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ṬOḌARAMALA OF JAIPUR (A JAINA PHILOSOPHER–MATHEMATICIAN)

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Paṇḍita Ṭoḍaramala (*c.* 1720-1767) of Jaipur lived mostly in the province of Ḍhūṇḍhāra (Rajasthan). His original introductory chapters on the mathematics of system-theoretic texts, known as the *Arthasaṃdṛṣṭi* (Symbolism for Gauge), are his monumental contributions. They serve as a guiding factor for understanding the deep and intricate works on the functional *(karma)* theory, the commentaries of the *Gommaṭasāra*, the *Labdhisāra* and the *Kṣapaṇāsāra*, of 10th-11th century A.D., being the summary texts of the *Ṣaṭkhaṇḍāgama* (*c.* 2nd century A.D.) and the *Kasāyapāhuḍam* (*c.* 1st century A.D.). These texts have been found to have a modern set up of the system theory. He wrote some independent texts on Jaina philosophy and commentaries of which the *Samyakjñānacandrikā* commentary became a work of mathematical utility. Similarly, the *Trilokasāra* appears to be containing a major portion of the *Tiloyapaṇṇattī* (*c.* 5th century A.D.) with some important additional mathematical material on which Ṭoḍaramala also wrote a commentary *(Bhāṣā-vacanikā)*.

INTRODUCTION

Ṭoḍaramala was born in 1720 A.D. and is said to have spent most of his life at Jaipur. He migrated to Siṅghāṇā in his later life.[1] He was a government servant and died possibly on Kārttika white 24, Vikrama-saṃvat 1823, *c.* 1767 A.D.[2] His father was Jogīdāsa and mother Rambhādevī.[3] He belonged to the Godikā family of the Khaṇḍelavāla community of the Digambara Jaina sect.[4] He was

married and had two sons, Haricanda and Gumānīrāma.[5] He was a great critic, and a socio-religious reformer.[6]

Ṭoḍaramala got his education at Jaipur, at some home-school, known as sailī, an educational set-up started under the son of Raja Ṭoḍaramala. The director of the sailī was Bābā Bansīdhara.[7]

His financial condition was not so good, and he was obliged to leave Jaipur for Siṅghāṇā, one hundred and fifty kilometers west of Jaipur, possibly in the later years of his life. However, according to other sources, he was well-to-do and was employed under Government where he executed many works for the benefit of the public.[8]

The recent investigation[9] on the mathematical contents of the Ṣaṭkhaṇḍāgama and the Kasāyapāhuḍaṃ, their commentaries, their summary texts by Nemicandra Siddhāntacakravartī, the Gommaṭasāra, the Labdhisāra (inclusive of the Kṣapaṇāsāra) and their commentaries, bring to light a modern set up of systems theory through existential and constructive set theoretic approach, in the Jaina School since the beginning of the Chistian era. The last person to have commented on such mathematical material was Ṭoḍaramala, through ancient symbolism, explanation or teaching of which was not available till his period.[10] Before him these mathematico-philosophical works were available only in Sanskrit, Prakrit and Kannaḍa. There was no such work available in any language of northern India, like Hindi or its dialects. Although Ṭoḍaramala was a good scholar of Sanskrit and Prakrit, he felt the necessity of translating and commenting upon them in the folk-language, Ḍhūṇḍhārī, which is like the Braja language prevalent in northern India.

At present the following works of Ṭoḍaramala are available : These are seven commentaries and five original works. The commentaries are upon Sanskrit and Prakrit works. Among the Sanskrit texts the commentaries are on the Ātmānuśāsana and the Puruṣārthasiddhyupāya. Among the Prakrit texts, the commentaries are on the Gommaṭasāra Jīvakāṇḍa and Karmakāṇḍa, the Labdhisāra, the Kṣapaṇāsāra, and the Trilokasāra. A Sanskrit commentary was available on the Trilokasāra by Mādhavacandra Traividya (*c.*1203 A.D.). Another Sanskrit commentary on the Gommaṭasāra and the Labdhisāra by Muni Nemicandra was available as also in Kannaḍa by Keśava Varṇī. An original text, the Kṣapaṇāsāra, by Mādhavacandra Traividya was also available. The period of Keśava Varṇī is *c.*14th century A.D. and that of Muni Nemicandra is *c.* 16th century A.D. It was to the credit of Ṭoḍaramala to write commentary on the Gommaṭasāra, the Labdhisāra and the Kṣapaṇāsāra, combining it as a single work, the Samyakjñānacandrikā ṭikā, because of their topical relevance.

The works of Ṭoḍaramala are available in prose and verses as original contribution.[11] The prose composition is in four forms :

1. Descriptive style : Samosaraṇa Racanā Varṇana,[12] and similar other topics in various texts.

2. Letter correspondence style : Rahasyapūrṇa Cit̤t̤hī and various other letters.[13]
3. Symbolic style : Artha Saṃdr̤s̤t̤i Adhikāra included in the Samyakjñāna-candrikā t̤īkā as original chapters.
4. Critical style : Mokṣamārgaprakāśaka.

The verse composition is available in two forms :

1. Devotional style : Gommat̤asārapūjā and various other verses found in the beginning, middle and end of his works.
2. Colophon style : Introductory description given at the end of his works.

PERIOD OF T̤OḌARAMALA

T̤oḍaramala lived in a transitional period of Indian political fervour. When he completed his mathematical manuscripts in 1762 A.D., the days of the Moghul empire were being counted. The Rajputs and the Marathas were free and rising. The Afghans were supreme and the British held their highest authority in Bengal and Bihar under Clive. The south was also under revolt.

It was an epoch of Seven-Years War between the British and the French over colonies, culminating in the emergence of England as a supreme colonial power. America was preparing for declaration of independence and the circumstances of the French revoution were in the making.

The mathematical world remodelled by Newton was facing the well known crisis in Calculus. It was gradually progressing from intuition to absolute rigour. Euler (1707-1783 A.D.) made profound changes in analysis, and Lagrange (1736-1813 A.D.) contributed to the theory of numbers, analysis, and elliptic functions. It was a benumbed mathematical world and the number concept based on a set theory was still to emerge, at the hands of Georg Cantor (1845-1918 A.D.) after a century. Quantum, Relativity and Systems theories alongwith Cybernetics were to appear much later.

During such a crisis period of mathematics, India was still ahead of the frontiers in existential and constructive set theoretic approach to its functional (karma) system theory. T̤oḍarmala had reached the *ad summum* of the mathematical pursuits of the Digambara Jaina School. It appears that if his work had reached Gauss (1777-1855 A.D.), Cauchy (1789-1857 A.D.), Lobatchewsky (1793-1856 A.D.), Fourier (1768-1830 A.D.), Galois (1811-1832 A.D.), Hamilton (1805-1865 A.D.) and Boole (1815-1864 A.D.), the mathematical world might have taken some other turn even before Georg Cantor.

The land of Rajasthan had already become famous during the reign of Sawai Jai Singh (1699-1743 A.D.) of Amber for astronomical pursuits. T̤oḍaramala lived during his reign and those of his successors, Ishwar Singh (1744-1750 A.D.) and Madho Singh (1751-1767 A.D.), who patronized their father's love of science and continued to make Jaipur the resort of researches.[14] It appears that at the

time of Ṭoḍaramala, the religious and social degradation had reached a stage when its criticism and opposition was moved by the reformers one of whom was Ṭoḍaramala[15] himself.

CONTRIBUTION TO MATHEMATICS

The Artha-Saṃdṛṣṭi on the Gommaṭasāra :

The first commentary on the Gommaṭasāra is known as the Vīramārtaṇḍī in Kannaḍa by Cāmuṇḍarāya, the prime minister of a southern kingdom, and the disciple of Nemicandra Siddhāntacakravartī (10th-11th century A.D.). The second attempt at the commentary, the Mandaprabodhikā, is by Abhayacandra Saidhāntī (*c.*13th century A.D.). The third is known to be by Keśava Varṇi, in Kannaḍa, (*c.*1360 A.D.), who was disciple of the former. This is well known as the Jīvatattvapradīpikā, following the Vīramārtaṇḍī which is not available now. A Sanskrit commentary on *Gommaṭasāra* with the same nomenclature was written by some later preceptor Nemicandra, a disciple of Jñānabhūṣaṇa, sometime before 1552 A.D.

After a period of about two centuries, Ṭoḍaramala took up the challenge of rendering the various commentaries in Ḍhuṇḍhārī without the help of any teacher.[16] His commentary, the Samyakjñānacandrikā, has a different form from the earlier commentaries. His commentary is divided into two portions. The first part consists of description which is without symbols. The second, known as the Artha-Saṃdṛṣṭi Adhikāra, is in about 308 printed pages, which consists of mathematical explanatory details through symbolism.

Ṭoḍaramala starts by introducing the meaning of the Artha-Saṃdṛṣṭi. The measure *etc.* of arbitrary fluents (dravyas), quarters (kṣetras), times (kālas), and phases (bhāvas) is called Artha. Saṃdṛṣṭi means symbolism.[17] Thus the chapter is on symbolism and its manipulation of various types of measures or gauges (artha) is called Artha-Saṃdṛṣṭi (gauge-symbolism). Then he explains various kinds of symbols for numbers from conventional or universal (laukika) measure.[18]

The description of notations from post-universal (lokottara) measures (pramāṇas) appears next in the forms of number (saṃkhyā) and simile (upamā) measures. Herein, the use is made of various types of numerical (āṅkika), algebraic (bījīya) and figurative (ākārātmaka) symbols.[19]

Ṭoḍaramala had to face the difficulty of distinguishing such symbols which, in several cases, stood for more than one gauge (artha). He had to solve this through several readings of the contexts.[20] This has been established by Jain.[21]

Details of operations, basic and logarithmic (śalākā gaṇana), *etc.*, elaborate the treatment of many types of sets.[22] In all these types of operations the place of putting the sets and operators (rāśis and karaṇas) is decisive at various places and in various operations. Position value in case of subtraction in a series of

factors plays an interesting role and reminds us of the application of zero in the place value notation.[23]

For description of karmic life-time (sthiti), various types of geometrical notations, triangular, linear, square, quadrilateral, and rectangular, have been depicted. Thus Ṭoḍaramala comes to the end of the introduction to symbolism, preliminary in character.[24] After this follows the explanatory details of various complicated calculations with sets through numerical and algebraic symbols. The chapter on the measures based on numerous characteristic properties, controls (guṇas), and events (paryāyas) of the sets of souls finishes through set theoretic treatment.[25]

The chapter on the theory of functional (karma) is begun by Ṭoḍaramala with details of karma spaces, that is, sets with mathematical structures in relation to karma, and of various systems defined on them.[26] A few additional symbols may be found here explained by him. The manipulation here is more involved than that of the previous chapter as the karmic structure involves inputs (āsrava), outputs (bandha, saṃvara, nirjarā) and state-transition (sattva-saṅkramaṇa), *etc.*, of *karmic* fluents (dravyas) with calculated energy-levels (anubhāga's aṃśas), life-time (sthiti), configurations (prakṛtis) and mass number of particles (pradeśas). Ten types of conditions (avasthās) in the description of bond (bandha) are explained.

Then Ṭoḍaramala gives account of distribution of particles in different configurations (prakṛtis) without details of the dynamical system, let alone the rules of karma operations.[27] Although the set theoretic calculations and operations are prcise and preliminary here, the foundations are deeper and require a probe through modern mathematical tools. The process of karma annihilation (kṣaya) is also difficult to understand mathematically. Ṭoḍaramala has given details of mathematical steps left by his prdecessors through his own efforts. This gives an easy access to the earlier commentaries which are full of mathematical results depicted through symbols at several difficult contexts.

This chapter on the Artha-saṃdṛṣṭi of the Gommaṭasāra compiled by Ṭoḍaramala forms an excellent base for further study of the karma theory in dynamical form presented in the Labdhisāra on which he wrote the Artha-Saṃdṛṣṭi chapter through his greater effort because only one Sanskrit commentary was available, and that too covered only the Labdhisāra without the Kṣapaṇāsāra.

The Artha-Saṃdṛṣṭi on the Labdhisāra and the Kṣapaṇāsāra :

This chapter includes the Artha-Saṃdṛṣṭi of both the texts. At the outset Ṭoḍaramala describes the form of notations relating to the Labdhisāra and the Kṣapaṇāsāra as per traditional convention correcting the scribe's mistakes. He is as precise as possible and entrusts the responsibility of future research and corrections to the learned posterity.[28] He admits that he could not make out certain portions which should be made clear from the original commentary, and hence he leaves such portions unattended from the Artha-Saṃdṛṣṭi.[29]

Here the knowledge of the previous Artha-Samdṛṣṭi is essential, with a few more additions.[30] There are some common and certain uncommon notations in this chapter as compared with those in the former. The figurative forms of the symbols are in abundance here. A matrix column with particles as instant-effective-bond (samaya-prabaddha) represents input-influx (āsrava) every instant (samaya). The elements or cells of the column matrix are called nisusus (niṣekas). It is a fundamental system-variable-matrix expression.[31] In a certain position it denotes the variable number of karmic particles with a certain variable life-time, a certain energy-level (anubhāga-aṃśa) and a wave-phase denoting a characteristic configurational nature of a functional-type (karma-prakṛti). The problem of matrix-mechanics appears to be manipulated with the help of the tetrad of the configuration (prakṛti), particle-set (pradeśa-rāśi), life-time (sthiti), and energy (anubhāga), each of which is associated with the karmic fluents (dravyas). These equations of motion are given in the geometrical symbolism.[32] The forms are exposed in three steps, in accordance with the particles in output-trail (udayāvali), geometric-progression (guṇaśreṇī), and upper-life-time (uparitana-sthiti), as different positions of the column-matrix.

Before going into details of this geometric-symbolism, one may like to go through the detailed introduction of the Labdhisāra by Ṭoḍaramala.[33] In this there are thirty pages containing description of the karma theory which has a modern set up of automation, controls, optimization, and realization. This is given through numerical representation. He first introduces the ten kinds of conditions of the bonds of karma. These are known as karaṇas (operators). Then he relates the four types of karmic bond (karma-bandha), and details of instant-effective-bond (samaya-prabaddha).[34] The variations of volition (yoga) effects the quantity of input-influx (āsrava), as well as transition in state (sattva). Variations in affections (kaṣāyas) effects the life-time (sthiti) and the energy-levels (anubhāga aṃśa) while binding the *karma* particles in form of nisusus (niṣekas) placed in the *karma*-matrix. The dynamical configuration (prakṛti) is also effected by volition (yoga) so that transition in the layer of different sub-configurations follow for a particular bound configuration. Thus Ṭoḍaramala tries to sketch the involved structure of the nisusus of the karma-fluents (karma-dravyas).[35]

After this the theory of state (sattva) of dynamical configuration (prakṛti), particle-number (pradeśa), life-time (sthiti), and energy-levels (anubhāga-aṃśa) in relation to functionals (karmas) is explained. Analogous description of the out-put in the form of bond (bandha), impedence (saṃvara), and disintegration (nirjarā) corresponding to *karma* is interesting.[36] Various operational details follow the former.[37]

Then Ṭoḍaramala describes the process of annihilation or eradication (kṣapaṇā) in the Artha-Samdṛṣṭi of the Kṣapaṇāsāra, corresponding to the bond (bandha) and state (sattva) through the attainment (labdhi) of serene vision (samyak darśana) and character (caritra) is similarly described mathematically, in relation to the earlier mentioned tetrad.[38] The brief description rendered by

Todaramala is simple to understand. After outlining the definitions, the process of eradication is given. The terminology introduced in the beginning is extremely useful. It gives a survey of all possible mathematical techniques applied by his predecessors, excepting a few operations.[39] First, a survey of all types of life-time-structure (sthiti-racanā) is given. Then an elaboration of division of karmic-particles (karma-pradeśas) is given with respect to quantity and intensity.[40] Further specification in special circumstances of the states of existence (sattva) of *karma* due to inputs, outputs, complete the description.[41]

Symbolic and figurative representation of the process of attainment of serene vision (samyak darśana) and character (caritra) alongwith the process of eradication of configuration (prakṛtis), particle-numbers (pradeśas), life-time (sthiti) and energy (anubhāga) subsisting in a mundane soul has been elaborated in a given specified order. Here also Todaramala has simplified the complicated results through intermediate mathematical steps in absence of any commentary, except the text, Ksapanāsāra, independently compiled by Mādhavacandra Traividya.

The Bhāṣā Vacanikā of the Trilokasāra :

This work follows the commentary of Mādhavacandra Traividya and is in Sanskrit. Todaramala wrote the *Bhāṣā Vacanikā* in *Ḍhūnḍhārī*. An appendix containing introduction to its mathematics appears in it. First, he describes the eight fundamental operations *(parikarmāṣṭaka)* : *saṅkalana, vyavakalana, guṇakāra, bhāgahara, varga, vargamūla, ghana,* and *ghanamūla*. The method of finding the cube-root deserves attention. He also deals with fractions, the rule of three sets *(trairaśika)*, treatment of progressions *(średhi-vyavahāra)*, and mensuration. He mentions the term *alaukika gaṇita* (non-universal mathematics) in this appendix and gives certain symbols relevant to it. This is in twenty-two pages of the printed text.[42] For a look into the correct symbols manuscript should be seen.

CONCLUSION

From the above, it would be evident that Todaramala dealt with the mathematics embedded in the Digamabara Jaina philosophical texts of the *Karaṇānuyoga* group of study in a unique way. His both the *Artha-Saṃdṛṣṭi* texts are quite relevant and evident to call him a philosopher and a mathematician. His foundational studies may lead to a deeper understanding of the naive set theoretic approach and the Indian *karma* theory dealt with mathematics, having a modern set up of systems and cybernetics approach. Rendering of the Sanskrit commentaries into the folk language was his ingenious attempt to popularize philosophy for the common man and to simplify the technical matter through mathematics for the intelligentsia. Like the famous European philosopher-scientists he is said to have sacrificed his life for the cause of social and religious reforms for which he is known to have been sentenced to death.[43]

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REFERENCES AND NOTES

[1] *Cf. Mokṣamārgaprakāśaka,* written by Todaramala, p.15, introduction, Sonagarha, 1978.

[2] *Cf. ibid.*, p.16, introduction.

[3] *Cf.* Pandita Todaramala : Vyaktitva aura Kartattva, Doctoral thesis by H. Bharilla, Indore University, 1973, p.56 for the quotation :

"Rambhāpati stuta guna janaka jāko Jogīdās
Soi mero prāna hai dhāraim pragata prakāśa. 37"

[4] *Cf. ibid.*, p.56.

[5] "tathā tinike piche Todaramalajī ke bade putra Haricandajī tinitaim chote Gumānīrāmajī". . . ", *cf. ibid.*, p.57.

[6] *Vide* Kasliwal, K.C., Ācāryakalpa Pandita Todaramala : Vyaktitva evam Kṛtitva, in Ātmadharma, special no., March 1967, pp.14-17.

[7] "ara *eka* Bansīdhara kiñcita saṃjama kā dhāraka. . . . ", *Jīvana Patrikā,* appendix I, ref.3.

[8] *Cf. ibid.*, p.61 ; *Cf.* also, Rahasyapūrna Citthī, introduction, ref.3, pp.9-10.

[9] Jain, L.C., Set Theory in Jaina School of Mathematics, *Indian Journal of History of Science,* **8**, 1-27, 1973 ; *Cf.* also, Jain, L.C., System Theory in Jaina School of Mathematics, *Indian Journal of History of Science,* **14**, 29-63, 1979.

[10] The latest commentator before Ṭoḍaramala was Muni Nemicandra of the 16th century A.D., who had compiled the commentaries of the Gommaṭasāra and the Labdhisāra in Sanskrit.

[11] *Cf.* ref. 3, pp.80-81.

[12] *Cf. ibid.*, p.80.

[13] *Cf. ibid.*, pp.80, 82.

[14] *Vide* Todd, James, Annals and Antiquities of Rajasthan, vol.II, S.K. Lahiri and Co., Calcutta, 1894, pp.353-359.

[15] *Cf.* ref.3, pp.3-40. "Koū mandarādi acetana padārtha burā lāgai taba torana phorana ityādi rūpa kari vākā burā cāhe.", *cf.* ref.1, p.56.

[16] *Vide* Artha-Samdṛṣṭi Adhikāra, by Ṭodaramala in the Gommaṭasāra of Nemicandra Siddhānta-cakravarti, alongwith various commentaries, the Jīvatattvapradīpikā, Mandaprabodhikā, and Samyak jñānacandrikā commentaries, (eds.) G.L. Jain and S.L. Jain, Gāṅdhī Haribhāi Devakaraṇa Jaina Granthamālā, Calcutta, *c* 1919.

[17] *Cf. ibid., p.1.*

[18] *Cf. ibid.*, pp.2, 3.

[19] *Cf. ibid.*, pp.3-7.

[20] *Cf. ibid.*, p.7.

[21] Jain, L.C., On the Jaina School of Mathematics, in *Chotelāla Smṛti Grantha,* Calcutta, 1967, pp.265-292.

[22] *Cf.* Artha-Saṃdṛsṭi of the Gommatasāra Samyakjñānacandrikā, *loc.cit.*, pp.8-23.

[23] *Cf. ibid.*, pp.20-21.

[24] *Cf. ibid.*, pp.24-25.

[25] *Cf. ibid.*, pp.25-193.

[26] *Cf. ibid.*, p.195.

[27] *Cf. ibid.*, pp.196-307.

[28] *Cf.* Artha-Saṃdṛsṭi of the Labdhisāra in the Samyakjñānacandrikā, (ed.) G.L. Jain and S.L. Jain, Gāndhī Haribhāi Devakaraṇa Jaina Granthamālā, Calcutta, *c.* 1919, p.1.

[29] *Cf. ibid.*, pp.1, 2.

[30] *Cf. ibid.*, p.2.

[31] Jain, L.C., Mathematical Foundations of Jaina Karma System, in Bhagavāna Mahāvīra *and* His Relevance in Modern Times, Bikaner, 1975, pp.132-150 ; *Cf.* also, Jain, L.C., On the Contribution of Jainology to Indian Karma Structures, Tulsīprajñā, J.V.B., Lādnū, vol.7, nos.5-6, pp.1-11, 1981, (co-author : C.K. Jain).

[32] *Cf.* ref. 28, pp.2, 3.

[33] *Cf. ibid.*, pp.2-38.

[34] *Cf. ibid.*, pp.4, 5.

[35] *Cf. ibid.*, pp.6-8.

[36] *Cf. ibid.*, pp.9-12.

[37] *Cf. ibid.*, pp.12-15.

[38] *Cf. ibid.*, pp.16-19.

[39] *Cf. ibid.*, pp.19-29.

[40] *Cf. ibid.*, pp.29-33.

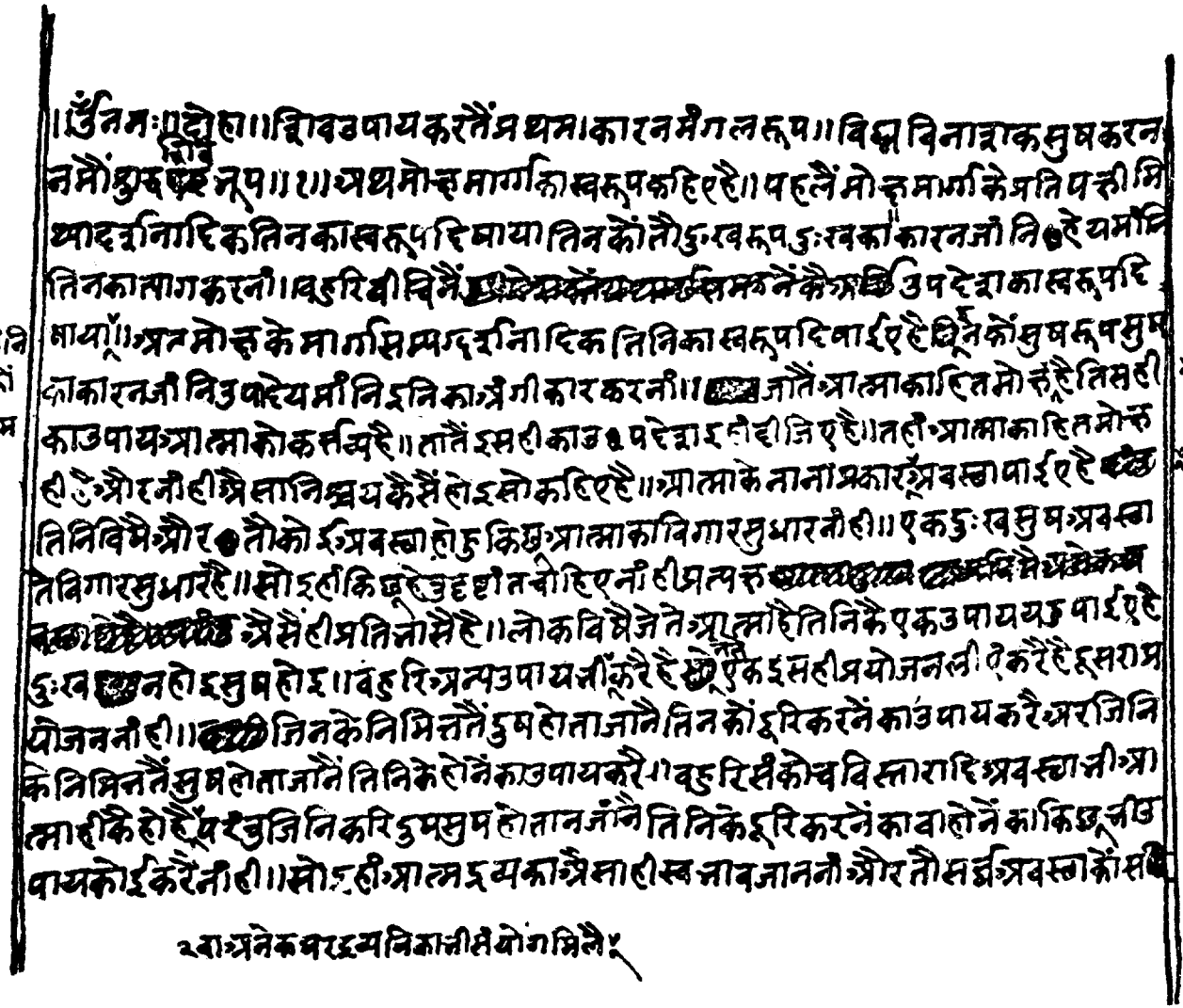
[41] *Cf. ibid.*, pp.33-38. For details of the ancient work on Artha-Saṃdṛsṭi through modern set up of symbols and operations, *vide* the project work on "The Labdhisāra of Nemicandra Siddhāntacakravartī" submitted to the Indian National Science Academy, New Delhi, in four volumes of manuscript (unpublished), 1987, by the first author.

[42] *Cf.* Trilokasāra of Nemicandra Siddhāntacakravartī, with Bhāṣā Vacanikā of Paṇḍita Ṭoḍaramala, (ed.) M.L. Shāstrī, Hindī Jaina Sāhitya Prasāraka Kāryālaya, Bombay, 1918, pp.1-22.

[43] *Cf.* ref.1, p.18, introduction.

APPENDIX

An imaginary portrait of Ṭoḍaramala and a specimen of his own handwriting is being reproduced along with a page from the Artha-Saṃdṛsṭi at the reference no.16.



A page from the original manuscript, "Mokśa Marga Prakaśaka" of Todaramala, at Bhadicand Divana Jaina Temple, Jaipur, written by him in his own handwriting.

Ācāryakalpa Śraddheya Paṇḍita Ṭoḍaramalajī

देशावधिका भेद प्रमाण वार ध्रुवहारकरि गुणें जघन्य देशावधिका विषयभूत द्रव्य हो है ऐसा जानना। बहुरि देशावधिका विषयभूत जघन्य क्षेत्र घनांगुलकौं पल्यका असंख्यातवां भागका भाग दीएं ऐसा $\frac{६}{प}_{a}$ उत्कृष्ट लोकमात्र ऐसा $\equiv$ उत्कृष्टमें जघन्य घटाएं ऐसा $\equiv -\frac{६}{प}_{a}$ इहां घटावनेकी संदृष्टि लोकके आगें ऐसी -- जाननी। याकौं सूच्यंगुलका असंख्यातवां भागकरि गुणें ऐसा $\equiv -\frac{६}{प}_{a} \cdot \frac{१}{a}$ यामें एक मिलाएं द्रव्य अपेक्षा देशावधिके भेदनिका प्रमाण ऐसा $\equiv -\frac{६}{प}_{a} \cdot \frac{१}{a}$ हो है। इहां जघन्य देशावधिका क्षेत्र ऐसा ६।८।२२ अपवर्तन कीएं पल्यका असंख्यातवां भागकरि भाजित घनांगुलमात्र ऐसा हो है $\frac{६}{प}_{a}$ बहुरि जीव समास अधिकारोक्त अग्नि कायिक जघन्य अवगाहन ऐसा ६।८।२२ उत्कृष्ट ऐसा ६।८।८ उत्कृष्टमें जघन्य घटाइ अपवर्तन कीएं ऐसा $\frac{६}{प}_{a} \cdot \frac{१-}{a}$ यामें एक जोडें सर्व अग्निकायिक अवगाहना विकल्प ऐसा $\frac{६}{प}_{a} \cdot \frac{१-}{a}$ याकरि अग्निकायिक राशि ऐसा $\frac{६}{प}_{a}$ हो है $\equiv \frac{६}{प}_{a} \cdot \frac{१-}{a}$ ताकौं गुणें ऐसा $\frac{६}{प}_{a} \cdot \frac{१-}{a}$ प्रमाण भया सोई सर्व परमावधिके भेदनिका प्रमाण जानना। यातें दोय