவர்களை வெவ்வேறு வழியாக அனுப்பிவிட்டுத் தானும் அந் நகரைவிட்டுச் சென்றான்" என்பது திருவிளையாடற் புராணத்திற்கூறப் பட்டுள்ள வரலாறுகும்.

சோமசுந்தரக் கடவுளே தம் வாய்விட்டுப் பாடியதான புகழ்பெற்ற இராகமே "பண் சாதாரி" என்ற பெயரில் வழங்கி வருகின்றது. மடங்களிலுள்ள ஏட்டுப் பிரதிகளிலிருந்தும் பரம்பரை வழக்கிலிருந்தும் "பண் நட்ட ராகம்" "பண் சாதாரி"—என்ற இரண்டு பண்களும் பந்துவராளி இராகம் ஒன்றையே குறிக்கக் காண்கிறோம். "நட்ட ராகம், சாதாரி" என்ற இரண்டு பண்களுக்கும் பெயர், நிலம், பண், யாழ், திறன் இவைகள் வெவ்வேறு நிலைகளில் விளங்குவதால் இவை தனித் தனியான இராகமாக இருத்தலே முறையாகும். ஆனால் இரண்டு பண்களையும் ஒரே இராகத்திற் பாடுவதற்குரிய காரணத்தையும் லட்சணத்தையும் யாரும் கூறவில்லை. தேவாரப் பண்களை ஓர் அம்மையார் சரியான முறையிற் பாடிக்காட்டியதாகவும் அம் முறைகளே இன்று தேவார ஆசிரியர்களால் கையாளப்படுகின்றதென்றும் சொல்லுகிறார்கள். தேவாரப் பண்களுக்கு மடங்களிலுள்ள ஏட்டுப் பிரதியிற் குறித்த இராகங்களுக்கும், தற் காலம் தேவார ஆசிரியர்கள் பாடும் இராகங்களுக்கும் எவ்வளவோ வேறு பாடுகள் இருக்கின்றன. "கொல்லி, கொல்லிக்கௌவாணம், காந்தாரம், பியந்தைக் காந்தாரம்" என்ற இந்த நான்கு பண்களையும் நவரோசு என்ற ஒரே இராகத்தில் பாடி வருகின்றனர் இதுபோல இன்னும் சில உள. இவ்வாறு இவைகளை ஒரே இராகத்திற் பாடுவதற்கு இவர்கள் பாடி வருகின்றதைத்தவிர வேறு எவ்வித ஆதாரமுங் கிடையாது. இக்காரணங்களால் அம்மையார் பாடிக்காட்டிய முறையிலேயே இப்பொழுதும் தேவார ஆசிரியர்கள் பாடிவருகின்றார்கள்? என்ற ஐயம் எழுகின்றது எவ்வாறாயினும் "பண் நட்ட ராகம்" "பண் சாதாரி" இவ்விரண்டில் ஒன்று பந்துவராளி என்ற இராகமாகவும், மற்றொன்று வேறொரு இராகமாகவும் இருத்தல் வேண்டுமென்பது தெளிவு.

27—12—50ல் சென்னைமா நகரத்தில் நடத்திய தேவாரப்பண் ஆராய்ச்சி மகாநாட்டில் தேவார ஆசிரியர்கள் பாடுவதையே காரணமாய்க்கொண்டு "பண்

சாதாரி” என்பது பந்துவராளி இராகம் என்று தீர்மானித்துப் பதிவு செய்தனர். பாடுவதைக்கொண்டு தீர்மானஞ் செய்வது ஓர் முறையாயினும் அதற்குக் காரணங்களைக் கண்டு தீர்மானித்தால் இன்னும் சிறந்ததாக இருக்கும். ஏனென்றால் அம்மையார் பாடிக்காட்டிய முறையைத் தழுவினே இவர்கள் என் பொழுதும் பின்பற்றி பாடிவருகின்றனர் என்பது ஐயப்படவேண்டியதே இப்பதை முன்பே கூறினோம். “பண்நட்டராகம்” என்பதைத் தற்கால வழக்கிலுள்ள வேறு இராகமாக அம்மகாநாடு இனிமேல் தீர்மானித்து முடிவு செய்யும். “பண்நட்டராகம்” வேறு இராகமாக முடிவடையும்போது இன்ன காரணம் தால் இதை இன்ன இராகமென்று குறிப்பிடுகின்றோமென்று கூறினால் அது சாலச் சிறந்ததாகும். இங்கு “பண்நட்டராகம்” என்பது ஒதுவாமூர்த்திகள் பரம்பரையாகப் பாடிவருவதைக்கொண்டும் இன்னும் பல காரண காரியங்களைக் கொண்டும் அது பந்துவராளி இராகமாகும் என்று “பண்நட்டராகம்” என்ற கட்டுரையில் விளக்கப்பட்டுள்ளது. அதுபோல “பண்சாதாரி” என்பதைக் கடவுள் பாடினாரென்பதைக் கொண்டும் இன்னும் பல காரணங்களைக் கொண்டும் அது தற்காலத்தில் வழங்கிவரும் இராகங்களில் இன்ன இராகமாகும் என்பதை ஆராய்வோம்.

“பண்சாதாரி” என்பது எங்கும் நிறைந்த கடவுளாலேயே பாடப்பட்ட தெனின் அந்த இராகமானது உலகெலாம் பரவி விளங்குகின்றதெனப் பொருள் படுத்தவேண்டும். அன்றியும் ஏமநாதன் மானுட வர்க்கத்தைச் சேர்ந்தவன். தெய்வவர்க்கமல்லன். அவனைப் படைத்த கடவுளே, பாடி அவனை மயங்கவைக்க வேண்டுமெனின், அவனாலும் அறியப்படாததான ஓர் இராகத்தை (பண்ணைக்) கடவுள் பாடிவிட்டாரெனின் அது கடவுளுக்கே பெருமைதரக்கூடிய செயலன்று. ஏமநாதனுக்கும் மற்றுமுள்ள உலகத்தோர்களுக்கும் தெரிந்த பண்நட்ட மிகப் பழமையான ஓர் லக்ஷிய இராகத்தையே கடவுள் பாடிக்காட்ட அதைக்கேட்ட ஏமநாதன் தனக்கு மிகவும் சிறந்த லட்சண அம்சங்களுடன் மிகச் சாதாரணமாய் வரும் அந்த இராகமானது, வேறு அழகமைதியிற் சிறந்தும், நுட்பமான கமகாதி களைப் பெற்றும், அதே இராகம் தாம் பாடுவதைவிட எல்லாத்துறையிலும் சிறப்புமிகத் தோன்றும் ஆற்றலைக்கண்டு, பாணபத்திரனின் பாட்டைக்கேட்ட வீரகுத்தலையனே இவ்வாறு பாடுகின்றனனே? இன்னும் பாணபத்திரன் எவ்வாறு பாடக்கூடுமோ! எவ்வாறாயினும் விறகுத்தலையன் பாடுவதைவிட பாணபத்திரனின் இசை இன்னும் சிறந்தே விளங்கும் என்பதற் சிறிதும் ஐய மில்லை. அவ்வாறாயின் அவனிடமிருந்து வரும் இசையழகின் அமைதிகளையும் அதன் திட்ப நுட்பங்களையும் யாம் ஒரு சிறு அணுவளவேனும் இசைக்க இயலுமா? நம்மால் இயலாது என்று மயங்கியே சொல்லாமற் சென்றான் என்பது திருவினையாடற் புராணம் விறகு வீற்ற படலத்தினின்று புலனாகின்றது.

தென்னாட்டில் வழங்கிவரும் இசைக்கும் வடநாட்டில் வழங்கிவரும் இசைக் கும் பேதம் கூறும்போது தென்னாட்டிசை உள்ளதோற்றம்போலவும், வடநாட்டு இசை வெளித்தோற்றம்போலவும் விளங்குவதாகும். உயிர்த்துடிப்பு அல்லது ஆத்ம விசாரணையின் தன்மை தென்னாட்டிசையிலும், உடல் கூறு அல்லது உலக விசாரணையின் வெளித்தோற்றத்தின் தன்மை வடநாட்டிசையிலும் தோன்று கின்றது. நமது தென்னாட்டு இசை அதிநுட்பமான அமைதிகளைப்பெற்றும், கம காதிகளைப்பெற்றும், அழகையுண்பண்ணுவதான 22 சுருதிகளிலே ஒலித்தும் வருவதாகும். வடநாட்டு இசை வீணையிலுள்ள 12 சுரத்தானத்திலே மட்டும் நின்று ஒலிப்பதாகும். நமது இசையிலுள்ள கமகாதிகளை நீக்கிவிட்டு ஒவ்வொரு இராகத்தையும் 12-சுரத்த சுரத்தானத்திலே இயக்கிப்பார்த்தால் அது வடநாட்டு இந்துஸ்தானி சங்கீதத்தின் ஒலியையே எடுத்துக்காட்டும் மாதிரியை இன்றும்

பார்க்கலாம். அதனால் நம்நாட்டு இசையானது எல்லாத்தேசத்து இசைக்கும் மேம்பட்டதாய், கடவுளின் தன்மையதாய், ஜீவன்முகத்தின் நிலையில் நின்று விளங்குகிறதென்பதும், அது தமிழ்நாட்டிலேயே தொன்றுதொட்டு வழங்கி வருகிறதென்பதும், எல்லா மக்களையும் எல்லா தேசத்தையும் ஒன்றுபடச் செய்யும் சக்தியுள்ளதென்பதும், அவ்வளவு மேலான அமைதிகள் நமது தமிழ் நாட்டில் வழங்கிவரும் தமிழிசையின்கண் நிரம்பித் ததும்புகின்றதென்பதும், கடவுள் பாடிய நிகழ்ச்சியினாலும், ஏமநாதன் மயங்கித் தன் ஊருக்கு ஓடிய செயல் களினாலும் அறியக்கிடக்கின்றன.

கடவுள் உலகெலாம் நிறைந்து எங்கும் பரந்திருப்பதுபோல அவர் பாடிய சாதாரி-யும் மக்கள் வாழுகின்ற எல்லா நாடுகளிலும் பரவியிருத்தல்வேண்டும். அப்படி எல்லா நாடுகளிலும் பரவியிருக்கும் அந்த இராகமே புகழுடையதும் கடவுளால் பாடப்பெற்றதென்று எல்லோராலும் போற்றப்படுவதுமாகும். இவ்வாறு பரவியிருக்கும் இராகம் நமது தேவாரத்தில் வழங்கிவரும் சாதாரி-ப் பண்ணையாகும் என்பதை அதன் சுர அமைதியால் அறியலாம். இந்த இராகம் வெவ்வேறு தேசத்தில் வெவ்வேறு பெயருடையதாய் விளங்குகின்றது. ஒவ்வொரு தேசத்திற்கும் தனிச்சிறப்புக்களுண்டு. தேசத்தின் நடை, யுடை, பாவனை, குணம், பேச்சு, ஒலி இவ்வமைதிகளுக்கு ஏற்ப இசையமைதிகள் பல இருக்கின்றன. ஆனால் அந்தந்தத் தேசச் சிறப்பை விளக்கும் அந்த இசையமைதி, எல்லாத் தேசங்களிலும் இருக்கவேண்டுமென்ற நியதி இல்லை அவ்வாறு இருக்கவும் முடியாது. நமது தமிழ் அகமாகிய தக்ஷிணத்திலுள்ள, ஆனந்த பைரவி, முகாரி, சகானு, யதுகுலகாம்போதி, நீலாம்பரி-முதலிய பல சிறந்த இராகங்கள் லண்டன், அமெரிக்கா, ரஷ்யா, ஐர்மனி முதலிய நாடுகளில் இருக்க முடியாது. அவ்விதம் இல்லாததினால் யாதொரு குறையுமில்லை. ஆனால் கடவுளால் பாடிக்காட்டிய பண் சாதாரி-என்பது தமிழ் நாட்டோடு நின்று விட்டது என்றால் அது மேன்மைக்குரியதாகாது. தமிழ் நாட்டின் வேறுகிய வட நாட்டு ஏமநாதனுக்கும் அது தெரிந்த இராகமாகவே (பண்ணாகவே) இருக்க வேண்டும், தமிழ்நாட்டில் பாடிக்காட்டியது பெருமை என்று கொள்ளலாம். அப்படிப்பாடிய இராகம் (பண்) மேல் நாட்டிற்கும், கீழ்நாட்டிற்கும் வடநாட்டிற்கும் தென்நாட்டிற்கும் உரித்தானதாய் இருக்கவேண்டும். நம் நாட்டின் வழக்கிலுள்ள எல்லா இராகத்தையும்விட பண் சாதாரி - என்பதன் ஒலிப்பரப்பு எல்லா நாட்டிலும் சிறப்படைந்து இருக்கிறது. அவ்வாறு விரிவு அடைந்து நிற்பதான பண் சாதாரி-என்பது நாம் தற்காலம் பாடிவருவதில் எந்தப் பெயருடைய இராகம்? அதன் சுரத்தான அமைதிகள் என்ன? என்பவை இதுகாறும் அறியப்படாமலே இருக்கின்றன. இஃது உண்மை! கடவுளது உண்மை வடிவத்தையும், அவனால் பாடப்பட்ட உத்தமோத்தமமான இன்னிசையமுதத்தையும் அறிவது எளிதன்று. ஆனாலும் எளிதில் அவனையும், அவன் பாடிய பண்ணின் அமைதியையும் அறிவதற்கான வழியுண்டு. அவ்வழி மாயையால் மறைக்கப்பட்டிருக்கின்றது, இதுதான் அவனது திருவினையாடல்.

சாதாரி-என்பது ஓர் புதைபொருள். அப்பொருள் அவனையன்றி வேறன்று அல்லது அவனைப் புகழும் தன்மையுடையது. ஈசுவரனின் அரிய குணதீசயங்களைச் சாதாரி-பண்ணில் பாடும்பொழுது அச்சுர இயக்கங்களின் ஒலிச்சிறப்பு, அவனைப்பற்றிப் புகழும் தன்மையுடையது போலக் கம்பீரமாகவும், உத்வேகம் துடனும் விளங்கவேண்டும். தவிர சாதாரி-என்ற பதமே அது குறிப்பிடும் இராகத்தை உள்ளங்கை நெல்விக்களிபோல் மிகத்தெளிவாக உணர்த்தி நிற்கின்றது வேத மந்திரங்களால் உணர்த்தப்படும் சக்தி தெய்வங்களுக்கெல்லாம் பீஜாக்ஷரம் விளங்குவதுபோல, கடவுளால் பாடப்பட்ட இராகத்தின் சுரத்தான

அமைதிகள் இன்னவையென அறிவதற்குரிய பீஜாஷ்ரமாய் சாதாரீ—என்ற பதம் அமைந்திருக்கின்றது. எது மாறினும் கடவுளால் பாடப்பட்ட இராகம் இன்ன தென எக்காலத்திலும் அறிவதற்கேற்றதாய் சாதாரீ—என்ற பெயர் குறித்திருப்பது போற்றற் குரியது. இது தமிழகத்தின் மூதாதையர்களின் தீர்க்க திருஷ்டியையும், சங்கீத அறிவின் தீட்பு நுட்பங்களையும் அவர்களது மேதா விலாஸங்களையுமே குறிப்பிடுவதாய் இருக்கின்றது. சாதாரீ என்ற முழுப் பெயரின் தோற்றமாகிய மாயையினால் இதுகாறும் அது இன்ன இராகம் என்று தெளிவுபடாத தன்மையில் நாம் இருந்து விட்டோம், இனி அதை விளக்குவோம்.

உலகில் உள்ள தோற்றங்களுக்கெல்லாம் இரு பகுதிகள் அறியப்படுகின்றன. தோன்றுதல், அழிதல்; பகல், இரவு; சூரியன், சந்திரன்; முன்புறம், பின்புறம்; உள் தோற்றம், வெளித்தோற்றம்; இருகண்கள், இருகைகள், இரு காதுகள், இருகால்கள்—என்பதுபோல ஒவ்வொரு இராகங்களுக்கும் இருபகுதிகள் உண்டு. அவை பூர்வாங்கமென்றும், (முன் பகுதி) உத்தராங்கமென்றும் (பின் பகுதி) குறிக்கப்பெறும். பூர்வாங்கத்தில் எந்தெந்த சுரத்தான அமைதிகள் அறியப்படுகின்றனவோ, அதே அமைதிகளுள்ள சுரத்தானங்களே உத்தராங்கத்திலும் இருத்தல் வேண்டும். அவ்வாறு அமைக்கப் பெற்றவரும் இராகம் அழகு மிகுந்து பிரகாசிக்கும். அவ்வாறு அமையும் போது அது வாதி சம்வாதி என்ற லட்சணத்தைப் பெற்றவருவதாய்க் கருதப்படும். சாதாரீ—என்ற பெயர் அது குறிக்கும் இராகத்தின் வாதிசம்வாதி தத்துவத்தை அடிப்படையாகக் கொண்டு தோன்றியதாகும். நம்மால் பேசப்படும் ஒவ்வொரு வார்த்தைக்கும் அது குறிப்பிடுவதான பொருளமைதிகள் இருப்பது போல சாதாரீ—என்ற வார்த்தைக்கு வேறு தனிப்பட்ட எவ்வித பொருளில்லை யென்பதை யாரும் அறிவர். அப்படி பொருளில்லாத ஓர் பெயரை நமது முன்னோர்கள் தீர்க்க திருஷ்டியுடன் வைத்தார்கள் என்பதும், அப்பெயருள்ள பண்ணையே கடவுள் பாடினார் என்றும் கூறிவருதலானது இழுக்குடையதாயுள்ளதன்றோ? என்று கூறலாம். இங்கு கவனிக்க வேண்டுவது :—

சாதாரீ—என்ற வார்த்தையிலுள்ள எழுத்துக்களைப் பார்ப்போம். அதில் சா-தா-ரீ—என்று மூன்று எழுத்துக்கள் உள்ளன. இம்மூன்று எழுத்துக்களும் ஒன்று சேர்ந்து ஒலிப்பதான முழு வார்த்தையல்ல. இது சங்கீதத்தின் அடையாளச் சொற்களான சுரப்பெயர்களேயாகும் என்பது தெளிவு. சா—என்னும் போது அது ஷட்ஜஸ்வரமென்றும், தா—என்னும்போது அது தைவத சுரமென்றும், ரீ—என்னும்போது அது ரிஷபசுரமென்றும் அறிதல்வேண்டும். இச்சுரங்களை ஏன்? நெடிலாகக் குறிப்பிடவேண்டுமெனின் அதற்கு பல காரணங்களுண்டு. அவைகளாவன:—1. வடமொழியில் ஈகார இறுதியாயுள்ள சொற்கள் தமிழில் வரும்போது இகர ஈருக வருமென்பது விதியாதலால் சாதாரீ—என்பது சாதாரீ—என வந்தது. 2. இம்மூன்று சுரங்களும் சாமவேதத்திலுள்ள சுத்த சுரங்கள் அல்லது கரஹரப்பிரியாவின் சுரங்கள் என்பதை நெடில் எழுத்துக்கள் குறிக்கும். 3. இம்மூன்று எழுத்துக்களும் முறையே சட்சம், சதுசுருதிதைவதம், சதுசுருதி ரிஷபம் என்ற பெரிய சுரத்தானங்களைக் குறிக்கும். 4. இம்மூன்றெழுத்தையும் சொல்லும்போது அம்மூன்றும் சேர்ந்துவரும் ஓர் முழு வார்த்தையன்று, அவை சுர ஒலிகள் என்பதை நாம் பிரித்துச் சொல்லுவதற்குச் சுரங்களினிடையே கோடிட்டுப் புத்தகங்களில் காட்டுவதைப்போல் சுர உச்சாரத்தில் இடை நிறுத்தல் உண்டு என்று அறிய ஒவ்வொரு சுரமும் ஒவ்வொரு கால் பெற்று நீண்டு அமைந்தது என்று உணர்தல் வேண்டும். 5. கடவுளால் கானஞ்செய்யப்பட்ட படியால் அவனுடைய நிலையில் விளங்கும் சாமவேத சுரங்களின் அமைதியைப் பெற்று சா-தா-ரீ—விளங்குகின்றதென்பது பொருத்தமுடையது. இனி இந்த

இராகத்தின் பூரணமான அமைதியைப்பெற “சா-தா-ரீ”—என்ற இம்மூன்று சுரங்களுக்கும் சம்வாதி சுரங்கள் அமைத்தல்வேண்டும். சம்வாதி என்பது 9-வது சுருதியாய், நட்புரிமையோடு அதாவது “ச-ம” முறையிலும்; 13-வது சுருதியாய் கிளை உரிமையோடு அதாவது “ச-ப” முறையிலும் வரும். இவற்றில் எம்முறை அனுசரிப்பது என்பதைக் கவனிப்போம்.

கடவுள் ஒருவரே பரமபுருடர் எனப்படுவர். இந்த இராகம் பரமபுருடராகிய சிவபெருமானால் கானஞ் செய்யப்பெற்றமையால் சுர அமைதிகளிலும் ஆண்மை வகிக்கும் தன்மையில் சம்வாதி அமைத்தல்வேண்டும். “ச-ம” என்னும்பொழுது பெண் தன்மையிலும், “ச-ப” என்னும்பொழுது ஆண் தன்மையிலும் சுரங்கள் விளங்குகின்றன. ஆதலால் 13-வது சுருதியாகிய பஞ்சம முறையிலேயே சம்வாதி களை விளக்க வேண்டியிருக்கிறது. “சா-தா-ரீ” என்பதில் சா—என்பது பூர்வாங்கத்திலும், தா—என்பது உத்தராங்கத்திலும் விளங்குகின்றது. ரீ—என்பதும் பூர்வாங்கத்திலே இருப்பினும் அதற்கு சம்வாதி சுரம் உத்தராங்கத்திலுள்ள தைவதமே 13-வது சுருதி சம்வாதியாக அமைந்திருக்கிறது. ஆதலால் ரீ—யைத்தவிர பாக்கியுள்ள சா-வுக்கும், தா-வுக்குமே சம்வாதி சுரம் வேண்டியவை. “சா-தா-ரீ” என்ற மூன்று சுரத்துடன் “சா-தா” இவ்விரண்டின் சம்வாதியான இரண்டு சுரங்களையும் சேர்க்க, மொத்தம் ஐந்து சுரங்களைப்பெற்று ஓர் பண் உண்டாயிற் றென்பதை “சா-தா-ரீ” என்ற பெயர் குறிக்கின்றது. சா—என்பதற்கு 13-வது சுருதியாகிய ப-வும், தா—என்பதற்கு 13-வது சுருதியாகிய அந்தரகாந்தாரமும் சம்வாதி சுரங்களாக நின்று புருடத்தன்மை பெற்றது. சம்வாதி சுர அமைதி களைக் கீழே குறித்துள்ள 22-சுருதித்தான பதிகத்தில் அறிக.

22 சுருதித்தானப் பதிகம் :																								
1.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
2.	ச	ரி	,	ரி	,	க	,	கா	,	ம	,	மா	,	ப	த	,	தா	,	ரி	,	ரி	,	ச	
3.	ச			ரி																			தா	
4.	ச															ப								
5.				ரி																			தா	
6.																							தா	
7.	ச			ரி																		ப		தா
																								ச

1. 22 சுருதிகளின் வரிசை எண்கள். 2. சுத்த, சுத்தவிக்ருத, விக்ருத சுரக் குறியீடுகள். 3. சாதாரீ என்ற மூன்று சுரங்களும் 22 சுருதி நிலையில் எங்கெங்கு வரவேண்டுமென்பது. 4. சா-விளிர்ந்து 13வது சுருதியில் பஞ்சமம் சம்வாதியாய் வருகின்றதென்பது, “ச-ப” இவ்விரண்டிற்கும் இடையில் 12 இடை வெளிகள் இருக்கவேண்டும். 5. ரீ-யிலிருந்து 13-வது சுருதியில் தைவதம் சம்வாதியாய் இயற்கையாய் இருக்கின்றதென்பது. “ரீ - தா” இவ்விரண்டிற்கும் இடையில்

12 இடைவெளிகள் இருக்கவேண்டும். 6. தா-விலிருந்து 13-வது சுருதியில் அந்தர காந்தாரம் சம்வாதியாய் வருகின்றதென்பது, தா-விலிருந்து வலமாக எண்ணவேண்டும். “தா-கா” இவ்விரண்டிற்கும் இடையில் 12 இடைவெளிகள் இருக்கவேண்டும். 7. எல்லா சுரத்தானங்களும் நிற்கும் நிலை.

ஷட்ஜ மத்தியம் (ச-ம) முறையில் வாதி சம்வாதி அமைக்கப்பெற்று வருமானால் அது மிக முரண்படும். எவ்வாறெனில்: சா-விற்கு ம-என்பது 9-வது சுருதியாகிய சம்வாதி சுரமாகும். தா-விற்கு ரி என்பது 9-வது சுருதியாகிய சம்வாதி சுரமாகும். இது இயற்கையாகவே அதில் அமைந்துள்ளது. ரி-க்கு 9வது சுருதியாக ப-வரவேண்டும். ஆனால் ரி யிலிருந்து ப-என்பது 10வது சுருதியில் வருவதை மேலே குறித்துள்ள 22 சுருதிப் பதிகத்தில் அறியலாம். ஆதலால் ஷட்ஜ மத்தியம் முறையிற் சம்வாதி சுரங்கள் பொருந்தி வராததைக் காண்கிறோம். அத்துடன் “ச-ம-ரி-த” என்ற நான்கு சுர அமைதிகளே கிடைப்பதால் இது கானஞ் செய்வதற்குத் தகுதியுடையதன்று. ஆதலால் முன் குறித்தபடி “சா-தா-ரி” என்னும் சுரங்களின் சம்வாதி முறைகளாற் கிடைத்த பஞ்சமம், அந்தரகாந்தாரம் இவற்றையும் அம்மூன்றுடன் சேர்த்து முறைப்படுத்தினால் இது ஷட்ஜம், சதுசுருதி ரிஷபம், அந்தரகாந்தாரம், பஞ்சமம், சதுசுருதி தைவதம் என்ற ஐந்து சுரங்களுடன் அமைந்த மோகன இராகமாகும். எல்லா இராகத்தையும்விட மோகன இராகத்தின் சுரத்தான அமைப்பு மேல் நாட்டிலும், வடநாட்டிலும், தென்நாட்டிலும் காணப்படுகிறதென்று யாவரும் கூறுவர். தவிர, கடவுளின் இசை மோகிக்கத் தகுந்த தாதலின் “சா-தா-ரி” யின் சம்வாதித்வம் சேர்ந்த சுரங்கள் மோகிக்கத் தகுந்த காரணத்தினாலேயே எல்லா நாட்டிலும் அந்த சுர எல்லையின் ரஸம் அறியப்படுகின்றதென்றும், தென் நாட்டில் அதற்கு மோகிக்கப்பட்டதன் காரணமாய் மோகனமென்று காரணப் பெயரிட்டனரோ என்றும் எண்ணவேண்டியது இருக்கிறது.

இசை யென்பது தொனிப்பிரபஞ்சம். அந்தத் தொனிகளின் அழகமைதிகளைச் சேர்த்து நமது முன்னோர்கள் லக்ஷியத்தில் கானஞ்செய்து வந்தனர். அவ்வாறு செய்து வந்ததில் அநேக ஒலி உருவங்கள் அறியப்பட்டு வந்தன. அவ்வுருவபேதங்களை வழி வழியாகக் கேட்டு லக்ஷியத்தில் பாடப்பட்டு வந்ததுடன் இசை உருவங்களின் வெவ்வேறு அமைதிகளை யாவரும் அறிந்து குறிப்பிட்டு வர அனுகூலமாய் அவ்வக்காலங்களில் யுக்தமாய் அவைகளுக்கு இடகுறிப்பெயர்களை அமைத்தனர், காலதேச வர்த்தமானங்கள் மாறமாற அப்பெயர்களும் மறைவுற்று புதுப்புதுப் பெயர்கள் வரலாயின. ஒரு பொருளிற்குப் பல பெயர்களிருப்பது போலவும், ஒரு பெயர் பல பொருளைக் குறிப்பிடுவதுபோலவும், ஒரே இராகத்திற்குப் பல பெயர்கள் பிற்காலங்களில் வரலாயின. அந்தப்பெயர்கள் பலவும் ஒரே இராகத்தையே குறிக்கின்றன என்ற உண்மையை மறந்துவிட்டபடியால், தற்காலம் அப்பெயர் ஒவ்வொன்றும் வெவ்வேறு இராகமென்றெண்ணி அவற்றிற்கு வெவ்வேறு சுர அமைதிகளை ஏற்படுத்தி பின்னுள்ளவர்கள் சிறிது மாற்றங்களைச் செய்தனர். அவ்விபரங்கள் ஆங்காங்கு வரும் பண்ணாராய்ச்சியின் கீழ்க் குறிக்கப்படும்.

லக்ஷியத்திற் பாடிக்கொண்டிருந்த ஒலி விசேஷங்களுக்குப் பெயர்க்குறியீடு செய்ததில் நமக்கு இன்று கிடைக்கும் புராதனமான பெயர் பிங்கல நிகண்டில் காணப்படுவதேயாகும். அதில் அம்முனிவர் தம் காலத்திற்கு முன்பே வழங்கியுள்ள பெயரைக்கொண்டோ? அல்லது அவ்விசைகளின் ஒலிகளை நன்கறிந்து, அதனுடைய அமைதிகளைப் பின்னுள்ள சந்ததியார்கள் செவ்வனே அறிய உதவுவதுபோல் ஒவ்வொரு பண்ணமைதிக்கும் கருத்து உள்ளதான ஓர் குறியீட்டுப்

பெயரை அமைத்தோ? உதவினர் என்று கொள்ளவேண்டும். அவ்வாறு கடவுள் பாடிய பண்ணிற்குச் சிறந்த கருத்தை மனத்திற்கொண்டு “சா-தா-ரி” என்ற குறியீட்டுப்பெயர் அமைக்கப்பெற்றுள்ளது என்று கருதுவது சிறந்ததாகும். கடவுளாற் பாடப்பெற்ற ஒலிவடிவுகளைச் சாதாரி என்ற பெயரினால் குறிப்பிட்டு, தேவாரம் முதலிய இன்னிசைப் பாக்களை இசைத்து வந்தனர். தேவாரப் பாசுரங்கள் மறைவுற்ற காலத்தில் கடவுளால் பாடப்பட்ட ஒலியின் பண்பு மட்டும் லக்ஷியத்தில் இருந்து வந்தது. அதன் குறியீட்டுப்பெயர் நூல்களில் இருந்ததே யன்றி லக்ஷியத்தில் கானஞ்செய்யப்படும் இன்ன ஒலிச் சேர்க்கைகளுக்கு இன்ன குறியீட்டுப்பெயர் தாமுண்டு என்பதை மறந்துவிட்டனர். இவ்வாறு மறைவுற்ற (பெயர் தெரியாத) பண்களுக்கு (இராகங்களுக்கு) அபூர்வ மென்றே பெயர். இக்காலத்திலும் பெயர் தெரியாத அநேக இராகங்கள் வழங்குவதையும், அவற்றிற்கு ஒவ்வொருவரும் வெவ்வேறு பெயர்களை அமைத்துப் புத்தகங்களில் புதிது புதிதாக எழுதி வருவதையும் பார்க்கிறோம். அதிக ரஞ்சகத்தை உண்டு பண்ணுவதும் லக்ஷியத்தில் வழங்கி வருவதுமான பெயர் தெரியாத இராகங்கள் அபூர்வம் என்ற பெயரினாலேயே நூல்களில் இடம் பெற்றிருப்பதை இன்றுங் காரணமாம் இது போல் “சா தா ரி” என்ற பெயர் மறைந்து அதன் லக்ஷியமாகிற பண் மட்டும் மக்களால் கானஞ்செய்து வரப்பட்டிருந்தது அந்த இன்னிசையின் பண்பானது ஒவ்வொரு மக்களின் மனத்திலும் ஊடுருவிச் சென்று அவர்களை மயங்கச்செய்து வந்தது ஒவ்வொரு மக்களும் அவ்விசையின் இயக்கத்தை கேட்குந்தோறும் அதிலுள்ள மோகங் காரணமாக இவ்விராகம் எவ்வளவு மோகத்தைக் கொடுக்கின்றது என்றே பேசி வந்தனர். கடைசியாக அவ்வியக்கத்தை உடைய பண்ணைக் குறிப்பிடும்போது, தங்களது அனுபவ வாயிலாக வந்த மோகனம் என்ற பெயரினாலேயே வழங்கி வருவராயினர். மோகனம் என்ற பெயர் பிற்காலத்தில் ஏற்பட்டதாகையால் இது முன்னூல்களிற் காணப்பெறமாட்டாது. தவிர கடவுளால் பாடப்பெற்றமையால் எல்லா மக்களின் அனுபவ வாயிலாக வரப்பெற்ற பெயராகும். ஒருவரால் மட்டும் இடப்பெற்ற பெயரல்லவென்பது ஊன்றிக் கவனிக்கத்தக்கது.

“சா-தா-ரி” என்னும்போது அதை கடவுளால் பாடப்பட்ட ஓர் பண்ணின் சுர அமைதியின் தன்மையை இசை அறிஞர்கள் அறிந்து கொள்ளுவதற்குரிய ஓர் அடையாளச் சொல்லாகுமென்று உணர்தல் வேண்டும். அது மோகனமென்று கூறப்படும் பொழுது இராகப் பெயருடன் விளங்கி கடவுளின் மோகன வடிவத்தையும், மோகனக் குரலையும் குறிப்பிடுகிறது. இவ்வாறு புகழ்த்தக்கதான மோகன இராகத்தில் ஏன் தேவாரப் பண்களை ஒதுவாமுர்த்திகள் கையாள வில்லையோ தெரியவில்லை தவிர கடவுளின் எல்லையில்லாத குணங்களைப் புகழ் மோகனம் ஏற்றதாயிருக்கின்றதென்பதை யாரும் மறுக்கமாட்டார்கள். புகழும் ரஸத்தன்மையே மோகனமாம்.

மாணிக்கவாசக சுவாமிகள் இயற்றிய திருவாசகப் பாக்களுக்கும், திருக்கோவையாருக்கும் பண்களில்லை, ஆதலால் அப்பர், சம்பந்தர், சுந்தரர் இம் மூவர்க்கும் முந்தியவர் என ஆராய்ச்சியாளர் கூறுகின்றனர். அவரது பாடல்களான திருவாசகத்தையும், திருக்கோவையாரையும் நடராசப் பெருமானே அந்தணர் வடிவுகொண்டு இவர் முன்வந்து சொல்லச்செய்து, ஏட்டில் எழுதியதாகவும், தாம் எழுதியதை மக்கள் அறியவேண்டி அவ்வேட்டின் அடியில் “அழகிய திருச்சிற்றம்பலம் உடையான்” எனக் கையொப்பமிட்டு அன்பர்களுக்குத் தெரிவித்தாரென்பது இன்றுவரை யாவரும் அறிந்துவந்த ஓர் செய்தியாகும். சிவபெருமானைப் புகழ்ந்து பாடப்பட்டதும் அவனால் எழுதப்பட்டதுமான திருவாசகம் முழுதும் மோகன இராகத்திலேயே பாடப்படுவது குறிப்பிடத்

தக்கது. சிவபிரான் மிக நயந்து கேட்ட திருவாசகப் பாடல்களெல்லாம் மோகன இராகத்தில் பாடுவதே வழக்கமாய் இருந்தலால், அவனே வாய் விட்டுப் பாடியதும் மோகன இராகமாகவே இருக்கவேண்டுமென்றும், அம் மோகன இராகத்தின் சுரத்தானங்களைக் குறிப்பிடுவதற்குரிய லக்ஷணபதமே “சா-தா-ரி” என்றும் துணிந்து கூறலாம்.

சா தா ரி—ப் பண்ணுனது நெய்தல் யாழ்த்திறத்தின் புறநிலையில் முல்லை என்ற வரிசையில் வருகின்றது. நெய்தலுக்குப் பண்களில்லை என்று நூல்கள் கூறுகின்றன. காரணமென்ன வென்றால் காந்தார சுரத்தைத் தலையாய்க் கொண்டு ஆரம்பிக்கும் எந்த இராகமும் சட்டி சுரத்தையும் துணையாக அடைந்து வரும் முறை கொண்டு நெய்தல் யாழ்த்திறங்களைல்லாம் முல்லையாழ்த்திறங்களாகும் என்றனர். பாலையாழிற்கு “ச”-வே தலையாய சுரம். குறிஞ்சியாழிற்கு “ம”-வே தலையாய சுரம். மருதயாழிற்கு “ரி”—யே தலையாய சுரம். நெய்தல் யாழிற்கு “க”-வும் “ச”-வும் தலையாயசுரம், பாலையாழ் என்றால் “ச”- மட்டும் தலைமை சுரம் என்றும், முல்லையாழ் என்றால் “க”-வும் “ச”-வும் தலைமை சுரங்கள் என்றும் அறிவதன் பொருட்டு நெய்தல் பண்களெல்லாம் முல்லைப் பண்கள் ஆம் என்று குறித்தனர். நெய்தல் யாழிற் பிறந்த ஓர் பண்ணிற்குக் காந்தாரம் முதற்றொடங்கி இராகம் இயங்கிவர வில்லையாயின் சட்டி சுரத்தினின்றும் தொடங்கலாம். ஆனால் ச-க இவ்விரண்டு சுரங்களும் ஒன்றிற் கொன்று துணையாயிருந்து கொண்டிருக்கவேண்டும். “சா-தா-ரி” யானது நெய்தல் அல்லது முல்லையாழ்த்திறன் என்று குறித்தமையால் இந்த இராகம் காந்தார சுரத்திலிருந்தோ அல்லது சட்டிசுரத்திலிருந்தோ எடுத்துப் பாடவேண்டும் என்று புலனுகின்றது. புறநிலை என்றபடியால் நெய்தல் பண்ணிற்குரிய (தோடி-இராகத்தின்) சுரநிலைகளை அடைந்துவரவில்லையென்றும், அதனின்றும் புறநிலை சுரங்களின் அமைதிவேண்டுமென்றும் அறியற்பாலது. முல்லை என்ற வரிசையில் வருவதால் முல்லைக்குரிய குண அமைதி (திறன்) சாதாரி—என்பதில் வர வேண்டும் என்பதும் முக்கிய அம்சமாகும். இவ்விதமான அமைப்புத் தன்மைகள் மோகன இராகத்தில் வருவது குறிக்கத்தக்கது. மோகன இராகம் (சாதாரிப் பண்) நெய்தல்யாழாகிய காந்தாரத்தினின்றும் ஆரம்பித்து உடனே பாலை யாழாகி பஞ்சமத்தையடைந்து பின்பு பாலையாழாகி சட்டிசுரத்தில் முடிவடை கின்ற தென்பதை எல்லா இசைவாணர்களும் நன்கறிவர். இஃது தமிழ்ப் பாஷையில் வினைமுற்று என்பது எவ்வளவு மேலானது என்று மதிக்கப்படுகின்றதோ அதுபோலவே இங்கு இசையில் குறிக்கப்பெறுகின்றது. சாதாரி-யாகிய மோகன இராகத்திற்கு நெய்தல், மருதம், குறிஞ்சி, பாலை (தோடி, கரஹரப்ரியை, மாயா மாளவகளை, சங்கராபரணம்) என்னும் இப்பண்களின் அகநிலை சுரங்களில் இயக்கம் வரவில்லை என்றும், பாலைப்பண்ணின் (சங்கராபரணத்தின்) சுரநிலைகளே முல்லைத்திறத்தின் புறநிலையில் பேசப்படுகிறதென்றும் விளங்குகின்றது.

முல்லை என்பது ஒழுக்கம் கற்பு என்ற பொருள்களைத்தரும். ஒழுக்கம் கற்பு இவற்றின் சிறந்த அம்சமே கடவுட் தன்மையாகும். “சா-தா-ரி”-ப் பண் கடவுளினிடத்திலிருந்து வரப்பெற்றமையால், அப்பண் லட்சண ஒழுக்க அமைதியில் ஏனைய பண்களைவிட எல்லா விதத்தானும் சிறந்து வருகின்றதென்று அறியக் கிடக்கின்றது. லட்சியத்தினின்றே லட்சணம் அறியப்படும் ஆனதால் “சா-தா-ரி” பண்ணின் லட்சியம் கடவுளிடமிருந்தே அறியப்பட்டதால் அதனுடைய லட்சணம் சீரிய ஒழுக்கத்தின் வரம்பில் நின்று வருவதேயாம் என்று கொள்ளத்தகும். அவ்வாறு வரும் லட்சணச் சிறப்பை நாம் அறிவதன் பொருட்டு முல்லை என்பதன் வரிசையில் புறநிலையில் இப்பண்ணை நமது முன்னோர் வகுத்துக் காட்டி இருக்கின்றனர். அதாவது இதன் லட்சண மாமம் சிறந்த ஒழுக்கத்துடன் வருவது என்பதாம்.

தவிர “சா-தா-ரி” பண்ணுனது சிவபெருமானின் திருவாக்கினின்றும் எழுந்தபடியால், அச் சிவபெருமானைச் சிறப்பித்துக் கூறுவதான மகா வாக்கியமாகி “நமசிவாய” என்னும் பஞ்சாட்சர மந்திரத்தில் அடங்கி வருவதான ஐந்தெழுத்துக்களைப்போல, அச் சிவபெருமானால் கானஞ் செய்யப்பட்ட “சா-தா-ரி”ப் பண்ணின் அமைதியிலும் “சரிகபத” என்ற ஐந்து சுர அட்சர ஒலிகளே வருகின்றன. “நமசிவாய” என்ற பஞ்சாட்சரத்தின் சீரிய ஒழுக்க நிலைகளே இப்பண்ணில் “சரிகபத” என்ற சுரங்களாகப் பரிணமித்து ஒளிர் கின்றன. பஞ்சாட்சர மகா வாக்கியமாகி “நமசிவாய” என்பதில் “சிவ” என்ற இரண்டெழுத்துக்களும் நடுமத்தியாக அமைந்து வருவதுபோல, “சாதாரி”ப் பண்ணின் சுர நிலைகளாகி “சரிகபத” என்ற ஐந்து சுரங்களிலும் நடுசுரமாகிய காந்தாரத்தினின்றே இப்பண்ணை ஆலாபனை செய்துவரும் ஒழுக்க அமைதியினை யாவரும் சற்றுக் கவனித்தல் வேண்டும். தவிரவும் இப் பண்ணின் சுரநிலைகளின் ஈற்றில் “ச” என்னும் சுரத்தைப் பெய்து கொண்டால் அப்பொழுது அது ஒரு ஸ்தாயி அல்லது அப்பண்ணின் முழு எல்லை என்பதை உணர்த்தும். “சாதாரி”ப் பண்ணின் அவ்வாறு விளக்கும்போது அதனுடைய முழு எல்லையானது “சரிகபத” என்று கிடைப்பதாகும். இவற்றின் நடுவில் வருவன “க-ப” என்ற இரண்டு சுரங்களும். இவற்றில் க-என்பது நெய்தல் யாழ். ப-என்பது பாலையாழ். நெய்தலுக்குப் பண்களில்லை யாதலால் நெய்தற் பண்ணெல்லாம் முல்லைப் பண்ணாகும் என்று கூறியபடி இந்தச் “சாதாரி”ப் பண்ணுனது நெய்தல்யாழாகி காந்தார சுரத்தினின்றும் ஆரம்பித்து, உடனே பாலையாழாகி பஞ்சமசுரத்தைத் துணையாயடைந்து இறுதியில் சட்டி சுரத்தில் முடிவு (நியாசம்) பெற்று கானம் செய்யப்பட்டுவரும் சீரைப் பெற்றதாயும் அமைந்திருக்கின்றது. உதாரணமாக:—கபா-கரி இசா; கபா-தபகரி இசா; கபா-தச்சப கரி இசா; இவற்றில் நெய்தல்யாழ் முன்பும் பாலையாழ் பின்பும் வருவதையும், பாலையாழிலே முடிவடைந்து விளங்கி நெய்தல் முல்லை என்ற இரண்டு யாழ் ஒலியின் சீரான அமைப்பைப் பிரதானமாய்க் கொண்டு இயங்குவதையும் பார்க்கின்றோம். க-ப என்ற இவ்விரண்டு சுரங்களும் “சிவ” என்பதுபோல் நடுமத்தியாயும் அம் மந்திரத்தைச் “சிவாயநம” என உச்சரிக்குமிடத்து அச் சிவ சப்தம் முதலில் வருதல்போல இந்த இராகத்தின் இயக்கத்திற்குத் தலைமையாயும் வரும் சீரான ஒழுக்கத்தின் அமைதி உற்றுக் கவனிக்க வேண்டியதாகும்.

இந்தச் “சாதாரி” பண்ணுனது பாலைப்பண்ணின் அகநிலையாகி சங்கரா பரண இராகத்தின் சுரத்தானங்களைப்பெற்று வந்தாலும், பாலைப்பண்ணின் புறநிலையாகி கல்யாணி இராகத்தின் சுரநிலைகளின் இயக்கத்தை அடைந்து, அகமும் புறமும் ஒரே ரீர்மைய என்னும் ஒழுக்கத்தின் இயல்பைக் காட்டுகின்றது. முல்லை என்பதன் குண அமைதியை நான்கு நிலைகளிலுள்ள பண்களும் பெற்று வரவேண்டும். முல்லைத்திறத்தின் வரிசையிலுள்ள அகநிலைக்குப் பண் இல்லை. புறநிலையில் வருவதான “சாதாரி” என்பது முல்லையின் குண அமைதியைப் பெற்று விளங்குகின்றது. இந்த “சாதாரி” என்பதன் ஒலி இயக்கங்களை நாம் வெகுதூரமாய் இயக்கிக் கானம் செய்து வருகின்றோம். இதனுடைய ஒலிகள் தான் “சாதாரி” என்பதும். இப்பெயர் நம்மிடமிருந்து வெகு நாளாக மறைந்து விட்டது. ஆனால் இவ்வொலிகளின் இயக்கத்திற்கு வேறு பெயரும் கிடையாது கடவுளால் பாடப்பட்டபடியால் வேறு எவ்விதப் பெயருமின்றி இன்றுவரை இது தன் ஒலிச்சிறப்பையே லக்ஷியமாய்க் கொண்டு நம்மால் கானஞ் செய்து வரப்படுகின்றது ஆனால் இதை மோகனம் என்ற பெயரால் குறிப்பிட்டு வருகிறோமே என்று கேட்பவர்களுக்கு மோகனம் என்ற பெயர் முற்காலத்தில் காண்பதரிது. இப்பெயர் வெகு சமீப காலமாகவே கேட்கப் படுகிறது என்ற பதிலே போதுமானது. இவ்விபரம் முன்பு கூறப்பட்டுள்ளது.

தற்காலம் இவ்வொலிகளின் இயக்கத்திற்கு மோகனம் என்ற பெயர் வழங்கப் படினும், இனி இவ்வொலி இயக்கத்தை ஒரு பெயரில் குறிப்பிடும்போது நமது மூதாதையர்களால் இடப்பெற்ற, அர்த்தமுள்ள, சாதாரி -- என்ற அழகிய பெயரோடு குறிப்பிடுதலே நல்ல சீலமாகும்.

இனி அருகியலிலும் பெருகியலிலும் வரும் பண்களுக்கும் முல்லை என்பதின் பண்பு அமையப்பெறும் ஆயினும் இவ்விரண்டும் வடநாட்டினர் கானஞ் செய்து வரப்படுவதாகும். இவ்வொலி இயக்கங்களுக்கும் இப்பண்களின் பெயர்களுக்கும் அங்கு வேறு பெயர்களே காணப்படும். பொதுவாக அகநிலை புறநிலை இவ்விரண்டையும் கர்னாடக இசையைக் கையாளும் தமிழ்நாட்டு மக்களும், அருகியல் பெருகியல் இவ்விரண்டையும் இந்துஸ்தானி இசையைக் கையாளும் வடநாட்டு மக்களும் பெரும்பாலாக உபயோகிக்கின்றனர். ஏதோ சில பண்களை மட்டும் நாம் அருகியல் பெருகியல்களில் இசைக்கின்றோம். அதுபோல அவர்களும் சில பண்களை அகநிலை புறநிலைகளில் இசைத்தும் வருகின்றனர்.

மேற்கூறியவாறு அகநிலையான சுரங்களைப் பெற்றிருந்தும் புறநிலையான சுர இயக்கங்களை ஏற்றுவரும் குணநலன்கள் மோகனமென்ற “சாதாரி” பண்ணில் வருவதும் மற்ற இராகங்களில் (பண்களில்) வராமையும் குறிக்கற்பாலது. தவிர பாலைப்பண்ணின் சுரங்களும் அகநிலைக்குரியதாயிருக்கும் பொழுது எவ்வாறு புறநிலையாயிற்று என்னும் சந்தேகம் எழலாம். இது இங்கு கவனிக்க வேண்டுவது :- சங்கராபரணத்தின் சப்த சுரம் பாலைப்பண்ணின் அகநிலை எனப்படும். ஷே சப்த சுரத்தில் வரும் சுத்த மத்யமத்திற்குப் பதிலாக பிரதிமத்யமத் தோடு வருமாகில் அது பாலைப் பண்ணின் புறநிலையாகும். மோகன இராகத்திற்கு மத்யம சுரமும், நிஷாத சுரமும் இல்லை என்பதை யாவரும் அறிவர். சங்கராபரண இராகத்தின் இயக்கத்தில் மத்யமம், நிஷாதம் இவ்விரண்டையும் நீக்கி “சரிகபதச” என்ற சுரங்களைக் கானஞ் செய்து வந்தால் அதில் மோகன இராக ஒலி வராது என்பதைப் பாடியும் வாசித்தும் நன்கு உணரலாம். பாலைப் பண்ணின் புறநிலையாகிய கல்யாணி இராகத்தின் சுர இயக்கங்களை இயக்கி வரும் போது அதில் வரும் “ம-நி” என்ற இரண்டு சுரங்களையும் நீக்கி எஞ்சிய “சரிகபதச” என்ற ஐந்து சுரங்களையும் கானஞ் செய்தும் வாத்தியங்களில் வாசித்தும் பார்த்தால் அப்பொழுது மோகன இராகத்தின் அழகமைதியும் அதன் உண்மைத் தோற்றமும் தெற்றென விளங்கும். மோகன இராகத்தின் இயக்கத்தில் வரும் “சரிகபதச” என்ற பாலையின் அகநிலையோடு சுத்தமத்யமம்—காகலி நிஷாதம் இவ்விரண்டு சுரங்களையும் சேர்த்தால் சங்கராபரண இராகத்தின் தோற்றம் சிறிதும் வரவில்லையென்றும், மோகன இராகத்தின் இயக்கத்தில் வரும் “சரிகபதச” வேரோடு பிரதி மத்யமம்—காகலி நிஷாதம் இவ்விரண்டு சுரங்களையும் சேர்த்தால் புறநிலையாகிய கல்யாணி இராகத்தின் தோற்றம் புலனாகின்ற தென்றும் நன்கறியலாம். இவ்வித நலன்களை நன்கறிந்த நமது முன்னோர்கள் “சாதாரி” முல்லைப்பண்ணின் புறநிலையேயாகுமென்பதை நன்கு உணர்த்தினர். தவிர நெய்தல் யாழின் திறமாகிற முல்லைக்கு அகநிலையிற் பண்ணில்லை. புறநிலைக்கும், அருகுநிலைக்கும், பெருகு நிலைக்கும் பண்களுண்டு. ஆதலால் அகநிலை புறநிலை இவ்விரண்டும் ஒன்றென அறிதல் வேண்டும். இப்பண்ணின் சுரநிலைகள் பாலைப்பண்ணின் (சங்கராபரணத்தின்) அகநிலை சுரத்தானத்தைப்பெற்றிருந்தாலும், அவற்றின் இயக்கமானது பாலைப்பண்ணின் புறநிலை (கல்யாணி) இயக்கமாகவேயுள்ளன. அன்றியும், அவ்விதக்கங்கள் எடுத்துக்கூறவும் இயலாத ஓர் உயர்ந்த ஒழுங்கமைதி பெற்றும் வருகின்றன. இது கடவுளால் பாடப்பட்ட படியால் அகமும் புறமும் ஒன்றாய் அமைந்து வருகின்றது போலும்! இது மிக மிகப் போற்றத்தகுரியதாகும். அகநிலைத் தலைவனாகிய கணவனுடன் உடலும்

உயிரும்போல் ஒன்றுபட்டொழுகுந் தலைமகள், அவன் பொருளிட்டல் முதலிய காரணங்களால் புறத்தே பிரிந்தவிடத்து அவன் வருமளவும் அவன் சொற்படி ஆற்றியிருத்தலாகிய முல்லையொழுக்கத்தை மேற்கொண்டு அகத்திலிருந்தாலும், புறத்தே பிரிந்து சென்ற தலைவனையே அவன் எப்பொழுதும் நினைவிற்கொண்டிருப்பது போல, மோகன இராகமானது அகநிலையில் தலைமையான சங்கராபரணத்தின் சுர அமைப்புக்களையே பெரும்பாலும் பெற்றிருந்தாலும், அச் சங்கராபரண பூர்வாங்க உத்தராங்க சுரங்கள் முன் பின்னாக மாறி யொலித்துப் புறநிலையில் கல்யாணியெனப் பெயர்பெற்ற விடத்துத் தான் அக் கல்யாணியின் இயக்கத்தையே தழுவி இயங்குவதைக் காணலாம்.

விறகு விற்ப படலத்தில் கூறியபடி ஓர் மூங்கிலிலையானது பழுத்துக் கீழே உதிரும்போது வெகு லாகவமாய் காற்றில் மிதந்துபடிப்படியே கீழே இறங்கி விழுதல் போலப் பாடவேண்டுமென்ற விதியானது எல்லாப் பண்களுக்கும் பொதுவாயினும் “சாதாரி” ப்பண்ணாகிய மோகன இராகத்தில் எல்லாவிடங்களிலும் சிறந்து வருதல் காணலாம். உதாரணமாக :—காரிசாஆஆ—சதாபாஆ; க்கரிச் ரிகாரி சாஆ; ரிரிச்சத சரிச் தாஆபா; ரிகரி இசா, சரிசாஆதா. தச்சா ஆபா; என்பது போன்ற சஞ்சாரங்கள் கவனிக்கத் தக்கனவாம். மேலே குறித்த சுர இயக்கங்கள் வெகு மிதமாகவும், சாவதானமாகவும் கேட்கும் அமைதிகளாகும்.

இரண்டாவதாக ஓர் மீன்கொத்திப்பறவையானது தண்ணீர் நிலைக்கு மேலே மீனைக் கொத்தும் நோக்கத்துடன், தன் இரண்டு சிறகுகளையும் அடித்து அசைத்துக்கொண்டு அக்கம்பக்கம் விலகாமல் அந்தரத்தில் தொங்குவதுபோல நின்று கொண்டு தண்ணீரின்மேல் மீன் தெரிந்தவுடன் திடீரென்று பாய்ந்து மீனைக் கௌவுவது போன்ற தன்மை “சாதாரி” யாகிய மோகன இராகத்தின் இயக்கங்களில் வருதலைக்காணலாம். உதாரணமாக :—கரிசாஆஆரிச்சத; கரிசா ஆஆகரிரிச்ச; ரிசாரி இஇ ரிச்சத; பதா தபபா காஆ தா ஆ; கரிஇ கரிஇ ரிச்சத; கரிசாஆல்கா; ரிசா ரிஇ லரி; சதசாஆல்காஆ—என்பன போன்ற சுர இயக்கங்கள் கவனிக்கத் தக்கனவாம். பறவை அந்தரத்தில் நிற்பதுபோன்ற பகுதி சவுக்கமாயும், திடீரென்று குதிக்கும் பகுதி துரிதமாகவும் அமைந்து, சில பகுதிகள் மேல் சுரத்தினின்று கீழ்சுரத்தில் திடீரென்று தாவி வருவதும், உடனே மேலேபோய் நிற்பதுமான நிலைமைகள் “சாதாரி” அல்லது மோகனத்தின் எல்லா எல்லைகளிலும் பூரணமாய்க்காணப்படுவதை யாவரும் அறிவர்.

திருஞான சம்பந்தசுவாமிகள் திருஆலவாய்த் திருப்பதிகம், பண்பழம் பஞ்சரம் 8-ம் திருமுறையில், திருநீலகண்ட யாழ்ப்பாணரது திருவருட்பேற்றைச் சிறப்பித்துப் பாடியதான “ஆலநீலுலகந்த திருக்கையே” என்ற பதிகத்தில் 6-வது, பாட்டில் வருவதான “தாரமுய்த்து” என்ற அடி கவனிக்கத் தக்கது.

“நக்க மேகுவர் காடுமோர் ஊருமே
நாதன் மேனியின் மாசணம் ஊருமே
தக்க பூமனைச் சுற்றக் கருளோடே
தாரமுய்த்து பாணற் கருளோடே”

என்பதில் பல விஷயங்கள் புலப்படுவதாகும் இது திருநீலகண்ட யாழ்ப்பாணரின் திருவருட்பேற்றை எடுத்துக் கூறுவதாயிருப்பினும், பொதுவாக இசையை ஆதாரமாய்க் கொண்டு கடவுளைத் துதிக்கும் பக்தர்களையும், இசையின்

மேலான தன்மைகளையும் மேன்மைப்படுத்திக் காட்டும் பொருள்கள் இதில் அடங்கியுள்ளன.

1. தாரமென்றால், இசைப் பகுதியில் தாரஸ்தாயி என்பது பொருள்.
2. நிஷாத (நீ) சுரத்திற்கும் தாரமென்று பெயர்.
3. இசையென்றும் பொருள்படும்.
4. அழகே உருவான நட்பு குணமுடைய உயர்ந்த ஸ்தான மென்பதும் பொருள்படும்.
5. தமிழ் மக்களின் இசை மரபின் நூல்வழிப்படி தாரமென்பது கார்த்தைக்குறிக்கும்.
6. தாரமென்றால் உயர்ந்தது எனப்பொருள் படுவதால் அது கடவுள் என்ற குறிப்பையுந்தரும்.
7. கடவுள் ஒலிவடிவாய் இருக்கிறான் என்பதால்.

கடவுள்—இசை இரண்டும் ஒரு தன்மையதாகும். இனி, இசையில் கடவுளின் தன்மையை அடையச்செய்யும் கானமே கந்தர்வமெனப்படும். கந்தர்வம் என்பதே சுர ஒலியில் கார்த்தாரமென்று திரிந்ததாம். ஆதலினால் கார்த்தாரமென்பது கடவுளின் தன்மையதான கந்தர்வமாகும் என்ற குறிப்பையும், உயர்ந்த நிலையுடையது என்ற குறிப்பையும், தாரம் என்ற சிறப்புச்சொல் உணர்த்துவதாகும். தவிர உன் அருள் வல்லபத்தினாலே நம் நாட்டு இசையின் மேம்பாட்டை மக்களுக்கு எடுத்துக்காட்டி, உனது பக்தனை திருநீலகண்ட யாழ்ப்பாணருக்குப் பொற்பலகை ஈந்தும், * பாணபத்திரனுக்காக விறகுத் தலையனாக வந்து கானம் செய்தும், இசையும் நானும் ஒன்றே என்ற பொருளை உனது அருட்செயலினால் உணர்த்தினாயே! இசையும் உயர்வடைந்தது. நம் நாட்டு இசையும் உன்னால் காப்பாற்றப்பட்டது என்ற கருத்துக்களையும் “தாரமுய்த்தது” என்ற பகுதி உணர்த்துவதாகும்.

இன்னும் இசையின் பெருமையை உணர்த்த வந்தவிடத்து “தாரமுய்த்தது” எனச் சம்பந்தர் கூறியிருப்பது, கந்தர்வ கானமாகிய “சாதாரீ”ப் பண்ணை நீ பாடியபொழுது தாரஸ்தானமாகிய கார்த்தாரத்தினின்றும் ஆரம்பித்து இசையின் உயர்ந்தநிலையையும் உணர்த்தினாய் என்றும் பொருள் கொள்ளுதற்கு இடந்தருகின்றது. “சாதாரீ”ப் பண்ணாகிய மோகன இராகத்தை தற்காலம் வித்துவான்கள் எவ்வாறு தொடங்கி கானஞ் செய்தாலும் அது தாரஸ்தானமான கார்த்தாரத்தினின்றும் தொடங்கி கானஞ் செய்வதே லட்சண யுக்தமாகும். தேவாரப் பதிகத்தில் உள்ள “சாதாரீ”ப் பண்ணின் பாடல்களை மோகன இராகத்தில் இசைத்து கந்தர்வத்தை அடைந்து இறைவனது பேரருளை எல்லோரும் பெற வேண்டும் என்பதே எனது பேரவாவாகும். சுபம்.

* இது இசைப்பகுதியின் மேம்பாட்டை விளக்க வந்தது ஆகையால் கடவுளால் காட்டப்பட்ட இசையின் நிகழ்ச்சி எதுவாயினும் பொருந்தும். அவற்றை எல்லாம் இங்கு வரவித்துக் கொள்ளலாம்.

॥ श्रीगुरुभ्यो नमः ॥

॥ विधिविमर्शः ॥

(पूर्वतोऽनुवृत्तः)

न च शाब्दबोधे संबन्धत्वेनैव संबन्धो भासते, पश्चादेव संबन्धविशेषप्रतीतिरिति न संसर्गभेदप्रयुक्तकार्यकारणभावानन्त्यापत्तिरिति वाच्यम् । शाब्दबोधे संबन्धत्वेनापि तत्तत्संबन्ध एव भासते न तु यः कोऽपि संबन्धः । कथमन्यथा प्रेरणाप्रयोज्यप्रवृत्तिवर्तमानतादशायां चैत्रः पचेत् इति प्रयोगो वारयितुं शक्यते भवद्भिः । संबन्धसामान्येन प्रेरणावत्त्वस्य कृताववाधात् । तस्मात् संबन्धत्वेनापि तत्तत्तद्विधादिपदज्ञानाधीनानुमितिप्रयोज्यत्वमेव भासते इति तत्संबन्धेन प्रेरणावत्त्वस्य कृतौ बाधात् निरुक्तवाक्याप्रामाण्यमुपपादनीयम् । एवञ्च तत्तत्संसर्गविगाहननिर्वाहाय तत्तत्संसर्गविगाहिबोधे तत्तत्समभिव्याहारज्ञानघटितसामग्री कारणमित्यभ्युपगतव्यम् ॥

अपि च, संबन्धस्य सामान्यतो भावेऽपि प्रकारविशेष्यन्यूनाधिक्यप्रयुक्तशाब्दवैलक्षण्यस्य, पदानां पौर्वापर्यवैलक्षण्याधीनाकांक्षाज्ञानवैलक्षण्यस्य च दुर्वास्त्वात् कार्यकारणभावभेदः न निषेद्धुं शक्यते । सुबर्थलिङ्गसंख्याव्यतिरिक्तः प्रातिपदिकार्थव्यतिरिक्तसर्वोऽपि भावनायामन्वेतीति अनुगतशब्दोत्कीर्तनमात्रमेव । यथा हेतुव्यापकसाध्यसामानाधिकरण्यं व्याप्तिरित्यनुगतशब्दोत्कीर्तनेऽपि हेतुतावच्छेदकधर्मसंबन्धभेदेन व्याप्तिस्वरूपं भिन्नभिन्नमेव । तत्र तत्रानुमितौ तत्तद्व्याप्तिज्ञानस्यापि कारणता भिन्नभिन्नैव । तथा अनुगतशब्दोत्कीर्तनेऽपि कार्यकारणभावानन्त्यं परिहर्तुमशक्यमेव ॥

वस्तुतस्तु संबन्धः विशेषरूपेणैव संसर्गतया भासते न तु संबन्धत्वेनेति सिद्धान्तः तथैव भट्टाचार्यैः तत्र तत्राभिधानात् । न च भूतले घटवत् इत्यत्र घटस्य संबन्धसामान्येन भूतले अन्वयबोधः दृष्ट इति वाच्यम् । तत्र भूतुर्बर्थः संबन्धी । तदेकदेशे संबन्धत्वावच्छिन्ने घटः स्वप्रतियोगिकत्वसंबन्धेनान्वेति । न तु घटः संबन्धसामान्येन भूतले अन्वेति ॥

इत्थञ्च पशुमालभेत इति वाक्यं पश्चालम्भे लिङ्गर्थबलवदनिष्ठाननुबन्धित्वं बोधयति ; न हिंस्यादिति निषेधशास्त्रन्तु तस्मिन् बलवदनिष्ठाननुबन्धित्वमिति, तयोर्विरोधात् निषेध-
शास्त्रं वैधर्हिसेतरपरतया सङ्कोच्यते । अन्यथा इष्टसाधनत्वमत्रस्य लिङ्ग बोधने निषेध-
वाक्यबोधितानिष्टसाधनत्वेन इष्टसाधनत्वस्य विरोधाभावात् निषेधशास्त्रसंकोचानुपपत्तेः ॥

न च बलवदनिष्ठाननुबन्धित्वं दुर्बलम्, तस्य नरकाजनकत्वरूपत्वे ज्वरितः
अपथ्यं न भुञ्जीत इत्यादौ नरकजनकत्वपर्यवसितस्य लिङ्गार्थाभावस्य अपथ्यभोजने
बाधादप्रामाण्यापत्तिरिति वाच्यम् । द्वेषविषयतावच्छेदकत्वोपलक्षितनरकत्वाद्याश्रयसाधन-
तात्वावच्छिन्नाभावत्वावच्छिन्ने विधिप्रत्ययशक्तेः स्वीकारेण, तात्पर्यबलात् अपथ्यं न भुञ्जीत
इत्यत्र रोगासाधनत्वस्य, न कलञ्जं भक्षयेत् इत्यत्र नरकासाधनत्वस्य च लिङ्ग बोधनं
संभवति । शक्तिभेदश्च नास्तीति प्रतिपादितम् ॥

न च श्येने लिङ्गस्यापि बलवदनिष्ठाननुबन्धित्वस्य बाधेनाभानवत्, पशुमालभेत
इत्यादावपि बलवदनिष्ठाननुबन्धित्वस्याभानसंभवात् विधिनिषेधशास्त्रयोर्विरोध एव नास्तीति
नैतावतापि निषेधशास्त्रसंकोचलाभ इति वाच्यम् । कथञ्चित् बाधकापनयनसंभवे
औत्सर्गिकार्थपरित्यागोऽनुचितः । निषेधशास्त्रसंकोचेनाप्युपपत्तेः आलभेत इत्यत्र लिङ्गः
बलवदनिष्ठाननुबन्धित्वं भासते । यत्र तु न कथञ्चिदपि बाधकापनयनसंभवः तत्र
श्येनादौ न तद्बोधः इति सिद्धान्तः ॥

एवं कृतिसाध्यत्वमपि लिङ्गः तद्ज्ञानस्य प्रवृत्तिहेतुचिकीर्षायां कारणत्वात् ।
इच्छायाश्च स्वसमानप्रकारकज्ञानजन्यत्वनियमात् । न च कृत्यसाध्ये द्वेषादेवाप्रवृत्तेः न
कृतिसाध्यताज्ञानस्य प्रवृत्तिहेतुतेति वाच्यम् । निष्फलेऽपि द्वेषादेवाप्रवृत्तिसंभवेन
इष्टसाधनताज्ञानस्यापि प्रवर्तकत्वाभावप्रसङ्गात् । न च कृतिसाध्यत्वे ज्ञातेऽपि अशक्तस्य
यागादौ प्रवृत्त्यनुदयेन, मत्कृतिसाध्यमिति मदंशविशिष्टकृतिसाध्यताज्ञानस्यैव प्रवर्तकता
वक्तव्या । तद्ज्ञानं च न विधिवाक्यत्वं भवतीति, यागः मत्कृतिसाध्यः मत्कृतिसाध्यत्व-
विरोधिधर्मानधिकरणत्वादित्यनुमानेनैव तदवगमन्न तस्य लिङ्गवाच्यतेति वाच्यम् ।
मदंशविशिष्टेष्टसाधनताज्ञानस्यैव प्रवर्तकत्वात् तस्य विधिवाक्यादलाभेन इष्टसाधनत्वे लिङ्गः

शक्तिस्वीकारेऽपि तद्वाक्यस्य प्रवर्तकत्वं न स्यात् । यदि प्रतिपुरुषं विधेरावृत्त्या
बोधकत्वात् विधिवाक्येनैव तत्तत्पुरुषीयेष्टसाधनत्वं बोधयितुं शक्यते इत्युच्यते तदा तथैव
कृतिसाध्यताबोधोऽपि संभवति । न च लौकिकप्रमाणादेव कृतिसाध्यताज्ञानसंभवेन
अन्यलभ्यं तत्र लिङ्ग इति वाच्यम् । समभिध्याहृतपदेन, पदसमभिध्याहारेण वा लभ्यस्यैव
न शक्यता इत्यत्रैव अनन्यलभ्यः शब्दार्थः इति न्यायतात्पर्यमित्यस्य प्रागेवाभिधानात् ॥

अपि च प्राचीनवैयाकरणैः प्रवर्तकज्ञानविषयतावच्छेदकत्वरूपोपलक्षणानुगतीकृते
इष्टसाधनत्वे शक्तिः स्वीक्रियते । तच्चोपलक्षणं कृतिसाध्यत्वसाधारणमिति तत्रापि शक्तिः
सिद्ध्यन्ती न प्रतिषेद्धुं शक्यते । न च भवन्मते पचेत् इत्यादौ आख्यातसामान्यार्थ-
कृतौ धात्वर्थस्य पाकस्य अनुकूलतासंबन्धेनान्वये तुल्यवित्तिवेद्यतया धात्वर्थे कृति-
साध्यत्वमपि भासते इति अन्यलभ्यं तत्र शक्यमिति वाच्यम् । शाब्दबोधे विशेषण-
विशेष्यभावस्य नियतत्वात् पचेत् इति वाक्यजन्यबोधस्य कृतिविशेष्यकानुकूलता-
संसर्गपाकप्रकारकस्य सतः; पाकविशेष्यककृतिसाध्यत्वप्रकारकत्वं न संभवति ।
परन्तु शाब्दबोधोत्तरं मानसस्तादृशबोधः अवश्यमुत्पद्यते इति स्वीकरणीयम् । नियमेन
तादृशमानसबोधकल्पनायां गौरवमिति प्रवर्तकं ज्ञानं विधिना साक्षादेवोपजायते
इत्याशयेन तस्य लिङ्गत्वोपगमात् । कुरु इत्यादौ कृतिसाध्यत्वस्य न बोधः बाधात् ।
इत्थञ्च त्रितये शक्तिकल्पनं प्रामाणिकत्वात् दोषाय । इष्टसाधनत्वं बलवदनिष्ठाननु-
बन्धित्वं कृतिसाध्यत्वञ्च लिङ्गः । स चाश्रयतया धात्वर्थेऽन्वेति । सोऽपि
प्रथमान्तार्थविशेषणतापन्नायामाख्यातसामान्यार्थकृताविति स्वर्गसाधननरकासाधनकृति-
साध्ययागानुकूलकृतिमान् स्वर्गकामः इत्याकारकः यजेत स्वर्गकामः इति वाक्याधीनो
बोधः पर्यवस्यति ॥

न कलञ्जं भक्षयेत् इति निषेधस्थले तु लिङ्गस्य बलवदनिष्ठाननुबन्धित्वस्य
प्रतियोगितया नञर्थेऽभावे, तस्य च धात्वर्थे, तस्य च प्रथमान्तार्थविशेषणतापन्नाख्याता-
र्थकृतावन्वयः इति नरकासाधनत्वाभाववत्कलञ्जभक्षणानुकूलकृतिमानिति शाब्दबोधः
संपद्यते । निवर्तकं ज्ञानं निषेधवाक्येनैव जातमिति, नास्मन्मते व्याप्तिज्ञानाद्यपेक्षया
निवर्तकज्ञानोत्पादे विलम्बः, न वा शाब्दबोधविषयस्य संसर्गस्य ज्ञानाय प्रमाणान्तर-
गवेषणप्रयासः ॥

न च प्रत्ययानां स्वप्रकृत्यर्थान्वितस्वार्थबोधकत्वव्युत्पत्तेः लिङ्गार्थधात्वर्थयोर्मध्ये कथं नञर्थभानं संगच्छते इति वाच्यम् । प्रकृत्यर्थप्रत्ययार्थयोर्मध्ये नञर्थभानं प्रामाणिकमेव । अन्यथा ‘नानुपमृद्य प्रादुर्भावात्’ ‘नामूढस्येतरोत्पत्तेः’ इत्यादौ प्रादुर्भावाभावस्य, रागद्वेषोत्पत्त्यभावस्य च हेतुत्वेनान्वयबोधोऽनुभवसिद्धो नोपपद्येत । एवं अभावं न गच्छति इति वाक्यस्य द्वितीयार्थे प्रकृत्यर्थाभावबोधन एव प्रामाण्यं निर्वहति । तथाहि, कालिकसंबन्धेन गमनजन्यसंयोगाश्रयत्वमादाय ग्राममगच्छत्यपि ग्रामं गच्छति इति प्रयोगवारणाय, समवायसंबन्धावच्छिन्नाधेयत्वमेव द्वितीयार्थः इति स्वीकरणीयम् । एवञ्च प्रकृते अभावनिरूपितसमवायसंबन्धावच्छिन्नाधेयत्वाप्रसिद्ध्या तदभावस्य धात्वर्थ-फले अन्वयबोधः न संभवतीति द्वितीयार्थे एव प्रकृत्यर्थस्याभावस्याभावः नञा बोध्यते इति अकामेनाप्यङ्गीकरणीयमेव । तस्मात् प्रकृतिप्रत्ययार्थयोरन्तरा नञर्थातिरिक्तस्यैव भानं व्युत्पत्तिविरुद्धमिति सिद्धान्तः । एवञ्च लिङ्गर्थबलवदनिष्ठाननुबन्धित्वान्वितः नञर्थोऽभावः धात्वर्थे बुध्यते ॥

न च न कलञ्जं भक्षयेत् इत्यत्र धार्थान्वितनञर्थाभावे लिङ्गर्थः नरकाभावरूपेष्टसाधनत्वमेव बोध्यतामिति वाच्यम् । तथा सति विधिनिषेधयोः समानार्थकतया,

अन्तरं यादृशं लोके ब्रह्महत्याश्रमेधयोः ।

दृश्यते तावदेवेदं विधानप्रतिषेधयोः ॥

इत्यभिमुक्तवचनं निरुद्धयेत । अपि च रात्रौ श्राद्धं न कुर्वीत इत्यादौ रात्रिश्राद्धकरणस्य प्रत्यवायसाधनत्वे मानाभावेन, करणाभावे प्रत्यवायाभावरूपेष्टसाधनत्वबोधो न संभवति । अतः तत्र धात्वर्थकरण एव लिङ्गर्थस्येष्टसाधनत्वस्याभावो बोधनीय इति धात्वर्थे लिङ्गार्थाभावान्वयबोधस्य व्युत्पन्नत्वात् अत्रापि बलवदनिष्ठाननुबन्धित्वाभावस्य धात्वर्थे बोधः स्वीकर्तुमुचितः । इत्थञ्च निवर्तकं अनिष्टसाधनताज्ञानमपि साक्षादेव निषेध-वाक्याज्जायते इति न शाब्दबोधानन्तरं निवर्तकज्ञानोत्पत्तौ व्याप्तिज्ञानाद्यपेक्षया विलम्ब आपतति ।

एतेन न कलञ्जं भक्षयेदित्यतः आरोपितं कलञ्जभक्षणं प्रेरणाविषयः इति शाब्दबोधः । कलञ्जभक्षणाभावः प्रेरणाविषयः इति तदनन्तरं मानसबोधो जायते ।

ततश्च यदभावः प्रेरणाविषयः सः आप्तेष्टाधिकानिष्टजनकः इति व्याप्तिस्मरणात् कलञ्जभक्षणे अनिष्टसाधनत्वस्यानुमितिरूपं निवर्तकं ज्ञानं जायते इति परास्तम् । निवर्तकज्ञानोत्पादे अतिविलम्बकल्पनया गौरवात् ॥

‘न ब्राह्मणं हन्यादित्यदौ स्वभावतः प्राप्तहन्त्यर्थानुरागी नञ् । नञश्चैष स्वभावः यत्स्वसंबन्धिनोऽभावबोधनम् । निषेध्याभावबुद्धिश्चौदासीन्ये कारणम्, इति भगवत्पाद-भाष्यमपि नास्मत्प्रतिकूलम् । तथाहि, न हन्यादित्यादौ नञः हन्त्यर्थानुरागित्वं हन्त्यर्थान्वयर्थकत्वम् । लिङ्गार्थान्विताभावश्च धात्वर्थे हनने अन्वेति । अतश्च अनुयो-गितया हन्त्यर्थान्वय्यभावार्थकस्य नञः हन्त्यर्थानुरागित्वमुपपद्यते । स्वसंबन्धिः नञ्संबन्धिनः हननस्य, अभावबोधनं विध्यर्थाभावबोधनमिति तदर्थः । निषेध्याभाव-बुद्धिश्च—निषेधे हनने लिङ्गर्थस्य बलवदनिष्ठाननुबन्धित्वस्याभावबुद्धिः अनिष्टसाधन-त्वबुद्धिरिति यावत् । न च घटस्याभावः इत्यादौ षष्ठ्या प्रतियोगित्वस्य बोधात् स्वसंबन्धिनोऽभावेत्यनेन स्वसंबन्धिप्रतियोगिकाभावबोधनमेव स्वारसिकमिति वाच्यम् । यतः प्रतियोगित्वसंबन्धस्येव अनुयोगित्वरूपसंबन्धस्यापि षष्ठ्या बोधनं स्वारसिकमेव । न च निषेध्याभावबुद्धिरित्यस्य निषेधे अनिष्टसाधनताबुद्धिरिति श्रीवाचस्पतिमिश्राणां व्याख्यानं नाक्षरस्वारस्यानुगुणमित्युक्तमिति वाच्यम् । निरुक्तीत्या लिङ्गर्थबलवदनिष्ठा-ननुबन्धित्वस्याभाव एव तत्रानिष्टसाधनत्वपदेनोच्यते इति तस्याक्षरानुगुणत्वात् । अपि च भवतामेव निषेध्याभावबुद्धिरित्यस्य निषेध्याभावस्य प्रेरणाविषयत्वेन बुद्धिरिति शेषपूरणेन व्याख्यानमक्षरस्वारस्यानुगुणम् । किञ्च भवतां नव्यवैयाकरणानां मते नञा अभावशाब्दबोधाजननात् ‘नञश्चैष स्वभावः यत्स्वसंबन्धिनोऽभावबोधनम्’ इति भाष्यं उत्तरकालिकमानसबोधाभिप्रायेण योजनीयम् । विध्यर्थाभावस्य नञा बोधनेऽपि नञः हन्त्यर्थानुरागित्वं हन्त्यर्थाभावबोधकत्वरूपमुपपादितमेव । एवं सुरापानप्रतिषेधः इत्याचार्योक्तिरपि न भवदभिमतबोधे प्रमाणं भवति । यतः कण्ठरवेण धात्वर्थे लिङ्गार्था-भावो बोध्यते इति वदद्भिः नैयायिकशिरोमणिभट्टाचार्यैः हननप्रतिषेधः इति व्यवहृतम् । तस्मात् सुरापानस्यानिष्ठाननुबन्धित्वाभाव एव ‘भावन्तु वादरायणोऽस्ति हि’ इति सूत्रस्थेन ‘सुरापानप्रतिषेधः गम्यते’ इति भाष्येण विवक्षितः इति न विरोधः ॥

॥ श्रीः ॥

॥ प्रत्यक्षाध्याये — द्वितीयमाह्निकम् ॥

तदिहान्यथाख्यातिपक्षे विपर्ययस्य संशयस्य च व्यवच्छेदार्थं 'यथावस्थित-
व्यवहारानुगुणं ज्ञानम्' इति प्रमाणलक्षणे यथावस्थितादिविशेषणम् । अख्याति-
पक्षेऽपि तत्तत्सामग्र्यनुप्रविष्टं ज्ञानं तत्तच्छब्देन व्यपदिश्यते । तच्च तत्राप्रमाण-
मिति लोकसिद्धत्वाद्वाच्यवच्छेद्यमेव । तत्रापि प्रत्येकांशे याथार्थ्यं न विहन्यते ॥

तत् — तस्मात्, अन्यथाख्यातितद्धेतुमत्योरेव भ्रान्तित्वादित्यर्थः । इह —
अस्मिन् वैदिकमते । प्रमाणलक्षण इति - प्रमाणलक्षण इत्यर्थः । यथावस्थितादि-
विशेषणमिति — यथावस्थितव्यवहारानुगुणत्वविशेषणमित्यर्थः । सर्वकार्यकारणभूतस्य
कालस्य यथावस्थितव्यवहारं प्रत्यपि कारणतया, तद्वारणाय ज्ञानत्वनिवेशः । नन्व-
ख्यातिपक्षे विपर्ययस्य संशयस्य वाऽभावात् उक्तविशेषणव्यावर्त्याप्रसिद्धिरत आह
अख्यातिपक्षेऽपि इति । तत्तत्सामग्र्यनुप्रविष्टं ज्ञानमिति — विपर्ययसंशयसामग्रीत्वेन
नैयायिकाङ्गीकृतसमुदायानुप्रविष्टं ज्ञानमित्यर्थः । तत्तच्छब्देनेति — विपर्ययसंशयशब्दे-
नेत्यर्थः । व्यपदिश्यत इति । अयं भावः - अख्यातिपक्षेऽन्यथाख्यातिरूपविपर्ययानुप-
गमेऽपि अन्यथाख्यातिसामग्रीत्वेन पराङ्गीकृतसमुदायान्तर्गतं असंसर्गाग्रहसहितपुरोव-
र्तिग्रहणरजतस्मरणात्मकज्ञानद्वयमेव विपर्ययशब्देन व्यवहियते । एवं अख्यातिपक्षे नैयायि-
काभ्युगतस्य एकस्मिन् धर्मिणि विरुद्धनानाधर्मप्रकारकैकज्ञानरूपस्य संशयस्यानुपगमेऽपि
तादृशसंशयसामग्रीत्वेन तदङ्गीकृतसमुदायान्तर्गताऽसंसर्गाग्रहधर्मिज्ञानसहिता कोटिद्वयो-
पस्थितिरेव संशयशब्देन व्यवहियते; ज्ञानान्तरस्वीकारे गौरवादिति । ननु तथापि
भवदभिमतयोः संशयविपर्यययोः प्रमारूपतया लक्ष्यत्वेन न तद्व्यावृत्त्यर्थं विशेषणनिवेश-
संभव इत्याशङ्क्याह तच्चेति । संशयविपर्ययशब्दव्यपदेश्यं ज्ञानं चेत्यर्थः । तत्रेति—
तादृशसामग्र्यनुप्रविष्टत्वदशायामित्यर्थः । अप्रमाणमिति लोकसिद्धत्वात् — अप्रमात्वेन
लोके व्यवहियमाणत्वात् । लौकिकपरीक्षकव्यवहारेणैव प्रमाणाप्रमाणव्यवस्थासिद्धिरिति
हि पूर्वमेवोक्तम् । ततश्चाप्रमात्वेन लोकसिद्धयोः उक्तसंशयविपर्यययोः व्यावर्तनीयत्वं
युक्तमेवेति भावः । नन्वेवं सति सर्वविज्ञानयाथार्थ्यभङ्गप्रसङ्ग इत्यत्राह तत्रापीति —
संशयविपर्ययशब्दवाच्यसमुदाययोरपीत्यर्थः । प्रत्येकांशे याथार्थ्यं न विहन्यत इति —

विपर्ययशब्दवाच्यग्रहणस्मरणात्मकज्ञानद्वयान्तर्गते ग्रहणे स्मरणे च प्रत्येकं याथार्थ्य-
मस्त्येव । समुदाय एव च भ्रमत्वापरपर्यायं विपर्ययत्वम् । एवं संशयशब्दवाच्यधर्मिज्ञान-
कोटिद्वयोपस्थित्यात्मकज्ञानद्वयान्तर्गते धर्मिज्ञाने कोटिद्वयोपस्थितौ च याथार्थ्यमस्त्येव ।
समुदाय एव च संशयत्वमित्यर्थः । तथा च तादृशसमुदायद्वयेऽप्यतिप्रसक्तिवारणाय
व्यवहारशब्दितप्रवृत्तौ यथावस्थितत्वविशेषणम् । तत्र यथार्थश्चासौ अवस्थितश्चेति
विग्रहे शाकपार्थिवादितया समासे यथाशब्देन तद्वति तत्प्रकारकत्वरूपयथार्थत्वस्यावस्थित-
शब्देन निष्कम्पत्वस्य च बोधनात् अयथार्थप्रवृत्तिजनकविपर्ययशब्दितसमुदायस्य सकम्प-
यथार्थप्रवृत्तिजनकसंशयशब्दितसमुदायस्य च व्यावृत्तिरिति भावः । अत्र यद्यपि अन्य-
थाख्यातिपक्षे पुरोवर्तिग्रहणरजतस्मरणरजतभेदाग्रहसत्त्वेऽपि रजतभेदव्याप्यवत्ताग्रहणरजत-
भेदावच्छेदकधर्मदर्शनादृष्टविशेषादिप्रतिबन्धकवशात् विपर्ययो नोत्पद्यत इत्यविवादम् ।
एवं धर्मिज्ञानकोटिद्वयोपस्थित्यसंसर्गाग्रहसत्त्वेऽपि उक्तविधप्रतिबन्धकवशात् संशयो
नोत्पद्यत इत्यपि । तथैव तत्र तत्र भ्रान्तिव्यवहाराभावः संशयव्यवहाराभावश्च सर्वसंप्रति-
पन्नः । तथा च अख्यातिपक्षे तत्र तत्र तत्तद्व्यवहारप्रसङ्गः ; तदभिमतविषयसत्त्वात्,
व्याप्यतावच्छेदकभेदभिन्नान्तोक्तव्याप्यवत्ताज्ञानाभावान्, तादृशावच्छेदकधर्मदर्शना-
भावान् तत्तददृष्टाभावांश्चान्तर्भाव्य तद्वटितसमुदायस्यैव भ्रान्त्यादिपदार्थत्वाभ्युपगमे तु
महागौरवम् । असर्वज्ञदुर्ज्ञानता च ; तथापि अन्यथाख्यातिवादिभिः यत्रान्यथाख्याति-
रङ्गीक्रियते तत्रैवाख्यातिवादिभिः विभिन्नज्ञानीयविषयतयोः निरूप्यनिरूपकभावः
स्वीक्रियते । अन्यथाख्यातिसामग्र्यन्तर्गतदोषस्यैव तादृशनिरूप्यनिरूपकभावप्रयोजक-
त्वाभ्युपगमात् । इत्थं च तदभाववन्निष्ठविशेष्यतानिरूपिततन्निष्ठप्रकारतानिरूपक-
निश्चयत्वं विपर्ययभ्रान्त्यादिपदवाच्यतावच्छेदकम् । एवमेकधर्मिनिष्ठविशेष्यतानिरूपित-
विरुद्धनानाधर्मप्रकारतानिरूपकज्ञानत्वं संशयादिपदवाच्यतावच्छेदकमित्यङ्गीकारादुक्त-
व्याप्यवत्ताज्ञानस्थले न भ्रान्त्यादिव्यवहारप्रसङ्गः ; अन्यथाख्यातिसामग्रीविरहेण तत्र
विभिन्नज्ञानीयविषयतयोः निरूप्यनिरूपकभावविरहात् । न चैवं सति उक्त-
प्रकारतानिरूपकनिश्चयत्वरूपभ्रमत्वस्य रजतस्मरणमात्र एव सत्त्वेन 'तत्रापि प्रत्येकांशे
याथार्थ्यं न विहन्यत' इत्यनेन भ्रमत्वस्य समुदायनिष्ठत्वकथनमनुपपन्नं स्यादिति
वाच्यम् ; असंसर्गाग्रहादिविशिष्टरजतस्मरण एव भ्रमत्वस्य स्वीकरणीयतया तदुपपत्तेः । तथा

॥ विपर्ययनिरूपणम् ॥

तत्राद्ये पक्षेऽन्यस्यान्यथाध्यवसायो विपर्ययः । द्वितीये तु पक्षे
सामान्यतो धर्मिस्फुरणे सति अप्रतिपन्नतद्विरोधविरुद्धविशेषाध्यवसाय इति ।

हि — भ्रान्तिरूपरजतस्मरणानन्तरं यत्र पुरोवर्तिनि रजतभेदज्ञानं तत्रापि तदाश्रयस्य
भ्रान्तत्वव्यवहारप्रसङ्गः ; रजतस्मरणरूपभ्रान्तिसत्त्वात् । अतः असंसर्गाग्रहादिविशिष्टरजत-
स्मरण एव तादृशप्रकारतानिरूपकत्वमाश्रयणीयम् । ततश्च तादृशप्रकारतानिरूपकता-
वच्छेदकतापर्याप्त्यधिकरणधर्मावच्छिन्नस्यैव भ्रान्त्यादिपदार्थत्वाभ्युपगमात् भेदज्ञानदशायां
तादृशभ्रान्तिपदार्थविरहेण नोक्तातिप्रसङ्गः । अत्र चासंसर्गाग्रहादीनां तादृशप्रकारतानि-
रूपकतावच्छेदकतापर्याप्त्यधिकरणधर्मत्वेनैव भ्रान्त्यादिपदवाच्यतावच्छेदकत्वमिति न
पूर्वोक्तदुर्विज्ञानतेति । वस्तुतस्तु 'प्रत्येकांशे याथार्थ्यं न विहन्यत' इत्यस्यायमर्थः —
अन्यथाख्यातिसामग्र्यन्तर्गतं रजतस्मरणं हि पूर्वानुभूतापणस्थरजते रजतत्वप्रकारकमित्य-
विवादम् । ततश्च तादृशरजतांशेऽस्य याथार्थ्यमेतदभिप्रायकमेव । तत्रापि प्रत्येकांशे
याथार्थ्यं इति वाक्यं तादृशरजतत्वप्रकारतायां ग्रहणात्मकज्ञानीयपुरोवर्तिशुक्त्यादिनिष्ठ-
विशेष्यतानिरूपितत्वस्यापि स्वीकारात् तदंशेऽस्य भ्रमत्वम् ; यथा अन्यथाख्यातिपक्षेऽपि
पृथिवीजलोभयं गन्धवदिति ज्ञानस्य पृथिव्यंशे याथार्थ्यं जलांशे भ्रमत्वं तद्वदिति । उक्त-
भेदज्ञानदशायां भ्रान्तत्वव्यवहारप्रसङ्गस्तु अन्यथाख्यातिपक्ष इव भ्रमेऽप्रामाण्यज्ञानानन्तर-
मेव पुरोवर्तिनि रजतभेदज्ञानसंभवात्तदशायां भ्रमविरहादेव न संभवतीति सूक्ष्मधिया
अवधातव्यम् । ज्ञानस्य त्रिचतुरादिक्षणस्थायित्वे तु अप्रामाण्यज्ञानानास्कन्दितस्य
तदभाववन्निष्ठविशेष्यतानिरूपिततन्निष्ठप्रकारतानिरूपकज्ञानस्यैव भ्रमपदार्थत्वमङ्गीकृत्योक्ता-
तिप्रसङ्गो वारणीय इति दिक् ॥

अन्यथाख्यातिपक्षे विपर्ययस्वरूपमाह तत्रेति — अन्यथाख्यात्यख्यातिपक्षयोरि-
त्यर्थः । अन्यस्य अन्यथाध्यवसाय इति — तदभाववतः तद्वत्तयाऽनाहार्यनिश्चय इत्यर्थः ।
सामान्यतो धर्मिस्फुरण इति — किञ्चिद्धर्मप्रकारकधर्मिज्ञानविशिष्ट इत्यर्थः । अप्रतिपन्न-
तद्विरोधविरुद्धविशेषाध्यवसाय इति — धर्मितावच्छेदकतया भासमानधर्मविरुद्धत्वेना-
गृह्यमाणः वस्तुगत्या तद्विरुद्धो यो धर्मः तत्प्रकारकानाहार्यनिश्चय इत्यर्थः ; न तु तदुभय-
जनितं विशिष्टज्ञानान्तरमिति भावः ।

अत्र च 'सामान्यतो धर्मस्फुरणे सती'त्यनेन निर्धर्मितावच्छेदकविपर्ययो नास्तीति द्योत्यते । स्फुरणं च स्वतः परतो वेति ग्राह्यम् । तेन परतः स्फुरति इदंत्वावच्छिन्ने रजतत्वादिभ्रमस्येव स्वतः स्फुरति अहंत्वावच्छिन्ने स्थूलत्वादिभ्रमस्यापि संग्रहः । 'अप्रतिपन्नतद्विरोधे'त्यनेन वस्तुगत्या विरोधेऽपि तदग्रहात् तद्धर्मप्रकारकानाहार्यज्ञानस्य नानुपपत्तिरिति दर्शितं भवति । आहार्यज्ञानवस्तु भ्रान्तत्वाव्यवहारात् तद्व्यावृत्त्येऽनाहार्यत्वनिवेशः । संशयव्यावृत्त्यर्थं निश्चयत्वनिवेशः । यद्यपि इदं रजतं इदं च रज्जमिति प्रमाया अपि विपर्ययत्वप्रसङ्गः, रजतगतेदंत्वरूपधर्मितावच्छेदकविरुद्धत्वेनागृह्यमाणस्य रज्जत्वस्य वस्तुगत्या तद्विरुद्धत्वसत्त्वात् । यदि च तत्र चकारादिना रज्जरजतयोः भेदो-
ल्लेखात् रज्जत्वादौ रजतादिगतेदंत्वविरोधभानमपि तत्रास्त्येवेत्यंगीक्रियते, तदा रजतरज्जयोः इदं रज्जं इदञ्च रजतमिति विपर्ययासंग्रहप्रसंगः ; उक्तरीत्या रजतत्वस्य रज्जगतेदंत्वरूपधर्मितावच्छेदकविरुद्धत्वेन गृह्यमाणत्वात् । न च यत्किंचिद्विधर्मितावच्छेदकविरुद्धत्वेनागृह्यमाणत्वमेव विवक्षितम् । इत्थं च रंगत्वस्य रजतगतेदंत्वविरुद्धत्वेनागृह्यमाणतया तत्संग्रहसंभव इति वाच्यम् ; तथा सति पूर्वोक्तायामिदं रजतमिदं च रंगमिति प्रमायामतिप्रसंगात् ; रज्जत्वस्य रज्जगतेदंत्वरूपधर्मितावच्छेदकविरुद्धत्वेनागृह्यमाणत्वात्, रजतगतेदंत्वरूपधर्मितावच्छेदकविरुद्धत्वाच्च । यदि च तद्धर्मविरुद्धत्वेनाऽगृह्यमाणो यस्तद्धर्मविरुद्धो धर्मः तत्प्रकारकज्ञानस्यैव तद्धर्मावच्छिन्नविषयकज्ञानसहितस्य विपर्ययरूपत्वान्नोक्तदोषावकाश इत्युच्यते ; तदाऽपि काञ्चनमयदण्डवानयमित्यादिप्रमायां दण्डवानयं दण्डश्च काञ्चनमय-
इत्यादिप्रमायां चातिप्रसंगः ; काञ्चनमयत्वस्येदंत्वविरुद्धत्वेनागृह्यमाणत्वात्, वस्तुगत्या तद्विरुद्धत्वाच्च ; तथापि तद्धर्मावच्छिन्नविशेष्यतानिरूपिततद्विरुद्धधर्मनिष्ठप्रकारताशाल्य-
नाहार्यनिश्चयो विपर्यय इति विवक्षितत्वाच्च काचिदनुपपत्तिः । अत्र हि विरुद्धविशेष-
निष्ठप्रकारतायां तद्धर्मावच्छिन्नविशेष्यतानिरूपितत्वलाभायैव अप्रतिपन्नतद्विरोधेत्यभि-
धानम् । दोषसहितविरोधाग्रह एव हि भिन्नज्ञानीययोरपि विशेष्यत्वप्रकारत्वयोः निरूप्यनिरूपकभावे प्रयोजकः । ततश्चोक्तस्थले काञ्चनमयत्वप्रकारतायामिदंत्वावच्छिन्न-
विशेष्यतानिरूपितत्वविरहान्नातिप्रसंगः ।

१ चायमनेकविधः — एकानेकविरुद्धविशेषस्फुरणात् । तत्र एकविशेष-
स्फुरणं यथा — पीतः शङ्ख इत्यादि । अनेकविशेषस्फुरणं यथा —
एकमेव भिन्नमभिन्नं चेत्याद्यनेकान्तवादिनाम्, प्रपञ्चस्सद्विलक्षणोऽसद्विलक्षणश्चे-
त्याद्यद्वैतवादिनाम् । परस्परविरुद्धानेकविशेषवत ईदृशस्य विपर्ययस्य संशया-
द्भेदो मिथोविरोधाभिमानभानविरहेण समुच्चिताध्यवसायात् । धर्मविरोधे परस्परा-
विरुद्धानेकविशेषस्फुरणं यथा — विपुलत्वैकत्वादिविशिष्टे चन्द्रेऽल्पत्वद्वित्वादिग्रहः ।

स चायमिति — यथावस्थितविशेषणव्यावर्तनीयत्वेन प्रस्तुतोऽव्यवहितपूर्वोक्त-
स्वरूपश्चेत्यर्थः । अनेकविध इति — एकत्वान्यसंख्यावद्विभाजकधर्मवानित्यर्थः । एकाने-
कविरुद्धविशेषस्फुरणादिति । अत्र स्फुरणं विषयित्वं विभाजकधर्मान्वयि, अभेदः
ऽस्त्वर्थः । अत्र अनेकविशेषस्फुरणे परस्परविरुद्धानेकविशेषस्फुरणपरस्पराविरुद्धधर्मिता-
वच्छेदकविरुद्धानेकविशेषस्फुरणाभ्यां भेदसत्त्वात् द्विविध इत्यनुक्तिः । पीतः शङ्खः इति —
अत्र शङ्खत्वस्य धर्मितावच्छेदकतया तदतिरिक्तो विशेष एक एवेति भावः । एकमेवेति —
गुणादिरूपमेकमेव वस्त्वित्यर्थः । भिन्नमभिन्नं चेति । गुण्यादिना भिन्नमभिन्नं चेत्यर्थः ।
अनेकान्तवादिनां - कौमारिलादीनाम् । ननु एकस्मिन् धर्मिणि विरुद्धनानाधर्मप्रकार-
त्स्यास्य कथं संशयाद्भेद इत्यत आह परस्परेति । मिथो विरोधाभिमानभानविरहेणेति —
परस्परविरोधाविषयकेणेत्यर्थः । अस्य च समुच्चिताध्यवसायादित्यनेनान्वयः । संशय-
होत्थोः परस्परविरोधो भासत इत्यभिप्रायः । समुच्चिताध्यवसायादिति । विशेषयोः
सामानाधिकरण्यावगाहनाहार्यनिर्णयरूपत्वादित्यर्थः । संशयाद्भेद इत्यनेन अन्वयः ।
समुच्चिताध्यवसाय इति पाठे तु विरोधाभिमानविरहेणेत्यस्य संशयाद्भेद इत्यने-
नान्वयः । स चेत्यध्याहारेण स च समुच्चिताध्यवसाय इत्यन्वेतव्यम् । धर्मविरोध
इति — धर्मितावच्छेदकधर्मविरोध इत्यर्थः । विपुलत्वेति । “अष्टाशीतिसहस्राणि
वेस्तीर्णो योजनानि तु” इति प्रमाणप्रतिपत्तेत्यादिः । एकत्वादीत्यादिना श्वेत-
वपरिग्रहः । अल्पत्वद्वित्वादिग्रह इति । प्रादेशिकत्वरूपाल्पत्वस्य द्वित्वस्य च चन्द्र-
स्वरूपधर्मितावच्छेदकविरुद्धत्वादिति भावः । द्वित्वादीत्यादिना उदयास्तमयकालयोः
तीयमानस्य रक्तत्वस्य परिग्रहः । ननु विपर्ययशब्दितान्यथाख्यात्यपेक्षया विपरीतस्यातेः

विपर्ययमेव धर्मान्तरधर्म्यन्तरभेदादन्यथाख्यातिविपरीतख्यातिभेदेन कचिच्चवहर-
न्ति; यथा पीतशङ्खरज्जुसर्पभ्रमौ । तयोश्च रजस्तमसी मूलमिति गीयते —

यया धर्ममधर्मं च कार्यश्चाकार्यमेव च ।

अयथावत्प्रजानाति बुद्धिस्सा पार्थ राजसी ॥

अधर्मं धर्ममिति या मन्यते तमसा वृता ।

सर्वार्थान्विपरीतांश्च बुद्धिस्सा पार्थ तामसी ॥

यद्यपि रज्जुसर्पादिभ्रमे रज्जुत्वादिधर्मविपरीतसर्पत्वादिधर्माध्यास एव,

पृथग्यवहारात्तस्या अपि यथावस्थितशब्दव्यावर्तनीयत्वसंभवात्कुतस्तदनुक्तिरित्यत आह
विपर्ययमेवेति । न तु विपर्ययातिरिक्ता विपरीतख्यातिः । किन्तु विपर्ययावान्तरभेद
एवेति न तदनुक्तिरिति भावः । धर्मान्तरधर्म्यन्तरभेदादिति — धर्मितावच्छेदकविरुद्ध-
धर्मसंसर्गारोपरूपत्वतादृशधर्मवत्तादात्म्यारोपरूपत्वात्मकावान्तरधर्मभेदादित्यर्थः । अन्यथा-
ख्यातिविपरीतख्यात्योः रजोमूलकत्वतमोमूलकत्वाभ्यामपि भेदमाह तयोश्चेति । गीयते-
गीतया प्रतिपाद्यते । ययेति । यया बुद्ध्या पुरुषः धर्माधर्मौ कार्याकार्ये च, अयथावत्
तत्तदवृत्तिधर्मवत्तया, प्रजानाति । तादृशज्ञानं यादृशबुद्धयभिन्नमिति यावत् । राजसी-
रजोमूला । धर्ममितीति—धर्मतादात्म्येनेत्यर्थः । मन्यते—विषयीकरोति । तमसा वृतेति —
तमोधीनयथावस्थितार्थविषयकत्वाभावेत्यर्थः । सर्वार्थान् विपरीतांश्चेति । रज्ज्वादिरूपा-
नर्थान् सर्पादिरूपान् मन्यते इत्यनुषङ्गेणान्वयः । तामसीति — तमोजन्येत्यर्थः । धर्म्यन्त-
रतादात्म्यारोपस्थले धर्मान्तरसंसर्गारोपस्यापि नियततया संसर्गारोपत्वतादात्म्यारोपत्वाभ्यां
विभागो नोपपद्यते इत्यभिप्रायेण शङ्कते यद्यपीति । रज्जुसर्पादिभ्रमे - रज्ज्वादौ सर्पादिता-
दात्म्यभ्रमे । सर्पत्वादिधर्माध्यास एव—सर्पत्वादिधर्माध्यासोऽपि । ‘समवायितया वाच्यत्वा-
भावो घट एव प्रसिद्धः’ इत्यादाविध एवकारोऽप्यर्थकः । यद्वा तादात्म्यस्य कचिदपि
संसर्गतया भानं नेत्यभिप्रायेण इमे शङ्कासमाधाने । नीलो घट इत्यादिवाक्यजन्यशब्द-
बोधेऽपि विशेषणविभक्त्यभिहितमभेदापरपर्यायं तादात्म्यं प्रकारतयैव भासते । रज्जु-
सर्पादिभ्रमेऽपि सर्पत्वादिरूपं सर्पादितादात्म्यमेव प्रकारतया भासते, सर्पत्वादिकमेव वा ;

तथापि स्वरूपनिरूपकधर्मत्वेनान्तरङ्गतया धर्मिवैपरीत्यव्यपदेशः । श्रैत्यादेस्तु
रूपितस्वरूपविशेषकत्वमेव । विवरणे त्वेवमुक्तम् — ‘त्रिविधमज्ञानम् — स्वरूपा
ज्ञानमन्यथाज्ञानं विपरीतज्ञानमिति । स्वरूपाज्ञानं नाम वस्तुनोऽप्रतिपत्तिः ।
अन्यथाज्ञानं वस्तुनो वस्त्वन्तरतया भानम्, यथा शुक्तेः रूप्यतया । विपरीतज्ञानं
तु यथावद्वस्तुनि भासमाने युक्तिभिस्तस्यान्यथोपपादनम् — यथा ज्ञातृतया अह-
न्त्वेनात्मनि भासमानेऽपि कुयुक्तिभिरस्य भ्रान्तितोपपादनं कुट्टशाम्’ इति । अध-
र्मेन्द्रियदोषदुस्तर्काभ्यासदुर्व्याप्त्यनुसन्धानविप्रलम्भकवाक्यश्रवणादिभिस्तच्चाग्रह-
सहकृतैर्विपर्ययस्य यथासंभवमुद्भवः ॥

न तु तादात्म्यसंबन्धेन सर्पादिकमित्यभिप्रायः । अत्र पक्षे एवकारः तादात्म्यसंसर्गकध-
र्मिप्रकारकाध्यासव्यवच्छेदकः । तथा च धर्मारोपत्वधर्म्यारोपत्वाभ्यां विभागोऽनुपपन्न
इति यद्यपीत्यादिशङ्कावाक्यार्थः । अन्यथाख्यातिविपरीतख्यातिशब्दाभ्यां निरूपित-
स्वरूपविशेषकधर्मारोप-स्वरूपनिरूपकधर्मारोपयोरेव विवक्षिततया न दोष इत्यभिप्रायेण
समाधत्ते तथापीति । तर्हि धर्मिवैपरीत्यव्यपदेशः कथमित्यत्राह स्वरूपनिरूपकधर्म-
त्वेनेति — स्वाश्रयसाक्षात्कारत्वव्यापकस्वनिरूपितविषयिताकधर्मत्वेनेत्यर्थः । घटादेर्हि-
घटत्वादिकं स्वरूपनिरूपकम् ; घटविषयके चाक्षुषे स्पर्शने च साक्षात्कारे तस्य विषय-
त्वात् । रूपस्पर्शादिकं तु न तथा ; स्पर्शने रूपस्य चाक्षुषे स्पर्शस्य चाविषयत्वात् ।
अतस्तथाविधस्य निरूपितस्वरूपविशेषकत्वमेव । तदेतदाह श्रैत्यादेस्त्विति । विवरण-
कारैस्तु विपरीतज्ञानशब्देनान्यदेव व्यवहृतमिति दर्शयितुमाह विवरण इति । अज्ञान-
मिति — विरोधे नञ् ; ज्ञानविरोधीत्यर्थः । प्रमाविरोधीति यावत् । वस्तुनोऽप्रतिपत्ति-
रिति । वस्तुस्वरूपज्ञानसामान्यविरोधि कर्म ; यथा पामरादिगतेश्वराज्ञानम् । वस्त्वन्तरतया
भानमिति । अन्यथाख्यातेरख्यातेर्वा हेतुभूतं कर्मेत्यर्थः । शुक्तेः रूप्यतयेति ।
भानमित्यनुषङ्गेणान्वयः । भ्रान्तित्वोपपादनमिति । भ्रान्तित्वज्ञानहेतुभूतं कर्मेत्यर्थः ;
उक्तभ्रान्तित्वज्ञानस्यापि अन्यथाख्यात्यख्यात्यन्यतरूपत्वेऽपि गोबलीवर्दन्यायेन उक्तान्य-
तरातिरिक्तादृशान्यतरहेतुभूतं कर्मैव अन्यथाज्ञानशब्दविवक्षितमिति भावः । विपर्यय-
सामग्रीमाह अधर्मेति । तच्चाग्रहसहितैरिति । तत्त्वज्ञानस्य भ्रमप्रतिबन्धकत्वादिति
भावः । यथासंभवमिति । अधर्मः सर्वविपर्ययेऽपि हेतुः ; इन्द्रियदोषः प्रात्यक्षिकविपर्यये ।

॥ संशयनिरूपणम् ॥

सामान्यधर्मिस्फुरणे सति अप्रतिपन्नतद्विरोधप्रतिपन्नमिथोविरोधानेकविशेष-
स्फुरणं संशयः । यथा — ऊर्ध्वस्तुमात्रग्रहणे सति तद्विरोधितयाऽननुसन्धीय-
मानयोर्मिथः स्फुटविरोधयोः स्थाणुत्वपुरुषत्वयोः स्फुरणम् — अयं स्थाणुर्वा

दुस्तर्काभ्यासदुर्व्याप्त्यनुसन्धाने आनुमानिकविपर्यये ; विप्रलम्भकवाक्यश्रवणभ्रान्तवाक्य-
श्रवणविपरीतव्युत्पत्त्यादिकं शाब्दविपर्यय इति भावः ॥

संशयं लक्षयति सामान्येति — सामान्यधर्मप्रकारकधर्मिज्ञानसहितं मिथो
विरुद्धत्वेन ज्ञायमानानेकविशेषधर्मप्रकारकं ज्ञानं संशय इत्यर्थः । एककोटेः धर्म्य-
वृत्तितावश्यभावात् कथं तल तद्ज्ञानमिति शङ्कावारणाय अप्रतिपन्नतद्विरोधेति ।
अत्र यद्यपि 'इदं प्रमेयं' 'स्थाणुपुरुषौ परस्परभिन्ना' विति निश्चयेऽतिप्रसङ्गः तथापि
एकधर्मावच्छिन्नविशेष्यतानिरूपितप्रतिपन्नमिथोविरोधानेकधर्मप्रकारताकज्ञानत्वं संशयत्व-
मित्यत्र तात्पर्यान्न दोषः । 'इदं भिन्नमभिन्नं चे'ति समुच्चिताध्यवसायेऽतिप्रसक्तिवारणाय
प्रतिपन्नमिथोविरोधेति । 'स्थाणुपुरुषौ परस्परभिन्ना' विति निश्चयेऽतिव्याप्तिवारणाय
एकधर्मावच्छिन्नविशेष्यतानिरूपितेति । 'पुरुषत्वविरुद्धस्थाणुत्ववानयमि'ति निर्णयेऽति-
प्रसक्तिवारणाय अनेकेति । प्रकारताविशिष्टविशेष्यतानिरूपकज्ञानत्वं संशयत्वमिति तु
निष्कर्षः । विशेष्यतायां प्रकारतावैशिष्ट्यं स्वनिरूपितत्वस्वावच्छेदकावच्छिन्नविरुद्ध-
प्रतियोगिकत्वविशिष्टसंबन्धावच्छिन्नप्रकारतानिरूपितत्वोभयसंबन्धेन । अख्यातिपक्षे हि
संशयः प्रमितकोट्यंशे विशिष्टज्ञानात्मकः । बाधितकोट्यंशे तु असंसर्गाग्रहसहितज्ञान-
द्वयात्मकः । तत्र कोटिद्वयस्यापि कोट्यन्तरविरुद्धतत्कोटिप्रतियोगिकत्वविशिष्टाश्रयता-
संबन्धेन प्रकारत्वम् । सर्वमतेऽप्यख्यातिपक्षे भिन्नज्ञानीयविषयतयोः निरूप्यनिरूपक-
भावसत्त्वात् प्रमितकोटिप्रकारतानिरूपितायां विशिष्टज्ञानीयविशेष्यतायां ज्ञानान्तरीय-
बाधितकोटिप्रकारतानिरूपितत्वमक्षतम् । कोट्योः परस्परविरोधभानात् समुच्चयव्यावृत्तिः ।
तत्र संशये विरोधभाने मानमाह मिथ इति । विकल्पबोधकवाकारोल्लेखात् विरोधभान-
मावश्यकम् । अन्यथा 'वृक्षः कपिसंयोगवान् तदभाववांश्चे'तिवत् चकारोल्लेख एव

पुरुषो वेति । मिथो विरोधाग्रहणे तयोर्विकल्पो न स्यात् । तत एव 'डोलावेगवदत्र
स्फुरणक्रमः' इत्येके ; एकस्मिन् युगपदन्योन्यप्रतिक्षेपस्य धीविरुद्धत्वात् । अत्र
'चैतन्यस्य विषयेण दृढसंयोगो हि निश्चयः । तस्यैव बहुभिर्युगपददृढसंयोगः
संशयः' इत्यात्मसिद्धिग्रन्थोऽपि न विरुद्धः ; इतरथा ज्ञानार्थयोर्दृढादृढसंश्लेष-

स्यादिति भावः । विरोधभाने इतरसंवादमाह तत एवेति - कोट्योः परस्परविरोधभाना-
देवेत्यर्थः । डोलावेगवदिति — डोलावेगाधीनतद्गतभिन्नभिन्नदेशसंयोगवदित्यर्थः ।
स्फुरणक्रम इति — कोटिद्वयविषयितयोः क्रमिकत्वमित्यर्थः । अन्यथाख्यातिपक्षेऽपीति
शेषः । कुत इत्यत्राह एकस्मिन्निति — एकधर्मावच्छिन्न इत्यर्थः । युगपदन्योन्यप्रतिक्षे-
पस्येति — एककालावच्छिन्नस्य परस्परविरुद्धत्वेन गृह्यमाणधर्मद्वय(विषयता)विषयकत्व-
स्येत्यर्थः । धीविरुद्धत्वादिति - अनाहार्यज्ञानत्वाभावव्याप्यत्वादित्यर्थः । आहार्यज्ञाने
उक्तधर्मद्वयविषयकत्वसंभवात् अनाहार्येति । तथा चानाहार्यज्ञानरूपे संशये परस्पर-
विरुद्धत्वेन गृह्यमाणधर्मरूपकोटिद्वयविषयितयोः यौगपद्यासंभवात् तयोः क्रमिकत्व-
मावश्यकमिति भावः । इदं चाख्यातिपक्षे यत्र धर्मिज्ञानसहितं कोटिद्वयविषयकमेकं
स्मरणं तत्रैव बोद्धव्यम् । यत्र तु प्रमितकोटिविशिष्टधर्मिज्ञानसहितबाधितकोटिमात्रविषयक-
स्मरणात्मकसंशयः तत्र कोटिद्वयविषयितयोर्विभिन्नज्ञाननिष्ठत्वाच्च विरोधप्रसक्तिः । नन्वेवं
सति आत्मसिद्धिग्रन्थविरोधः । तत्र कोटिद्वयविषयितयोः यौगपद्यप्रतीतेरित्यत आह —
अत्रेति । संशये कोटिद्वयविषयितयोः क्रमिकत्वविषय इत्यर्थः । न विरुद्ध
इत्यनेनान्वयः । न विरुद्ध इत्यस्य न विरुद्धार्थतात्पर्यक इत्यर्थः । युगपदित्यस्य
यथाश्रुतार्थे तात्पर्यं नास्तीति भावः । कुत इत्यत्राह — इतरथेति — कोटिद्वयविषयि-
तयोः यौगपद्य इत्यर्थः । दृढादृढसंश्लेषनिरूपणानुपपत्तेरिति — दृढादृढसंश्लेष-
निर्वचनानुपपत्तेरित्यर्थः । अयं भावः — यावदाश्रयभाविसंबन्धो दृढसंश्लेषः । अतथा-
भूतश्च सः अदृढसंश्लेष इत्येवं दृढादृढसंश्लेषनिर्वचनं कार्यम् । इत्थं च संशये
कोटिद्वयविषयितयोः यौगपद्ये तयोः यावदाश्रयभावित्वमप्यावश्यकम् ; विरोधविरहात् ।
तथा च तयोरदृढत्वासंभवात् नोक्तरीत्या दृढादृढसंश्लेषनिर्वचनमुपपद्यते ; प्रकारान्तरं

निरूपणानुपपत्तेः । युगपदिति तु शैघ्र्यमात्रपरम् । यौगपद्याभ्युपगमेऽपि अदृढत्वं परस्परप्रतिक्षेपप्रकारविशेष एव ; अन्यथा अयमूर्ध्वो वा स्थाणुर्वेत्यादि-संशयप्रसङ्गः । यद्यप्यविरुद्धेष्वपि केषुचिद्धर्मादिमूलकाविरोधाग्रहणात्केषांचि-दीदृशोऽपि संशयः संभवति ; यथा आत्मा ज्ञानं वा ज्ञाता वेति, ज्ञानं

तु नोपलभ्यत इति । तर्हि युगपदित्यस्य कोऽर्थ इत्यत्राह युगपदिति त्विति । युगपद्विरुद्धधर्मद्वयविषयकत्वस्यानाहार्यनिश्चयत्वाभावव्याप्यत्वमेव, न त्वनाहार्यज्ञानत्वा-भावव्याप्यत्वम् । ततश्च संशये कोटिद्वयविषयितयोः यौगपद्ये बाधकाभावात् युगपदि-त्यस्य यथाश्रुतार्थपरत्वमेव युक्तम् । दृढादृढसंश्लेषौ तु प्रकारान्तरेण निर्वक्तुं शक्यौ इत्यभिप्रायेण पक्षान्तरमाह यौगपद्याभ्युपगमेऽपीति । परस्परप्रतिक्षेपाकारविशेष इति — परस्परकर्तृकप्रतिक्षेपविषयत्वरूपाकारविशेष इत्यर्थः । स च स्वविरुद्धत्वेन गृह्यमाणधर्मान्तरविषयकज्ञानीयत्वरूपः । तादृशधर्मान्तराविषयकज्ञानीयत्वं दृढत्वमित्यर्था-दुक्तं भवति । स्वं यत्र संश्लेष उपपादनीयः सः । ननु संशये विरोधभानानुपगमात् उक्तप्रकारेणादृढसंश्लेषनिरूपणं न संभवतीत्याशङ्कयामाह अन्यथेति — विरोधभानाभाव इत्यर्थः । अविरुद्धेष्वपि संशयदर्शनमवलम्ब्येष्टापत्तिं शङ्कते यद्यपीति । अविरोधा-ग्रहणादिति — कोट्योस्सामानाधिकरण्याग्रहणमात्रादित्यर्थः । भावाभावकोटिकसंशय इव न परस्परासामानाधिकरण्यरूपविरोधग्रहणावश्यकतेति भावः । एकस्मिन् धर्मिणि भावाभावोभयप्रकारकज्ञानस्य हि कोट्योः परस्परसामानाधिकरण्याग्रहमात्रेण परस्पराभावव्याप्यत्वादिलक्षणविरोधाभानेऽपि संशयत्वमानुभाविकम् । न ह्ययं स्थाणुर्वा न वेति संशये स्थाणुत्वाभावे स्थाणुत्वाभावव्याप्यत्वादिरूपः स्थाणुत्वात्मक-कोट्यन्तरविरोधो भासते । अथापि तादृशज्ञानं संशयरूपमेव ; कोट्योः सामानाधि-करण्याभानेन समुच्चयरूपत्वासंभवात् । संशयसमुच्चयोभयविलक्षणस्य कोटिद्वयविषयक-ज्ञानस्याप्रसिद्धेः । अतः भावाभावकोटिकस्य विरोधाविषयकस्यापि संशयस्य संप्रति-पन्नत्वे भावद्वयकोटकोऽपि विरोधाविषयकस्संशय उपपद्यत इति ऊर्ध्वत्वस्थाणुत्वयोः सामानाधिकरण्याग्रहदशायां अयमूर्ध्वो वा स्थाणुर्वेति संशय इष्ट एव । सामानाधि-

धर्मो धर्मि वेत्यादि ; तथाप्याभिमानिकं परस्परप्रतिक्षेपित्वं तत्राप्यस्त्येव ।

करण्यग्रहदशायां तु न संशयप्रसङ्गः ; कोट्योः सामानाधिकरण्यज्ञानस्य संशये प्रतिबन्धकत्वाङ्गीकारात् । अतो भावद्वयकोटिकस्यापि विरोधाविषयकस्य संशयस्य संभवात् भावाभावकोटिकविरोधाविषयकसंशयस्य संप्रतिपन्नत्वाच्चोक्तरीत्या दृढादृढसंश्लेष-निर्वचनं न संभवतीति शङ्कितुरभिप्रायः । समाधत्ते तथापीति । आभिमा-निकं । अमघटितं । परस्परप्रतिक्षेपित्वमिति — परस्परज्ञानप्रतिबन्धप्रयोजकधर्मवत्त्वमित्यर्थः । स च धर्मः भावाभावकोटिकसंशयस्थले एककोटिनिष्ठप्रतियोगितासंबन्धावच्छिन्नप्रकारता-निरूपितविशेष्यत्व - तादृशविशेष्यतानिरूपेतप्रतियोगितासंबन्धावच्छिन्नप्रकारत्वान्यतर-रूपः । भावद्वयकोटिकसंशयस्थले च परस्परविरुद्धत्वेन गृह्यमाणत्वरूपः । आत्मा ज्ञानं ज्ञाता वेत्यादि संशये विरुद्धत्वेन गृह्यमाणत्वमेव प्रतिक्षेपित्वमिति तत्र विरुद्धत्वग्रहस्य भ्रमरूप-तयोक्तप्रतिक्षेपित्वस्य भ्रमघटितत्वमिति बोद्धव्यम् । तत्राप्यस्त्येवेति — उक्तभाव-द्वयकोटिकसंशयस्थलेऽप्यस्त्येवेत्यर्थः । अयं भावः - कोट्योः परस्परज्ञानप्रतिबन्धकताव-च्छेदकत्वाहविषयतामन्तरा संशयस्यानुभवविरुद्धतया तादृशविषयताया आवश्यकत्वे भावाभावकोटिकसंशये कोट्योर्विरोधभानाभावेऽपि उक्तविषयतानिर्वाहान्न तत्र विरोधभाना-वश्यकता । भावद्वयकोटिकसंशये तु कोट्योर्विरोधभानमन्तरेणोक्तविषयत्वानिर्वाहात् तत्र विरोधभानमावश्यकमिति उक्तरीत्या दृढादृढसंश्लेषनिरूपणमुपपद्यत एवेति । यद्यपि भावाभावकोटिकसंशये कोट्योरुक्तविधादृढसंश्लेषो नोपपद्यते ; तत्र विरोधभानविरहात् ; तथापि स्वावच्छेदकावच्छिन्नवत्ताज्ञानप्रतिबन्धकतावच्छेदकविषयतानिरूपकज्ञानीयत्वमेव विषयतायामदृढत्वं विवक्षितमिति भावाभावकोटिकसंशये कोटिविषयतयोः परस्परवत्ता-ज्ञानप्रतिबन्धकतावच्छेदकत्वाक्षतेस्तत्राप्यदृढत्वोपपत्तिः । यदि च सिद्धान्ते विषयतायाः संयोगादिरूपायाः ज्ञानभेदेन भेदावश्यंभावात् न संशयीयविषयतायाः प्रतिबन्धकता-वच्छेदकत्वसंभवः ; संशयस्याप्रतिबन्धकत्वात् । निश्चय एव हि विपरीतज्ञानप्रति-बन्धकः । प्रतिबन्धकविशेषणमेव च प्रतिबन्धकतावच्छेदकम् । अत उक्तरीत्या अदृढत्व-निर्वचनं न युज्यत एवेत्युच्यते ; तदा स्वविरुद्धत्वेनेत्यादि प्रागुक्तमेवादृढत्वम् ; स्वविरुद्धत्वं च स्वाभावव्याप्यत्वस्वप्रतियोगिकत्वस्वप्रतियोगित्वान्यतमवत्त्वमेव । भावा-

अस्य च समानधर्मविप्रतिपत्तिभ्यामेवासाधारणकारणाभ्यामधर्मादिसहिताभ्यां यथासंभवमुद्भवः । तदुक्तं तत्त्वज्ञानकरे — ‘कश्चैष संशयः ? कतिविधश्च ? एकस्मिन् धर्मिणि विरुद्धानेकविशेषावभासः संशयः । स च द्विविधः’ इत्यादिना । तत्र समानधर्मः साधारणो धर्मः । तज्जनितो यथा — ऊर्ध्वत्वाविशेषात् स्थाणुर्वा पुरुषो वेति । अगृह्यमाणबलतारतम्यविरुद्धानेकज्ञापकोपस्थापनमिह विप्रतिपत्तिः । सा च सजातीयविजातीयाभासरूपद्वित्रिचतुरादिज्ञापकभेदाद्बहुप्रकारा ।

भावकोटिकसंशये च एककोटौ अपरकोट्यभावव्याप्यत्वाभावेऽपि अपरकोटिप्रतियोगिकत्वस्य तत्प्रतियोगित्वस्य वा भानान्नानुपपत्तिः । स्थाणुत्वतदभावकोटिकसंशये हि स्थाणुत्वे स्थाणुत्वाभावप्रतियोगित्वं, स्थाणुत्वाभावे च स्थाणुत्वप्रतियोगिकत्वं भासते । संशयकारणमाह अस्य चेति । समानधर्मेति — कोटिद्वयसहचरितधर्मवत्ताजानेत्यर्थः । अधर्मादीत्यादिना विशेषादर्शनसङ्ग्रहः । यथासंभवमिति — उक्तसामग्रीद्वयान्यतरस्मादेव तदुद्भवः; न तूभयमपेक्षितमिति भावः । समानशब्दस्य सदृशपरत्वे ऊर्ध्वत्वादेर्न सङ्ग्रहसंभवः; तस्य कोटिद्वयसदृशत्वविरहात् । कोटिद्वयं हि परस्परविरुद्धम्; ऊर्ध्वत्वन्तूभयाविरुद्धम् । अतस्समानपदार्थमाह तत्रेति । साधारण इति — कोटिद्वयसमानाधिकरण इत्यर्थः । ऊर्ध्वत्वाविशेषादिति — ऊर्ध्वत्वस्य कोटिद्वयसमानाधिकरणत्वादित्यर्थः । ज्ञानप्रयोज्यज्ञानविषयत्वरूपं ज्ञाप्यत्वं पञ्चम्यर्थः कोटिद्वयेऽप्यन्वेति । संशयांशे उद्बुद्धसंस्कारसहितादेव एकसम्बन्धिज्ञानादपरसम्बन्धिसरणेन ऊर्ध्वत्वरूपैकसम्बन्धिज्ञानाधीनकोटिद्वयस्मरणस्य सामानाधिकरण्यरूपसम्बन्धज्ञानाधीनत्वमक्षतम् । कोटिद्वयसमानाधिकरणधर्मवत्ताज्ञानस्य साक्षादेव संशयहेतुत्वाद्वा तदुपपत्तिः । कैश्चिद्विरुद्धार्थप्रतिपादकवाक्यद्वयमेव विप्रतिपत्तिरित्युक्ततया तन्निरसनाय विप्रतिपत्तिपदार्थमाह अगृह्यमाणबलतारतम्येति — इदं च ज्ञापकविशेषणम् । बलतारतम्यग्रहणे प्रबलेन दुर्बलस्य बाधान्न संशयस्यादित्युक्तविशेषणोपादानम् । ज्ञापकोपस्थापनमिति — ज्ञापकविषयकज्ञानप्रयोजको व्यापार इत्यर्थः । ज्ञापकरूपमुपस्थापनं कोटिद्वयोपस्थितिजनकमिति वा । सा च — विप्रतिपत्तिश्च । सजातीयेत्यादि — विरुद्धार्थोपस्थापकयोः परस्परसाजात्यैवासाध्यामेकस्यैवाभासरूपतया द्वयोराभासरूपतया

प्रत्यक्षतदाभासविप्रतिपत्तेस्संशयो यथा — चक्षुषा समुखं प्रतिभाति दर्पणतलम्; स्पर्शनेन त्वन्यथा; किमिदं समुखं निर्मुखं वेति । अनुमानतदाभासविप्रतिपत्तेर्यथा — धूमवत्त्वात्पर्वतोऽग्निमान्, निरालोकत्वादनग्निरित्यत्र साग्निरनग्निर्वेति । श्रुतिविप्रतिपत्तेर्यथा — भेदाभेदव्यपदेशाभ्यां जीवो ब्रह्मणो भिन्नोऽभिन्नो वेत्यादि । वादिविप्रतिपत्तेर्यथा — वैशेषिकौपनिषदवाक्यद्वयश्राविणो मध्यस्थबुद्धेः किमिन्द्रियाणि भौतिकानि आहङ्कारिकाणि वेति । एवं पामरादिवाक्यविप्रतिपत्तेरपि — नद्यास्तीरे फलानि^१ सन्ति न सन्ति वेत्यादि । प्रत्यक्षानुमानविप्रतिपत्तेर्यथा — चक्षुषा पीतशङ्खभ्रमे शङ्खत्वाच्च सितत्वानुमाने, किमयं शङ्खः पीतस्सितो वेति । प्रत्यक्षागमविप्रतिपत्तेर्यथा — किमहमर्थः स्थूलोऽणुर्वेति । अनुमानागमविप्रतिपत्तेर्यथा — किं परमाणूपादानं जगत् उत ब्रह्मोपादानमिति । एषा दिक् ।

च द्वित्र्यादिभेदाच्च बहुप्रकारेत्यर्थः । परस्परसजातीयैकमात्राभासरूपोपस्थापकद्वयरूपविप्रतिपत्त्या संशयमुदाहरति प्रत्यक्षतदाभासविप्रतिपत्तेरिति — प्रत्यक्षतदाभासरूपविरुद्धार्थोपस्थापकद्वयादित्यर्थः । एवमुत्तरत्राप्यर्थोऽवसेयः । वस्तुनि विकल्पासंभवेन एकस्याभासत्वनियममभिप्रेत्य तदाभासेत्युक्तम् । अत्रोभयोरपि प्रत्यक्षरूपतया साजात्यम् । अनुमानत्वेन साजात्ये उदाहरति अनुमानेति । श्रुतित्वेन साजात्ये उदाहरति — श्रुतिविप्रतिपत्तेरिति । श्रुतिवाक्यरूपविरुद्धार्थोपस्थापकद्वयादित्यर्थः । औपनिषदः — वेदान्ती । भौतिकानि — भूतोपादानकानि । आहङ्कारिकाणि — सात्त्विकाहङ्कारोपादानकानि । श्रुतिविप्रतिपत्तेस्तत्तद्वादिवाक्यविप्रतिपत्तेर्वा जीवः ब्रह्मणो भिन्नोऽभिन्नः भिन्नाभिन्नो वेति त्रिकोटिकस्य, प्रत्यक्षतदाभासविप्रतिपत्तेः पामरवाक्यविप्रतिपत्तेर्वा ‘इयं रज्जुस्सर्पो भूदलनमम्बुधारा वे’ त्यादि चतुष्कोटिकस्य, एवमधिककोटिकस्य, आभासद्वयविप्रतिपत्तिमूलकस्य पलालकूटे ‘अयं द्विरदौ गिरिशिखरं वे’ त्याकारकस्य च संशयस्य उदाहर्तव्यत्वाभिप्रायेणाह एषा दिगिति । नैयायिकोक्तं दूषयितुमाह —

^१ पञ्च फलानि

केचित्तु विप्रतिपत्तिशब्दमात्रे मुख्यन्तो वादिविप्रतिपत्तिमेव विप्रतिपत्तिं मन्यन्ते; तदयुक्तम्; विशेषाभावात् । यदुक्तं प्रज्ञापरित्राणे—

“साधारणाकृतेर्दृष्ट्यानेकाकारग्रहात्तथा ।

विपश्चितां विवादाच्च^१ त्रिधा संशय इष्यते” ॥

इति । तदपि नूनं परानुकारमात्रम्; द्वितीयतृतीययोरैकराश्यात् ग्राहकावान्तरभेद-स्यातिप्रसङ्गित्वात् अप्रयोजकत्वाच्च । अत्र चानेकाकारग्रहो नानाकारग्रहो विवक्षितः, न त्वनेकव्यावृत्तासाधारणाकारग्रहः, अनन्तरं ‘अर्थेष्वेवविशेषण द्वयाकारग्राहि धीद्वयम्’ । इत्यादिना तस्यैवोदाहरणात् ॥

केचित्त्विति । वादिविप्रतिपत्तिमिति — विरुद्धार्थप्रतिपादकतत्तद्वादिवाक्यद्वयमित्यर्थः । विशेषाभावादिति — उक्तवाक्यद्वय इव प्रत्यक्षतदाभासद्वयादावपि कोटिद्वयोप-स्थापनद्वारा संशयजनकत्वसंभवादिति भावः । ननु तर्हि प्रज्ञापरित्राणे कथं संशयलैविध्याभिधानमित्यतस्तत्तात्पर्यं वक्तुमाह यदुक्तमिति । परानुकारमात्र-मिति — नैयायिकोक्तशब्दसमानानुपूर्वीकशब्दोच्चारणमात्रमित्यर्थः । न तु तदभि-मतार्थेऽपि तात्पर्यमिति मात्रपदार्थः । अतस्तदुक्तं त्रैविध्यं नास्मदुक्तविरोधीति भावः । कथमित्यत्राह — द्वितीयतृतीययोरिति । ऐकराश्यादिति — अने-काकारग्रहादित्यनेन विरुद्धनानाधर्मग्राहकप्रत्यक्षादेरेव विवक्षिततया तस्यापि प्रागुक्तरीत्या विप्रतिपत्तिरूपत्वादिति भावः । ननु विप्रतिपत्तित्वेनैकराश्येऽपि ‘नानाकार-ग्रहादि’त्यनेन प्रत्यक्षरूपायाः ‘विपश्चितां विवादादि’त्यनेन शब्दरूपायाश्च विप्रतिपत्ते-र्विवक्षिततया न त्रैविध्यहानिः । अत आह — ग्राहकेति — कोटिद्वयग्राहकेत्यर्थः । अतिप्रसङ्गित्वादिति — अनुमानादिरूपग्राहकभेदमादाय चातुर्विध्यादिप्रसङ्गकत्वादित्यर्थः । ननु शब्देतरत्वेन शब्दत्वेन च संग्रहान्न चातुर्विध्यादिप्रसङ्गः । अत आह — अप्रयो-जकत्वादिति — तथा संग्रहे प्रयोजनविरहादित्यर्थः । नन्वत एव दोषादनेकाकारग्रहा-दित्यनेनानेकव्यावृत्तासाधारणग्रहो विवक्षितः । ततश्च साधारणधर्मज्ञानादसाधारणधर्म-ज्ञानाद्विप्रतिपत्तेश्च संशयोद्भव इति नैयायिकाभिमतमेव संशयत्रैविध्यमुक्तं भवतीत्यत आह — अत्र चेति । तस्यैवोदाहरणादिति । विरुद्धनानाधर्मप्रकारकज्ञानस्यैवोदाह-

च विमते:

असाधारणधर्मादपि केचित् संशयमाहुः; यथा — गन्धवत्त्वात् पृथिवी नित्या अनित्या वेत्यादि । अत्र गन्धवत्त्वस्य नित्यात्मादिव्यावृत्तेः कृतकत्वादि-वदनित्यत्वस्मारकत्वम्, अनित्यावादिव्यावृत्तेर्निरवयत्वादिवन्नित्यत्वस्मारकत्वमिति विरुद्धविशेषद्वयान्वितसमानधर्मस्येव तदुभयव्यावृत्तासाधारणधर्मस्यापि संशय-हेतुत्वमुपपन्नमिति; तदयुक्तम्; न हि तत्र गन्धवत्त्वादिना संशयोत्पत्तिः, अपि तु

रणादित्यर्थः । ‘अविशेषण द्वयाकारग्राहिधीद्वय’मित्यनेनागृहीतबलतारतम्यकोटिद्वय-विषयकज्ञानद्वयस्यैव कण्ठरवेणोक्ततया तत्तान्यथातात्पर्यकल्पनस्यासंभवादिति भावः । नैयायिकाभिमतं दूषयितुमुपन्यस्यति — असाधारणधर्मादपीति । कोटिद्वयव्यावृत्तधर्म-ज्ञानादपीत्यर्थः । यथेति — गन्धवत्त्वे नित्यात्मादिव्यावृत्तत्वस्य अनित्यजलादिव्या-वृत्तत्वस्य च ग्रहे सति पृथिव्यां तादृशगन्धवत्ताज्ञानात्पृथिवी नित्या न वेति संशयो जायत इति भावः । गन्धवत्त्वात्पृथिवी नित्या न वेति — अत्रापि ज्ञानाधीनज्ञान-विषयत्वरूपं ज्ञाप्यत्वं कोटिद्वयान्वयि पञ्चम्यर्थः । प्रथमज्ञाने च विषयितया प्रकृत्यर्थान्वयः । नित्यात्मादिव्यावृत्तेरिति — नित्यात्मादिनिष्ठाभावप्रतियोगित्वादित्यर्थः । कृतकत्वादिवदनित्यत्वस्मारकत्वमिति — यथा नित्यात्मादिनिष्ठाभावप्रतियोगि कृतक-त्वमनित्यत्वसमानाधिकरणमेवं गन्धवत्त्वमपि नित्यात्मादिनिष्ठाभावप्रतियोगितया अनि-त्यत्वसमानाधिकरणं स्यादित्येवंविधसंभावनाजनकत्वमित्यर्थः । एवमनित्येत्यादे-रप्यर्थोऽवसेयः । विरुद्धविशेषद्वयान्वितेति — परस्परविरुद्धधर्मद्वयसमानाधिकरणे-त्यर्थः । तदुभयव्यावृत्तेति — परस्परविरुद्धधर्मद्वयसमानाधिकरणाभावप्रतियोगीत्यर्थः । दूषयति — तदयुक्तमिति । गन्धवत्त्वादिनेति — गन्धवत्त्वादिज्ञानाधीनेत्यर्थः ।

व्यतिरेकनिरूपणविलम्बात्प्रागेव गन्धादिविशिष्टद्रव्यस्य नित्यानित्यसाधारणतया भासमानैर्द्रव्यत्वादिभिरेव । तत्रान्यतरशिरोनिर्णिनीषया विशेषधर्मचिन्तायां तु गन्धवत्त्वमुभयानन्वितत्वादुभयोरप्यनिष्कर्षकमित्येतावदेव चिन्त्यते । केवल-व्यतिरेकिभङ्गे चैतद्विशदं भविष्यति । गन्धवत्त्वात् पृथिवी नित्या वा अनित्या वेति तु यदा कश्चिद्व्यवहरेत्, तत्रापि गन्धवत्त्वं नित्यत्वानित्यत्वयोरन्यतरस्य

व्यतिरेकनिरूपणेति—अभावज्ञानेत्यर्थः । द्रव्यत्वादिभिरेवेति—अयं भावः—गन्धवत्त्वादौ नित्यत्वानित्यत्वसमानाधिकरणाभावप्रतियोगित्वज्ञानं द्रव्यत्वादिषु नित्यत्वानित्यत्वसमाना-धिकरण्यज्ञानाद्विलम्बितम् ; अभावाद्यधिकपदार्थज्ञानसापेक्षत्वात् । अतश्शीघ्रभाविना नित्य-त्वानित्यत्वसमानाधिकरणद्रव्यत्वादिमत्ताज्ञानेनैव संशयोत्पत्तिसंभवे नित्यत्वानित्यत्वसमाना-धिकरणाभावप्रतियोगिगन्धादिमत्त्वज्ञानस्य न संशयजनकत्वं स्वीकार्यम् ; गौरवात्प्रयोजना-भावाच्चेति । ननु तर्हि तत्र गन्धादिमत्त्वस्य नित्यानित्यव्यावृत्तिचिन्ता सर्वैरपि क्रियमाणा किमर्थेत्यत आह — तत्रेति । अन्यतरशिरोनिर्णिनीषया - अन्यतरकोटिनिर्णयेच्छया । विशेषधर्मचिन्तायां — एककोटिद्रव्याप्यधर्मजिज्ञासायाम् । उभयानन्वितत्वादिति — उभयोरपि व्याप्यत्वेनागृहीतत्वादित्यर्थः ; सामानाधिकरण्यग्रहस्यैवाभावादिति भावः । अनिष्कर्षकमिति — अनिर्णायकमित्यर्थः । तथा च गन्धवत्त्वादिकमेकस्या अपि कोटेर्न निर्णायकमिति निरूपयितुं तस्य कोटिद्वयव्यावृत्तत्वनिरूपणमिति भावः । ननु कथमु-भयोरप्यनिर्णायकत्वं, यत्रानित्यत्वाभावः तत्र गन्धाभावः, यथा आत्मादिषु ; एवं-विधव्यतिरेकव्याप्त्या गन्धवत्त्वस्यानित्यत्वकोटिनिर्णायकत्वसंभवादत्त आह केवलेति । एतत्—उभयोरप्यनिष्कर्षकत्वम् । विशदं भविष्यतीति—तत्र केवलव्यतिरेकव्याप्तेर्गम-कत्वाभावस्योपपादयिष्यमाणत्वादिति भावः । ननु गन्धवत्त्वात्पृथिवी नित्या न वेति व्यवहारो दृश्यते । कोटिद्वयान्वयि ज्ञानाधीनज्ञानविषयत्वं पञ्चम्यर्थः इति प्रागेवोक्तम् । तत्र गन्धवत्त्वज्ञानस्य संशयजनकत्वाभावे कथमेतदुपपद्येत्यतः परीक्षकाणां तथाविधव्यवहारो नास्त्येव, कस्यचित्तथाविधव्यवहारसत्त्वेऽपि च न क्षतिः, संशयस्य नित्यत्वानित्यत्वकोटि-कत्वविरहादित्याह — गन्धवत्त्वादिति । नित्यत्वानित्यत्वयोरन्यतरस्य प्रयोजकं न वेति — उक्तान्यतरस्यानुमापकं न वेत्यर्थः । अयं भावः — अत्र पञ्चम्या अनुमापकत्व-

प्रयोजकं न वा इत्येव संदेहः । सोऽपि धर्मत्वादिलक्षणसमानधर्मादेव । अथ नित्यव्यावृत्तधर्मवत्त्वादित्यत्वं, अनित्यव्यावृत्तधर्मवत्त्वाच्च नित्यत्वं पुरस्कृत्य नित्या अनित्या वेति संशेते ; तदापि हेतुभूतधर्मद्वयनिमित्तोऽयं संशयः । न ह्येक एवात्र हेतुः । गन्धस्तु तत्र सामान्यरूपस्तद्वत् ;

रूपं हेतुत्वं बोध्यते । नञ्वाकारावावर्त्य पृथिवी नित्येति वा न वेति वेत्येतत् गन्धवत्त्वाद्वा न वेति योजनया उक्तार्थलाभ इति । समानधर्मादेवेति — गन्धवत्त्वे उक्तानुमाप-कत्वतदभावसमानाधिकरणधर्मवत्ताज्ञानादेव ; न त्वसाधारणधर्मवत्ताज्ञानादित्यर्थः । ननु गन्धवत्त्वात् पृथिवी नित्या न वेत्यस्य यथाश्रुतार्थपरतयेवोपपत्तिसत्त्वान्नोक्तरीत्या क्लिष्टार्थाश्रयणं कार्यमित्यभिप्रायेण शङ्कते — अथेति । नित्यव्यावृत्तधर्मवत्त्वादिति । नित्यावृत्तिधर्मवत्त्वादित्यर्थः । अनित्यत्वमिति । पुरस्कृत्यत्यनेनान्वयः । अनुमायेति तदर्थः ; नित्यावृत्तिधर्मवत्त्वस्यानित्यत्वं प्रति अनित्यावृत्तिधर्मवत्त्वस्य च नित्यत्वं प्रति व्याप्यत्वादिति भावः । संशेते इति । तथा च नित्यावृत्तिधर्मरूपगन्धवत्त्वज्ञानस्य संशयहेतुत्वाक्षतेः गन्धवत्त्वात् पृथिवी नित्या न वेत्यस्य यथाश्रुतार्थ एवोपपन्न इति भावः । समाधत्ते तदापीति — तादृशसंशयदशायामपीत्यर्थः । हेतुभूतधर्मद्वयनिमित्त इति — अनुमानतदाभासविप्रतिपत्तिजन्य इत्यर्थः । न ह्येक एवात्र हेतुरिति — नित्यावृत्तिधर्मे अनित्यावृत्तिवत्त्वस्य अनित्यावृत्तिधर्मे नित्यावृत्तिवत्त्वस्य चासंभवादिति भावः । तथा च गन्धवत्त्वात् पृथिवी नित्या न वेत्यत्र पञ्चम्यर्थस्य कोटिद्वयेऽप्यन्वयाद्गन्धस्य नित्यावृत्तिधर्मरूपतया कथञ्चित् गन्धवत्त्वज्ञाप्यत्वस्यानित्यत्वत्वे संभवेऽपि नित्यत्वेऽसंभवान्न यथाश्रुतार्थसामञ्जस्यमित्युक्तं भवति । ननु कोटिद्वयेऽप्यन्वयाभावेऽप्यनित्यत्वमात्रेऽन्वयेनापि यथाश्रुतार्थसामञ्जस्यान्न क्लिष्टार्थकल्पना युक्तेत्यत आह — गन्धस्त्विति । सामान्य-रूप इति — नित्यावृत्तिवत्त्वेन वा अनित्यावृत्तिवत्त्वेन वा अनिश्रित इत्यर्थः । नित्यावृत्ति-त्वस्यानित्यवृत्तिवत्त्वं प्रति अनित्यावृत्तिवत्त्वस्य च नित्यवृत्तिवत्त्वं प्रति व्याप्यतया ताभ्यां नित्यवृत्तिवत्त्वानित्यवृत्तिवत्त्वयोरप्युपस्थापनात् आत्माद्यन्तर्भावेन नित्यावृत्तिवत्त्वस्य जला-द्यन्तर्भावेन अनित्यावृत्तिवत्त्वस्य च ज्ञानेऽपि तत्र तत्संशय एव स्यात् ; न तु निश्चय इति भावः । तद्वत् इति — नित्यत्वे अनित्यत्वे वा पक्षपातरहित

न तु हेतुः ॥

विप्रतिपत्तिमपि केचित् समानधर्म एवान्तर्भावयन्ति । यथा हि ऊर्ध्व-
त्वमुभयसाधारणम्, तथा वादिपरिगृहीतत्वादेरपि साधारणत्वात् विमतिविषयस्य
धर्मिणो वा सामान्यवेपस्य तदुभयसाधारण्यादिति । तथापि साधारणधर्मस्य
सहानुभूतस्थानुत्पत्त्युपपत्त्यस्मारकत्ववत् विप्रतिपत्तेरपि समानधर्मोपस्थिति-
निरपेक्षाया एव तदुपजीव्यतया तत्पूर्वभाविन्याः साक्षात्तत्त्वद्विशेषस्मारकत्वसिद्धेर्द्वैधमुक्त-
मस्माभिः ॥

इत्यर्थः । नित्यत्वव्याप्यत्वेनानित्यत्वव्याप्यत्वेन वा न गृहीत इति यावत् । न तु
हेतुरिति — नित्यत्वस्य अनित्यत्वस्य वा नोपस्थापक इत्यर्थः । तथा च गन्धवत्त्व-
ज्ञाप्यत्वस्यैकस्यामपि कोटावसंभवात् कथञ्चिदपि न यथाश्रुतार्थसामञ्जस्यमिति भावः ।
विप्रतिपत्तेरपि वादिवाक्यजन्यशाब्दबोधविषयत्वरूपसाधारणधर्मसंपादकतयैवोपयोगान्न
तस्यास्संशयजनकत्वम् । अतः साधारणधर्मवत्ताज्ञानजन्य एकविध एव संशय इति वदतां
मतं दूषयितुमनुवदति — विप्रतिपत्तिमपीति । वादिपरिगृहीतत्वादेरिति — वादि-
वाक्यजन्यस्वाभिमतसाध्यप्रकारकशाब्दबोधविषयत्वादेरित्यर्थः । आदिना शाब्दबोध-
विषयत्वादिमात्रस्य परिग्रहः । विमतिविषयस्य — विप्रतिपत्तिविषयस्य । सामान्य-
वेपस्य — सामान्यरूपस्य । इदञ्च वादिपरिगृहीतत्वादिविशेषणम् । तदुभयसाधा-
रण्यात् — कोटिद्वयसमानाधिकरणत्वात् । दूषयति तथापीति । समानधर्मोपस्थिति-
निरपेक्षाया इति — साधारणधर्मवत्ताज्ञानमन्तरेण विप्रतिपत्तिमात्रेणैव संशयोत्पत्तेरानु-
भाविकतया संशयद्वैविध्यं दुरपह्वमिति भावः । तदुपजीव्यतया — समानधर्मोपस्थिति-
जनकतया । साक्षात् तत्तद्विशेषस्मारकत्वसिद्धेरिति — साक्षादेव कोटिद्वयस्मारकत्व-
सत्त्वादित्यर्थः । तथा च सहानुभूतकोटिद्वयस्मृत्यर्थमेव समानधर्मोपस्थितेरपेक्षणीयतया
तस्याश्च स्मृतेर्विप्रतिपत्त्या साक्षादेव जननान्न मध्ये समानधर्मोपस्थितिसंपादनीयेति भावः ।
विप्रतिपत्त्या साक्षादेव संशयोत्पत्तिरिति तु नव्याः । द्वैधम् — द्वैविध्यम् ।

पुनश्चायं द्वित्रिचतुरादिशिरोधिकरणभेदाद् बहुविधः ; यथा — अयं स्थाणु-
र्वा पुरुषो वेति, घटः सत्योऽसत्यो निर्वचनीयोऽनिर्वचनीयो वेत्यादि । तथा
इमौ स्थाणू वा पुरुषौ वा, एते पदार्थाः सत्या असत्या निर्वचनीया अनिर्वच-
नीया वेत्यादि । यस्तु द्वयोरन्यतरस्य चोरत्वे सिद्धे अयं चोरः अयं वा
चोर इति संदेहः, स तु अयं चोरो न वा इत्येवंरूपसंशयद्वयसमाहारः । यद्वा
यश्चोरः, सः अयं अयं वा इत्येक एव । अथ वा चोरत्वमेतन्निष्ठं एतन्निष्ठं
वेति । यद्यप्युभयव्यतिरिक्तपुरुषचोरत्वाभावे तयोरन्यतरस्य चोरत्वे वा तात्पर्या-

द्वित्रिचतुरादिशिरोधिकरणभेदादिति — द्वित्रिचतुरादिकोटिभेदात्तादृशधर्मिभेदाच्चेत्यर्थः ।
असत्योऽनिर्वचनीयो वेति — असत्यत्वं - शशशृङ्गादिवत्तुच्छत्वम् । अनिर्वचनीयत्वम् —
सदसद्विलक्षणत्वम् । ननु एकोटिकसंशयोऽपि दृश्यते । यथा द्वयोरन्यतरस्य चोरत्वे
प्रमाणान्तरेण निर्णीते अयमर्थं वा चोर इति ; तत्र प्रागुक्तसंशयलक्षणविरहादव्याप्तिः ;
विभागे सङ्ग्रहाभावान्न्यूनता चेत्याशङ्क्याह — यस्त्विति । सिद्ध इति — स्थानविशेष-
स्थित्यादिलिङ्गकानुमानासवाक्यादिनेति भावः । समाधत्ते — सत्विति । संशयद्वय-
समाहार इति — तथा च द्वयोरपि संशययोः कोटिद्वयविषयकतया नोक्तदोषावकाश
इति भावः । सोऽयमयं वेति — तत्र इदंत्वयोरेव कोटित्वम् । चोरत्वावच्छिन्नस्य तु
धर्मित्वमेवेति भावः । न च कचिदपि चोरत्वनिर्णयाभावात्कथं तस्य धर्मितावच्छेदकत्व-
मिति वाच्यम् ; द्वयोरन्यतरश्चोर इति निर्णयसत्त्वात् । उक्तज्ञानस्य निर्णयरूपत्वान्न
संशयत्वसंभव इत्याशङ्कते — यद्यपीति । उभयव्यतिरिक्तचोरत्वाभाव इति —
आभ्यामुभाभ्यां विना नान्योऽचूचुरत् ; नात्र संदेह इति हि तत्र व्यवहरन्तीति भावः ।
तयोरन्यतरस्य चोरत्वे वेति — अनयोरन्यतरश्चोर इत्यत्र न संदेह इत्यपि व्यवहारादिति
भावः । उक्तविषये निर्णयरूपत्वेऽपि विषयान्तरे संशयरूपत्वमप्यस्तीति समाधत्ते —

निर्णयगर्भत्वम्, तथापि उभयोरन्यतरविशेषनिर्णयाभावात् तस्मिन्नेवं संशय एव । न चैकस्यापि ज्ञानस्य संशयनिर्णयात्मताविरोधः, सर्वस्मिन्नपि संशये धर्म्यंशादौ निर्णयस्य दुस्त्यजत्वात् ॥

पुनर्द्विविधोऽयम् — अन्यतरकोटिपरिशेषयोग्यत्वतदयोग्यत्वभेदात् । पूर्वं यथा — स्थाण्वात्मके वस्तुनि स्थाणुः पुरुषो वेति । उत्तरस्तु पलालकूटे द्विरदो गिरिशिखरं वेति । तत्र निरूपकाणां प्रायशः पूर्वं एव भवति । तेनैव च प्रवृत्तस्य पाक्षिकोऽर्थलाभः । यदा निरीहस्यैव कदाचित् द्वितीयेन संशयेन विपर्ययेण च प्रवृत्तस्य दैवात् तदातनार्थसंनिपातेनाभिमतलाभ इति ॥

तथापीति । अन्यतरविशेषनिर्णयाभावादिति — चारत्वमेतन्निष्ठमिति निर्णयाभावादित्यर्थः । तस्मिन्नेवं संशय एवेति — चोरत्वमेतन्निष्ठमेतन्निष्ठं वेति संशय एवेत्यर्थः । एवकारस्तदंशे निर्णयं व्यवच्छिनत्ति । संशयनिर्णयात्मकताविरोध इति — इदञ्च अनयोरन्यतरश्चोर एव; परन्तु चोरत्वमेतन्निष्ठमेतन्निष्ठं वेत्येवंविधज्ञानाभिप्रायम् । समाधत्ते सर्वस्मिन्नपीति । धर्म्यंशादाविति — धर्मितावच्छेदकांशादावित्यर्थः । आदिना कोटितावच्छेदकांशपरिग्रहः । अन्यतरकोटिपरिशेषयोग्यत्वेति — इदञ्च धर्मिनिष्ठैककोटिकत्वरूपम् । एतदभावः धर्म्यवृत्तिसर्वकोटिकत्वं तदयोग्यत्वम् । पूर्वं एवेति — धर्मिनिष्ठैककोटिक एवेत्यर्थः । तेनैव च प्रवृत्तस्य पाक्षिकोऽर्थलाभ इति — यथा (दा) धर्मिनिष्ठकोट्युद्देशेन प्रवृत्तिः तदा अभिमतलाभः, यदा धर्म्यवृत्तिकोट्युद्देशेन तदा नेत्येवं कदाचित्कोऽभिमतलाभ इत्यर्थः । एवकारेणोत्तरसंशयेन प्रवृत्तस्य कदाचिदप्यभिमतलाभो नास्तीति बोध्यते । ननु कथमर्थलाभाभावः । तत्रापि दैवादर्थलाभस्य दृश्यमानत्वादत आह यद्वेति । निरीहस्येति — गजादीच्छाशून्यस्येत्यर्थः । अथवा गजाद्यर्थप्रवृत्तिशून्यस्येति । विपर्ययेण चेति — दृष्टान्तार्थम् । शुक्तौ रजतभ्रान्त्या प्रवृत्तस्य दैवात्तत्रत्यस्य पूर्वमदृष्टस्य रजतस्य लाभवत् द्वितीयसंशयेन प्रवृत्तस्यापि तत्र दैवात्तदा समागतगजलाभः; नैतावता संशयमूलकप्रवृत्तेस्तत्र प्रयोजकत्वमिति भावः । यथाकथञ्चित् द्वितीयसंशयेन प्रवृत्तस्य कदाचिदलाभोऽप्यस्तीति लाभालाभयोः

पुनरपि इमौ संशयविपर्ययौ सामान्यधर्मिणो विशेषाणां चानुभूयमानत्व-
स्मर्यमाणत्वादिभेदाद् बहुविधावूहनीयाविति ॥

किंसंज्ञकोऽयं वृक्ष इत्येवमादिरूपोऽनध्यवसायो नामान्यो ज्ञानविशेष इति केचित्; तदसारम्; तस्य संज्ञादिविशेषमन्देहसमनन्तरभावितद्विशेषबुभुत्सात्म-
कत्वात् । अथवा अवच्छेदकादर्शनादनवच्छिन्नकोटिविशेषः संशय एव ॥

पाक्षिकत्वसत्त्वात् यद्वेत्युक्तम् । अनुभूयमानत्वेति — प्रत्यक्षविषयत्वेत्यर्थः । स्मर्य-
माणत्वादीत्यादिना अनुभूयमानत्वादिभेदो गृह्यते । दूरस्थे दृश्यमाने वह्नौ
अयमनुष्ण इति विपर्ययः, अयमुष्णो न वेति संशयश्चानुभूयमानधर्मिकः । पर्वतो
वह्निमानित्यनुमित्यनन्तरं तस्मिन्नुक्तसंशयविपर्ययावनुभूयमानधर्मिकौ । नद्यास्तीरे फलानि
सन्तीति श्रुतेषु फलेषु सुलभत्वादिसंशयविपर्ययौ श्रुतधर्मिकौ । स वह्निरिदानीमस्ति
न वेत्यादि संशयादिकं स्मर्यमाणधर्मिकम् । उक्तास्संशयविपर्ययाः स्मर्यमाणविशेषकाः ।
पीतश्शङ्ख इति विपर्ययोऽनुभूयमानविशेषकः । पीतद्रव्येऽनुभूयमानस्यैव शङ्खे आरोपात् ।
शङ्खत्वलिङ्गकानुमानेन विप्रतिपत्त्या जनितः शङ्खः पीतश्चेतो वेति संशयोऽनुभूयमान-
विशेषक इत्याद्युक्तम् । अन्य इति । संशयनिश्चयाभ्यामतिरिक्त इत्यर्थः । अथवा
दर्शितानेककोटिकसंशयादध्यवसायशब्दितनिश्चयाच्च विलक्षण इत्यर्थः । एककोटिक-
संशयरूप इति भावः । बुभुत्सात्मकत्वादिति — किंशब्दस्य जिज्ञासाबोधकतया
तदुल्लिखितस्य तस्येच्छाविशेषरूपत्वमेव; न तु ज्ञानरूपत्वमिति भावः । ज्ञानरूपत्वा-
भ्युपगमेऽप्याह अथवेति । अवच्छेदकादर्शनादिति — परिच्छेदकादर्शनादित्यर्थः ।
सङ्कोचकादर्शनादिति यावत् । अनवच्छिन्नकोटिविशेष इति । असंकुचितकोटिविशेष
इत्यर्थः । तदानीमुपस्थितसर्वसंज्ञाविशेषकोटिक इति यावत् । एवकारश्चासंशयात्मकत्व-
मेककोटिकसंशयरूपत्वं च व्यवच्छिनत्ति । तथाचोक्तलक्षणसंशयनिश्चयाभ्यां विलक्षणं
ज्ञानमेव शशशृङ्गायमाणमिति भावः । ननु कथं तादृशज्ञानाभावः, ऊहस्य तादृशस्य
सद्भावादित्यतः ऊहशब्देन 'किं प्रायः पुरुषेणानेन भवितव्यमि'त्याकारकं ज्ञानं विवक्षितमुत

उहस्तु प्रायः पुरुषेणानेन भवितव्यमित्यादिरूप एककोटिसहचरितभूयो-
धर्मदर्शनादनुत्कटान्यकोटिकः स एव । प्रायः पुरुषेण भवितव्यमिति पुरुष
एवेत्यभिप्रायश्चेत् यथोचितं प्रत्यक्षानुमानादिष्वनुप्रवेशः । तर्करूपमूहं तु अनुमाने
वक्ष्यामः ॥

त्रिविधं प्रमाणम् — प्रत्यक्षानुमानशब्दभेदात् । भगवता मनुनाप्युक्तम् —

‘प्रत्यक्षमनुमानं च शास्त्रं च विविधागमम् ।

त्रयं सुविदितं कार्यं धर्मसिद्धिमभीप्सता ॥’ इति ।

आह च भगवान् शौनकः —

‘दृष्टानुमानागमजं ध्यानस्यालम्बनं त्रिधा ॥’ इति ।

तर्करूपं वा ? आद्ये प्राय इत्येतद्वाहुल्यार्थकमवधारणार्थकं वा इत्येवं विकल्प्याद्ये उक्तैकतर-
कोटिकसंशयरूपतया प्रागुक्तलक्षणसंशयान्न वैलक्षण्यमित्याह उहस्त्विति । अनुत्कटान्य-
कोटिरिति — औत्कट्यरूपविषयताविशेषशून्यकोट्यन्तरविषयक इत्यर्थः । स एवेति —
प्रागुक्तलक्षणसंशय एवेत्यर्थः । एवकारेण संशयान्यत्वमेककोटिकसंशयरूपत्वं च
व्यवच्छिद्यते । आद्यद्वितीये प्रत्यक्षादिनिश्चयरूपतया न संशयनिश्चयाभ्यां वैलक्षण्य
मित्याह प्राय इति । द्वितीये तर्कस्याहार्थनिश्चयरूपतया नैककोटिकसंशयरूपत्वं न वा
संशयनिश्चयविलक्षणत्वमित्यनुमाननिरूपणे स्पष्टीभविष्यतीत्यभिप्रायेणाह तर्करूपमूह-
मिति । ‘अविज्ञाततत्त्वेऽर्थे कारणोपपत्तिस्तत्त्वज्ञानार्थमूहस्तर्कः’ इति न्यायसूत्रे^१ तर्कस्या-
प्यूहशब्देन व्यवहारात्तदभिधानम् ॥

एवं प्रमाणलक्षणप्रसक्तानुप्रसक्ते परिसमाप्य प्रमाणं विभजते त्रिविधमिति ।
मतान्तरसिद्धन्यूनाधिकविभागव्यवच्छेदायोक्तविभागस्य प्रमाणसिद्धत्वं दर्शयति भगव-
तेति । विविधागमं — श्रुतिस्मृतीतिहासपुराणाद्यनेकविधागमात्मकं । दृष्टेत्यादि —
दृष्टं — प्रत्यक्षं ; ध्यानस्यालम्बनं — स्मृतिसंस्तितिरूपध्यानकारणीभूतमनुभवात्मकं ज्ञानम् ।

भाष्यकारेण च प्रत्यक्षादित्रयं स्वशब्देनोपादाय ‘प्रमाणसंख्याविवादेऽपि
सर्वाभ्युपगतप्रमाणानामयमेव विषय इति न केनापि प्रमाणेन निर्विशेषवस्तु
सिद्धिः’ इत्यन्येषामनादरः कृतः । सर्वाभ्युपगतप्रमाणानामिति च पराभ्युपगम-
मात्रं द्योतयति, तत्र प्रतिवादिनः षट्प्रमाणाभ्युपगमात् । प्रत्यक्षानुमाना
गमानामेव च मिथो भेदो वेदार्थसंग्रहे विशदमुपपादितः ॥

यत्तु ‘मत्तः स्मृतिर्ज्ञानमपोहनं च’ इत्यत्र भाष्यम् — ‘ज्ञानमिन्द्रिय-
लिङ्गागमयोगजो वस्तुनिश्चयः’ इति, तत्रापि योगजस्य प्रत्यक्षस्य प्राधान्यात्
पृथग्व्यपदेशः । अन्तर्भावं च वक्ष्यामः । उक्तं च श्रीविष्णुचित्तैः प्रमेयसंग्रहे —
‘प्रमाणसंख्याविवादेऽपीत्यत्र त्रिप्रमाणत्वं भाष्योक्तम्’ इति । भाष्ये च
केषुचित् कोशेषु यथार्थख्यातिसमर्थनदशायाम् — ‘अथवा किमनेन बहुनोप-
पादनप्रकारेण । प्रत्यक्षानुमानागमाख्यं च निरस्तनिखिलदोषगन्धमनवधिका-
तिशयासंख्येयकल्याणगुणगणं सर्वज्ञं सत्यसंकल्पं परं ब्रह्माभ्युपगच्छतां किं न
सेत्स्यति ? किं नोपपद्यते ? —’ इत्यादिः पाठो दृश्यते ॥

यद्यपि स्मृतिरपि यथार्था प्रमाणमिति वक्ष्यते, तथापि प्रत्यक्षादिमूलतया
तदविशेषात् पृथगनुक्तिः । उक्तं च तत्परत्वाकरे — ‘प्रत्यक्षादिमूलानां स्मृतीनां
स्वस्वमूलेऽन्तर्भावविवक्षया प्रमाणात्रित्वाविरोधः । चतुष्टे च वैदिकानुवादो दर्शितः’
इति । स चायमनुवादः पूर्वोपात्तः — ‘स्मृतिः प्रत्यक्षमैतिह्यमनुमानं चतुष्टयम्’
इति प्रत्यक्षाद्यविशेषेण वेदानुवादाच्च — इति । प्रज्ञापरित्राणे तु स्मृतिप्रामा-
ण्यानभ्युपगमेऽपि ज्ञानस्य तावत् करणभेदाच्चातुर्विध्यमेवोक्तम् —

उक्तविभागस्य साम्प्रदायिकत्वमाह श्रीभाष्यकारेण चेति । इन्द्रियलिङ्गागमयोगजो
वस्तुनिश्चय इति — तथा चानुभवस्य चातुर्विध्याभिधानात्कथं त्रिविधत्वमिति भावः ।
समाधत्ते तत्रापीति । तदविशेषादिति — प्रत्यक्षाद्यसिद्धार्थसाधकत्वाभावादित्यर्थः ।
पृथगनुक्तिरिति — प्रत्यक्षादिष्वन्तर्भावविवक्षयेति भावः । ऐतिह्यम् — आगमः । स्मृति-
प्रामाण्यानभ्युपगमेऽपीति — यथार्थस्मृतेरपि प्रमाणपदवाच्यत्वानभ्युपगमेऽपीत्यर्थः ।

‘तत्रेन्द्रियार्थसंबन्धो लिङ्गशब्दग्रहौ तथा ।
संस्कारोन्मेष इत्येते संविदां जन्महेतवः ॥’ इति ।

यत्तु तत्रैव —

‘स्वयंसिद्धिस्तथा दिव्यं प्रत्यक्षमनुमागमः ।
पञ्च सन्ति प्रमाणानि जैमिनिव्यासयोर्हृदि ॥’

इत्यादिना स्वयंसिद्धिदिव्ययोः पृथङ् निरूपणं कृतम्, तत् प्रत्यक्षावान्तर-
वैरूप्यबोधनाभिप्रायम् । यथोक्तं श्रीविष्णुचित्तः — ‘भगवत्प्रसादलब्धयोगि-
प्रत्यक्षं दिव्यम्’ इति ।

॥ प्रत्यक्षलक्षणम् ॥

तत्र साक्षात्कारिप्रमा प्रत्यक्षम् । साक्षात्त्वं च जातिरूपा उपाधिरूपो वा
कश्चित् ज्ञानस्वभावविशेषः स्वात्मसाक्षिकः ॥

ज्ञातकारणजज्ञानस्मृतित्वरहिता मतिः ।

अपरोक्षेति निष्कर्षे नाव्याप्त्यादिप्रसज्जनम् ॥

वैरूप्यबोधनाभिप्रायमिति — वैलक्षण्यबोधाभिप्रायमित्यर्थः । प्रथमोद्दिष्टं प्रत्यक्षं लक्षयति
साक्षादिति — अनुमित्यादिवारणाय साक्षात्कारीति । अमवारणाय प्रमेति ।
साक्षात्त्वं चेति — साक्षात्कारित्वं चेत्यर्थः । जातिरूप इति — अतिरिक्तजात्यनभ्युप-
गमेऽपि संस्थानविशेषरूपजातेः सिद्धान्तेऽभ्युपगमादिति भावः । स्वात्मसाक्षिक इति —
घटं साक्षात्करोमि पटं साक्षात्करोमीत्यादिप्रतीतिसिद्ध इत्यर्थः । उपाधिरूपत्वपक्षे
तन्निर्वक्ति ज्ञानकारणेति — ज्ञायमानत्वावच्छिन्नकरणतानिरूपकत्वशून्यत्वे सति स्मृतित्व-
शून्यत्वे सति ज्ञानत्वं प्रत्यक्षत्वम् । अनुमितिशब्दयोर्वारणाय प्रथमसत्यन्तम्
स्मृतिवारणाय द्वितीयम् । इन्द्रियस्यापि ज्ञातत्वसंभवात्तत्करणकेऽस्मदादिप्रत्यक्षेऽव्याप्ति-
वारणाय ज्ञायमानत्वावच्छिन्नत्वं करणताविशेषणम् । इदं च ज्ञायमानलिङ्गशब्दयो-
रणत्वाभिप्रायेण । लिङ्गशब्दज्ञानयोरेव करणत्वे तु ज्ञानकरणकत्वशून्यत्वमेव प्रथम-
सत्यन्तं ग्राह्यम् । नाव्याप्त्यादिप्रसज्जनमिति — इन्द्रियार्थसन्निकर्षजन्यज्ञानत्वरूपस्य

प्रमेयमंग्रहे त्वेवमुक्तम् — ‘साक्षादनुभवः प्रत्यक्षम् । साक्षात्त्वं जातिः’ —
इत्यादि । तत्त्वरत्नाकरेऽप्येवमुक्तम् —

‘अपरोक्षप्रमाऽध्यक्षमापरोक्ष्यं च संविदः ।

व्यवहार्यार्थसंबन्धिज्ञानजत्वविवर्जनम् ॥’ इति ॥

पारोक्ष्यं चैवमुक्तम् — ‘पारोक्ष्यं व्यवहार्यानन्तर्गतवस्तुवेदनापेक्षा ।
तदनन्तर्गतलिङ्गाद्यपेक्षा पारोक्ष्यमनुमादौ’ इति । वरदविष्णुर्मिश्रैर्मनयाथात्म्य-

नेयायिकोक्तप्रत्यक्षलक्षणस्य यथेश्वरप्रत्यक्षादावव्याप्तिः, यथा च वैशद्यापरपर्यायलौकिक-
विषयतानिरूपकत्वस्य प्रत्यक्षलक्षणत्वे मण्डूकवसाञ्जनजन्यवंशोरगत्वभ्रमे, ‘वृक्षे वृक्षे च
पश्यामि चीरकृष्णाजिनाम्बर’मित्युक्तमारीचादिस्मृतिविशेषे चातिव्याप्तिस्तथेह नेति भावः ।
ज्ञाननिष्ठकरणतानिरूपकत्वशून्यत्वानिवेशान्न सुरभिश्चन्दनखण्ड इति प्रत्यक्षेऽव्याप्तिः;
तत्र सौरभज्ञानस्य व्यापारवत्कारणत्वरूपकरणत्वविरहात् । साक्षात्त्वस्य जातित्वे पूर्व-
ग्रन्थसम्मतिमाह — प्रमेयेति । उपाधित्वे तामाह तच्चेति । व्यवहार्येत्यादि —
प्रवृत्तिविषयभूतार्थसम्बन्धिज्ञानजन्यत्वाभाव इत्यर्थः । अनुमितिशब्दज्ञाने हि प्रवृत्ति-
विषयीभूतवह्न्यादिसम्बन्धिधूमतादृशशब्दज्ञानाभ्यां जन्येते । प्रत्यक्षन्तु न तथेति भावः ।
यद्यपि सुरभिश्चन्दनखण्ड इति प्रत्यक्षेऽव्याप्तिः; चन्दनखण्डसम्बन्धिसौरभज्ञानजन्यत्वात्,
तथापि स्वविषयनिरूपितव्याप्तिशक्त्यन्यतरज्ञानजन्यत्वस्य विवक्षितत्वान्न दोषः । यद्यपीदं
स्मृतावतिप्रसक्तम्, तथापि संविच्छब्देन स्मृतिभिन्नज्ञानस्य विवक्षितत्वान्न दोषः ।
प्रसज्जातत्रत्यं पारोक्ष्यनिर्वचनमपि दर्शयति पारोक्ष्यमिति । व्यवहार्यानन्तर्गतवस्तु-
वेदनापेक्षेति — स्वाविषयीभूतवस्तुविषयकज्ञानजन्यत्वमित्यर्थः । सुरभिश्चन्दनखण्ड इति
प्रत्यक्षे सौरभज्ञानजन्यत्वसत्त्वेऽपि सौरभस्य स्वाविषयत्वाभावाच्चातिप्रसङ्गः । अनुमित्यादौ
पारोक्ष्यमुपपादयति तदनन्तर्गतेति — स्वाविषयीभूतलिङ्गादिजन्यतया अनुमित्यादेः
पारोक्ष्यमित्यर्थः । लिङ्गादीत्यादिना शब्दपरिग्रहः । अनुमादावित्यादिना शब्दबोध-
परिग्रहः । अनुभवनिष्ठपारोक्ष्यस्यैवेह निर्वक्तुमिष्टतया स्मृत्यसङ्ग्रहो न दोषायेति

निर्णये त्वेवमुक्तम् — ‘अपरोक्षप्रमा प्रत्यक्षम् । प्रमाया आपरोक्ष्यं नाम विशदावभासत्वमिति ब्रूमः । किमिदं वैशद्यं नाम ? असाधारणाकारेण वस्त्ववभासकत्वम् —’ इत्यादि ॥

साक्षात्त्वं द्विधा — नित्यं चानित्यं च । ईश्वरनित्यज्ञानादिनिष्ठं नित्यम् । अस्मदादिज्ञाननिष्ठं त्वनित्यम् । अस्मदादिप्रत्यक्षं द्विधा — योगिप्रत्यक्ष-मयोगिप्रत्यक्षं चेति । तत्र योगिप्रत्यक्षं प्रकृष्टादृष्टविशेषजम् । तत् युक्ता-वस्थायां मनोमात्रजन्यम् । वियुक्तावस्थायां तु बाह्येन्द्रियजन्यमपि । तच्च बुभुत्सादिप्रतिनियतमागमैकसिद्धं च । भावनाबलजमात्रं जगत्कर्तरि प्रत्यक्षं

बोद्धव्यम् । असाधारणाकारेणेति — स्वासाधारणस्वभावविशेषणेत्यर्थः । प्रयोज्यत्वं तृतीयार्थः । न तु दोषेणेति भावः । वस्त्ववभासकत्वमिति — वस्तुनिष्ठलौकिकविषयता-निरूपकत्वमित्यर्थः । अनेन स्वाभाविकविषयतानिरूपकत्वं दोषानधीनलौकिकविषयता-निरूपकत्वपर्यवसितं वैशद्यमित्युक्तं भवति । ‘वृक्षे वृक्षे’ इत्याद्युक्तस्मृतिविशेषेऽपि लौकिक-विषयताया उक्तदरागाधीनकामिनीचिन्तनन्यायेन भयाधीनचिन्तानैरन्तर्यरूपदोषाधीन-तया नातिप्रसङ्गः । मण्डूकवसाञ्जनादिदोषविशेषाधीनवंशोरगत्वभ्रमे च नातिप्रसङ्गः । संस्कारानधीनलौकिकविषयतानिरूपकत्वं तदिति तु निष्कर्षः । तेन क्वचिद्विशदस्मृते-र्यथार्थत्वसंभवात्तत्र लौकिकविषयताया दोषानधीनत्वेऽपि न क्षतिः । साक्षात्त्वं द्विधा नित्यमनित्यञ्चेति — धर्मभूतज्ञानस्य नित्यतया तस्य नित्यत्वानित्यत्वाभ्यां विभागा-संभवात्तद्वर्मभूतं साक्षात्त्वमेव तथा विभक्तम् । अस्मदादिज्ञाननिष्ठत्वनित्य-मिति — सुषुप्त्याद्यवस्थास्वभावादिति भावः । युक्तावस्थायां — योगदशायां । मनोमात्रजन्यमिति — तदानीं बाह्येन्द्रियव्यापारविरहादिति भावः । वियुक्तावस्थाया-मिति — योगाभावदशायामित्यर्थः । बुभुत्सादिप्रतिनियतविषयमिति — यद्विषये साक्षात्कारेच्छाप्रणिधानादिकं तन्मात्रविषयमित्यर्थः । आगमैकसिद्धमिति — उक्त-प्रत्यक्षसद्भावे तत्प्रकारकभेदे चागम एव प्रमाणम्, न तु नैयायिकाद्युक्तमनुमानमपीत्यर्थः । आगमाश्च योगोपनिषद्योगयाज्ञवल्क्यादयः । ननु शास्त्रयोन्यधिकरणे योगजप्रत्यक्षस्य प्रतिक्षिप्ततया कथं तदभ्युपगम इत्यत आह भावनेति — कामुकपरिभाषितकामिनी-

प्रतिक्षिप्तं शास्त्रयोन्यधिकरणे, अन्यत्र भाष्यकारैरेव साक्षाद्योगिप्रत्यक्षस्य कण्ठोक्तेः, तस्य संभवतोऽप्यागमिकेश्वरज्ञानमूलस्यागमानुवादत्वापादनाशक्त्या तत्रौदासीन्यात्, धर्मादयः कस्य चिदिन्द्रियग्राह्याः, प्रमेयत्वात्, घटवत्,

साक्षात्कारन्यायेनेश्वरविषये भावनाप्रकर्षजन्यस्साक्षात्कारः प्रतिक्षिप्तः; न तु प्रकृष्टादृष्ट-विशेषजन्य इत्यर्थः । कुत इत्यत आह अन्यत्रेति — गीताभाष्य इत्यर्थः । योगिप्रत्य-क्षस्य कण्ठोक्तेरिति — मत्तस्मृतिर्ज्ञानमित्यत्र ज्ञानम् — ‘इन्द्रियलिङ्गागमयोगजो वस्तु-निश्चयः, इत्यनेनेति भावः । ननु तर्हि योगजप्रत्यक्षस्यैवेश्वरे प्रामाण्यं स्यात् । आगमस्तु योगजप्रत्यक्षसिद्धार्थानुवाद एव स्यात् । ततश्च योगजप्रत्यक्षमेवेश्वरसद्भावे प्रमाणतया परिग्राह्यं स्यात्; न तु शास्त्रमत आह तस्येति । आगमिकेश्वरज्ञानमूलस्येत्यादि — प्रथममीश्वरज्ञाने सत्येवानन्तरं तदुपासनेन परभक्तिशब्दितेन जनितभगवत्प्रसादरूप-प्रकृष्टादृष्टविशेषात्परज्ञानशब्दितस्तत्साक्षात्कारो जायेत । प्राथमिकमीश्वरज्ञानं च नागमादृष्टे संभवति । अतो योगजप्रत्यक्षमीश्वरविषयेऽपि संभवदपि नागमस्यानुवादता-मापादयितुं शक्नुयात् । अतश्चेश्वरे आगम एवानधिगतार्थग्राहकतया प्रमाणम्; न तु योगजप्रत्यक्षमिति तत्रोपेक्षा तु कृतेत्यर्थः । तथा चान्यत्र स्पष्टतयाभिधानादौदासीन्य-स्यान्यहेतुतया च जगत्कर्तरि भावनाबलजमेव प्रत्यक्षं प्रतिक्षिप्तम्; न तु प्रकृष्टादृष्ट-विशेषजन्यमिति समुदायार्थः । अथवा औदासीन्यं पूर्वपक्षोपपादकतयोपन्यासाभावः । तथा चायमर्थः । ननु भाष्यकारैः योगजप्रत्यक्षाभ्युपगमे शास्त्रयोन्यधिकरणपूर्वपक्षोप-पादकतया कुतस्तदुपन्यासो न कृत इत्याशङ्क्यामुक्तरित्या तस्य तदुपपादकत्वासंभवा-त्तत्रौदासीन्यमिति । अनुमानेनैव योगजप्रत्यक्षसिद्धिरिति नैयायिकोक्तं दूषयति धर्मादय इति । कस्य चिदिति इदं चास्मदादिप्रत्यक्षागोचरतया बाधशङ्कापरिहाराय । अत्र हि जन्यप्रत्यक्षविषयत्वमात्रस्यैव साध्यतया वह्निमत्ताज्ञाने महानसीयवह्न्यभाववत्तानिश्चयस्यैव जन्यप्रत्यक्षविषयत्ववत्ताज्ञानेऽस्मदादीन्द्रियजन्यप्रत्यक्षविषयत्वाभाववत्ताज्ञानस्याविरोधितया अस्मदादीन्द्रियजन्यप्रत्यक्षविषयत्वाभावसत्त्वमात्रेण न बाधप्रसक्तिः । अनेन चानुमानेन धर्मादिविषयकप्रत्यक्षसिद्धावस्मदादिप्रत्यक्षस्य धर्मादिविषयकत्वासंभवाद्योगिप्रत्यक्षसिद्धि-

मीमांसकानामप्रत्यक्षत्वाद्वा, अस्मत्सुखादिवदित्याद्यनुमानानां विपक्षे बाधक-
विरहादिभिराभासत्वात्, आगमबाधप्रसङ्गस्यैव पुरस्कारे त्वागमेनैव चरितार्थत्वात्;
अन्यथा धर्मादयः कस्य चिच्चक्षुर्ग्राह्या इति वदतो बौद्धस्य किं प्रतिवक्ष्यसि ।

रित्यभिप्रायः । ईश्वरप्रत्यक्षमादायान्यथासिद्धिवारणाय जन्येति । प्रमेयत्वादिति —
धर्मादय इत्यनेनातीन्द्रियाणां सर्वेषामेव पक्षीकारात्कापि न व्यभिचारप्रसक्तिरिति भावः ।
योगजप्रत्यक्षं मानसरूपमेवेति सिद्धये मानसप्रत्यक्षविषयत्वमेव साधनीयमित्यभिप्रायेणाह
मीमांसकानामिति — विचारं कुर्वतामित्यर्थः । स्वाश्रयातिरिक्तानामिति यावत् —
तत्पुरुषीयमुखे हि तदतिरिक्तानामेव प्रत्यक्षविषयत्वानिश्चयात्तत्संशयेन विचारप्रवृत्तिसंभवः ।
षष्ठ्यर्थे आधेयत्वं प्रत्यक्षाविषयत्वरूपाप्रत्यक्षत्वपदार्थैकदेशे प्रत्यक्षेऽन्वेति । तथा च
स्वाश्रयातिरिक्तवृत्तिप्रत्यक्षाविषयत्वादित्युक्तं भवति । अत्र मानसप्रत्यक्षविषयत्वरूप-
साध्याभाववति घटादौ व्यभिचारात्प्रमेयत्वादिरूपहेतूपेक्षा । सुखादीनां प्रत्यक्षविषयतया
दृष्टान्ते साधनवैकल्यवारणाय प्रत्यक्षे स्वाश्रयातिरिक्तवृत्तिनिवेशः । स्वं यत्र हेतुरुप-
पदनीयः तत् । दृष्टान्ते साधनवैकल्यवारकस्यापि व्यभिचारवारकस्यैव व्याप्तिग्रहौपयिकतया
हेतुकोटौ साफल्यं सर्वसंप्रतिपन्नम् । मीमांसकानामप्रत्यक्षत्वादित्यस्य मीमांसकानां प्रत्यक्ष-
व्यतिरिक्तप्रमाणगम्यत्वादित्यर्थवर्णने, तत्र प्रत्यक्षविषयत्वमात्रस्य साध्यत्वे ज्ञानविषयत्व-
रूपगम्यत्वमात्रस्य विषयतामात्रस्यैव वा हेतुत्वोपपत्त्या शेषवैयर्थ्यम् । मानसप्रत्यक्ष-
विषयत्वस्य साध्यत्वे पूर्वतो वह्निमानित्यनुमानगम्ये वह्न्यादौ व्यभिचारः । अतो यथोक्त
एवार्थः । इत्यादीत्यादिना धर्मादयः जन्यप्रत्यक्षविषयाः अभिधेयत्वात्, मानसप्रत्यक्ष-
विषयत्वातिरिक्तपक्षधर्मातिरिक्तधर्मवन्तः प्रमेयत्वाद्धटवदित्यादीनां सङ्ग्रहः । **विपक्षे**
बाधकविरहादिभिरित्यादिना धर्मादयः उक्तसाध्याभावातिरिक्तपक्षधर्मातिरिक्तधर्मवन्तः
प्रमेयत्वादित्यादिप्रत्यक्षानुमानसङ्ग्रहः । ननु विपक्षे आगमबाधप्रसङ्गरूपतर्कसद्भावान्न
दोषः । अत एव वृत्त्यनुमानमपि प्रतिकूलतर्कपराहृतत्वाच्च साध्याभावसाधकमत आह
आगमबाधेति—प्रागुपदर्शितागमबाधेत्यर्थः । **चरितार्थत्वादिति** — योगिप्रत्यक्षरूपाभि-
मतसिद्धेरित्यर्थः । तथा चानुमानप्रयोगवैयर्थ्यं सिद्धसाधनता अनुमानेनैव योगिप्रत्यक्ष-
सिद्धिरिति स्वप्रतिज्ञाव्याघातश्चेति भावः । **अन्यथेति** — उक्ताप्रयोजकानुमानेनैवाभि-

यश्चानुव्यवसाये सविषयव्यवसायप्रत्यक्षतामिच्छति, तस्यास्मदादिष्वपि धर्मादिव्य-
वसायानुव्यवसाये धर्मादिप्रत्यक्षत्वसिद्धौ कथं तदतिरिक्तयोगिप्रत्यक्षानुमासिद्धिः ।
तद्व्यवच्छेदेन प्रयोगेऽपि सौगतोक्तचाक्षुषत्वादिसाधनप्रसङ्गः स्यादिति । स
चादृष्टविशेषो योगाभ्यासतपश्चर्यादिभिर्जायते । तस्मादार्षाभिमतमपि प्रकृष्टादृष्ट-
जत्वाविशेषात् तत्रैवान्तर्भूतम् । यथोक्तं प्रज्ञापरित्यागे —

मतसिद्धयङ्गीकार इत्यर्थः । ज्ञानलक्षणाप्रत्यासत्तिजन्यप्रत्यक्षविषयत्वस्य धर्मादिषु
सिद्धतया सिद्धसाधनम्, तस्य परमतासिद्धत्वेऽपि तत्सिद्धिमादायानुमानपर्यवसानसंभवान्न
योगिप्रत्यक्षसिद्धिरित्याह यश्चेति । **सविषयव्यवसायप्रत्यक्षतामिच्छतीति** — व्यव-
सायविषयस्य व्यवसायस्य च प्रत्यक्षत्वनियममङ्गीकरोतीत्यर्थः । **धर्मादिव्यवसायेति** ।
सुखादिलिङ्गकानुमित्यादिरूपेत्यादिः । उक्तदोषपरिहारशङ्कामनुवदति **तद्व्यवच्छेदेनेति** —
उक्तदोषपरिहारकविशेषणविशिष्टतयेत्यर्थः । तच्च विशेषणं प्रत्यक्षविषयत्वरूपे साध्ये
मुख्यविशेष्यतात्मकत्वरूपं स्वातन्त्र्यमेव । उपनीतं विशेषणतयैव भासत इति नियमेन
धर्मादीनामुपनीतभानात्मकप्रत्यक्षे मुख्यविशेष्यत्वासंभवान्न सिद्धसाधनाद्यवकाश इति
केचित् । तत्र ; धर्मादिमुख्यविशेष्यकोपनीतभानसिद्धिमादायानुमानपर्यवसानसंभवेनार्था-
न्तरस्य मानसोपनीतभाने उपनीतभानस्यापि मुख्यविशेष्यतया भानसंभवस्य **प्रामाण्य-**
वादादौ स्पष्टतया सिद्धसाधनस्यैव दुर्वारत्वात् । अत उपनयसन्निकर्षाजन्यत्वमेव
प्रत्यक्षविशेषणं तद्वाच्यम् । यत्तु उक्तदोषवारणाय लौकिकप्रत्यक्षविषयत्वमेव साधनीय-
मिति ; तन्न ; अभिमतासिद्धेः । न हि धर्मादिषु लौकिकप्रत्यक्षविषयत्वसिद्धिमात्रेण योगज-
प्रत्यक्षसिद्धिसंभवः । तस्याः लौकिकप्रत्यक्षत्वेनैव नैयायिकैरङ्गीकारात् । **सौगतोक्तचाक्षु-**
षत्वादिसाधनप्रसङ्गस्यादिति — तथाचाभाससाम्यमिति भावः । **तपश्चर्यादीत्यादिना-**
मन्त्रजपादिपरिग्रहः । **तस्मादिति** — तादृशादृष्टविशेषस्य तपश्चर्यादिभिरपि जायमानत्वा-
दित्यर्थः । **प्रकृष्टादृष्टजत्वाविशेषादिति** — योगिप्रत्यक्षशब्देन तद्धर्मावच्छिन्नस्यैव विवक्षि-
ततया तस्यैव विभाजकधर्मत्वादिति भावः । उक्तार्थे प्राचीनसम्प्रतिमाह यथोक्तमिति ।

‘अत्रेन्द्रियानपेक्षं यज्ज्ञानमर्थावभासकम् ।
दिव्यं प्रमाणमित्येतम् प्रमाणज्ञाः प्रचक्षते’ ॥

परमेश्वरविज्ञानं मुक्तानां च धियस्तथा ।
सञ्जयार्जुनवाल्मीकिप्रभृत्यार्षधियोऽपि तत् ॥

इति ।

इन्द्रियानपेक्षमिति — अदिव्येन्द्रियानपेक्षमित्यर्थः । अत एव हि गीयते —
‘दिव्यं ददामि ते चक्षुः’ इत्यादि । यद्वा परमेश्वरादिविज्ञानसहपाठादिभिस्तथैव
तन्मतं मन्तव्यम् । अनन्तरं चैवमुक्तम्

स्वाभाविकस्य ज्ञानस्य स्वतस्सर्वावभासिनः ।

अविद्याप्रतिबन्धस्य प्रतिबन्धोऽक्षयोगतः ॥

तन्मतमिति — तादृशग्रन्थकृन्मतमित्यर्थः । अनेन दिव्येन्द्रियजन्यत्वमेव स्वाभिमत-
मित्युक्तं भवति । तथैव तन्मतमित्यत्रोत्तरग्रन्थसंवादमाह अनन्तरमिति । स्वतस्सर्वाव-
भासिन इति — सर्वावभासप्रयोजकस्वाभाविकशक्तिमतः । अविद्याप्रतिबन्धस्येति —
अविद्याया प्रतिबन्धो यस्येति बहुव्रीहिवशात्कर्माधीनकार्यानुत्पादशालिन इत्यर्थः ।
इदं च ज्ञानस्येत्यस्य विशेषणम् । यद्वा अविद्याप्रतिबन्धस्येति अविद्याकृतस्य प्रति-
बन्धस्येत्यर्थः । अनादरे षष्ठी । तथा च अविद्याकृतं प्रतिबन्धमनादृत्याऽप्रतिबन्धः
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अक्षयोगत इति — इन्द्रियसन्निकर्षादित्यर्थः ॥

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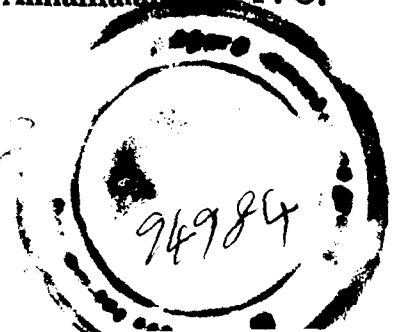
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