INTRODUCTION

Insects are the oldest inhabitants on the earth and have attracted the attention of man, since human life is not free without their involvement. These small creatures are well accustomed to every kind of biotic or/and abiotic factors as compared to other organisms due to their adaptive radiations and possessions of unique attributes like wings for dispersal and diversified mouth parts for finding new source of food materials.

The diversity of forms among insects boggles the minds of entomologists and vacillates them between bewilderment and fascination with this vast array of forms.

The discovery of pattern of all this diversity constitutes the science of taxonomy and the design invented provides a working key for a classification.

Taxonomy is the soul of biology. It deals with the identification of organisms which is basic to all research. The confusion in the identification of organisms leads to presumptions, errors and
misinformation. **Taxonomy avoids these deficiencies, by definite identification and naming uniquely to each species for future to compare the properties of known and unknown taxa. In addition, taxonomy establishes relationships amongst the organisms and guide us to study their evolution, ecology and distribution. Meaningful and useful classification must be possibly "natural", because the related groups of organisms have their common ancestry. Thus classification is essentially a filing system of information about organisms where data on the structure, function, life-history etc. of each are stored and retrieved.**

In the absence of some system of classification, scientific knowledge of organisms would be in a chaotic state. Therefore, it has been essential in all the fields of biology to develop a science of classification called as "Systematics". Good systematic work normally proceeds good biological work even if only, in case of organisms not having special economic importance because the worker on living things naturally prefers species that can be identified. Thus he adds biological information to the available evidence and this in turn places systematics on a firmer foundation (Kerrich, 1960).
The awareness of taxonomic research inspired man to realise the importance of research in this field, since it is significant in the branches of biology by providing the necessary basic information, as well as other areas of science. The problems of energy crisis, food deficiency, timber, drugs, pollinators, parasites and predators ultimately depend on the taxonomic explorations (Gupta, 1987), studies on the insect taxonomy provide much of the basic data essential for effective management of insect fauna so that harmful insects can be controlled and beneficial forms can be exploited for the betterment of mankind (Shannon, 1983; SubbaRao, 1983).

Insects are the notorious pests, cause heavy losses to the human assets. Efforts are being made all over the world to combat insect pests through various techniques.

On account of all these aspects the taxonomic research on the Ichneumon flies has been exploited in the present study. Since these are actively involved in the natural control of insect pests. The aim behind this investigation was to increase the knowledge of Ichneumon parasitoids (Living weapons) which play a major role in controlling the noxious insect pests, ultimately
result in increase of the yield of crops and other economic commodities.

Among the variety of insect pest control techniques, synthetic insecticides once were the most powerful weapons of the pest control but due to expensive production cost, their deteriorating property on the environment have proved fruitless. Besides use of the heavier doses of insecticides has resulted high resistant variety (Strains) of pests and also reduced the natural enemies of insects. This has forced human being only not to accept the risk involved by widespread use of pesticides but also compelled the manufacturers for production of safe insecticides.

Thus a critical situation and increased awareness on the environmental pollution constrained the scientists to search a new access viz., Integrated Pest Management Programme by introducing new method like "Biocontrol Agents" Technique. This technique reduces pest populations or maintains their equilibrium level and prevents economic injuries of human property. The following views by Townes (1980) aptly summerized the benefits that accrue from biological control. "Pest control with insecticides return an approximately average of 4 dollars for each dollar spent. The benefits
from insecticides accrue in one year only. The next year they must be used again. Control by introducing new kinds of parasitic insects return approximately 30 dollars in 20 years span for each dollar spent. This kind of control does not need repetition. Once established it continues indefinitely, without additional attention or cost. The very long term return on investment is therefore much greater than 30 to 1, nearer to 100 to 1."

The family Ichneumonidae include parasitic Hymenopterous flies that are significant for natural mortality of other destructive pests. Some key parasitoids are extensively used in the biological control and thus beneficial in the regulation of insect pests.

Biocontrol and taxonomy are interrelated and interdependent. Systematics is significant in the biocontrol problems, since the value of former is based on the authentic identification by the latter. "It is the key to all fields of research related to any biological control problem, and when properly undertaken can supply such basic information as where to undertake projects of foreign exploration,
what host specificities are involved, what major biological and ecological references are available for life history, mass production studies and to what extend biological races, subspecies, sibling species are involved with any "species" (Jonathan, 1984).

Proper identification of the parasitoids is a must so that the correct parasitoid will be introduced for effective control.

Taxonomists carry out the identifications of biocontrol agents and provide data on the behaviour, evolution and distribution of native and exotic parasitoids. The identification services need a good collection of concerned groups. For this co-operative attempts amongst taxonomists proved worthy in the biocontrol programmes. This can be justified with the statement if "Biocontrol will not progress on the larger scale, without basic taxonomic knowledge of parasitoids, as it has been proved the chemical control and development of insecticides would not have progressed without the knowledge of basic chemistry"(Gupta, 1987).
The order Hymenoptera: Arthropoda (Insecta) is one of the largest order of insects contain more parasitic species than any other group of insects. Most of the Hymenoptera are beneficial and economically important to agriculture and forestry either as parasitoids or predators of pests of crops, orchards and forests and/or male pollinators of variety of plants.

The order Hymenoptera is divided into two suborders *viz.*, Symphyta and Apocrita. The Apocrita is further classified into Parasitica or Terebrantia, includes families *viz.*, Braconidae, Ichneumonidae, Chalcidae etc. Aculeata embodies gall wasps, ants, true wasps, bees etc. Krombein (1979). The parasitic forms are non-social Apocrita, where their ovipositor serves mainly to deposit the eggs instead of, as the organ of defence. Usually these insects are ecto- or endo-parasitoids of other insects or spiders and rarely phytophagous (Marsh and Carlson, 1979).
The largest superfamily under division Parasitica, of the order Hymenoptera is the Ichneumonoidea that includes enormous number of parasitic insects and among them family Ichneumonidae is of great significance.

The family Ichneumonidae is one of the largest among the animal groups and comprises about 5 - 10% of all insects in various parts of the world. The family Ichneumonidae can be easily distinguished from its wing venation, especially fused costal and subcostal veins, the presence of second recurrent vein and longer antennae usually with more than 16 segments.

Statistics of Ichneumonidae is quite astonishing wherein the number of species in this family is seven times than in the birds. Approximately, 8600 species of birds are classified as a separate class, with about 27 orders, 160 families and 2400 genera. Compared with the birds total count of Ichneumonidae are about 60,000 species, classified into 25 subfamilies with 1250 genera (Townes, 1969).
Fig. 1: Histogram: Representing statistics of Ichneumonidae.
HISTOGRAM - ESTIMATE OF ICHNEUMONFLIES

INDO-AUSTRALIA

INDIA

- GENERA
- SPECIES AND SUBSPECIES

FIG - 1
To be specific the total estimate of Ichneumonidae from Indo-Australian region reveals 2579 species and subspecies, with 385 genera (Townes, Townes and Gupta, 1961). The recent studies on the taxonomy by various workers enriched the fauna of Ichneumonidae and the same has been reported by Gupta (1987) about 4506 species and subspecies with 676 genera included under 26 subfamilies of Ichneumonidae. This data strikes the entomologists that within 25 years, the number of ichneumonids counts nearly double (Gupta, 1987). The more precise and specific data on the total number of Ichneumonidae from India is with 213 genera comprising 671 species and subspecies (Townes et al., 1961) but the same in recent data has piled upto 344 genera embodying 1226 species and subspecies (Gupta, 1987). This statistics is well represented in the histogram as shown in the figure 1.

Historical resume of the family Ichneumonidae is very peculiar. Gravenhorst (1829) defined the family Ichneumonidae for the first time and arranged various genera under it. The first subsequent author worthy of note was Wesmael (1844) who divided...
the family Ichneumonidae into six groups *viz.*, Ichneumones, Crypti, Pimplae, Banchi and Ophionides. After a decade of years, Holmgren (1855) proposed the general classification of Ichneumonidae and classified it into five subfamilies (Ichneumonidae, Crypti, Ophionidae, Tryphonidae and Pimplidae). Simultaneously Cresson and Provencher (1855, 1890) attempted the survey on Ichneumonidae. Later Thomson (1873–1897) adopted and elaborated Holmgren's classification by studying natural characters of the Ichneumonidae. In the meanwhile Kriechauer (1889) Schmiedeknecht (1888), Marshal (1872), Tosquinet (1896) and others exhaustively surveyed and contributed to the knowledge of Ichneumonidae. Subsequently Foerster (1868) published classification of all genera of family Ichneumonidae dividing into 36 groups. Ashmead (1900) followed and modified Foerster's classification attempting minor changes. A synoptic catalogue of the world's species of Ichneumonidae prepared by Dalla Torre (1901 - 1902) was in a wide practice for taxonomic identification. This classification lasted until Townes (1945, 1961 and 1969), works on taxonomy of Ichneumonidae were widely
accepted, where he recognised more subfamilies, mostly based on more natural characters and also provided excellent reviews of the higher classification of Ichneumonidae.

Mostly in past, the taxonomic keys of the Ichneumonidae were based on morphological and anatomical characters. Birne (1941 a) attempted systematic study on the larvae of Ichneumonidae. The works of Short (1952, 1959) on immature forms of Ichneumonidae need special mention. Iwata (1958) studied the eggs of 233 species of Japanese Ichneumonidae, which would repay further consideration in the light of recent ideas on the classification of the family. To facilitate authentic determination of the taxa, the importance of male genitalia was focused by Peck (1937) and Phand (1989, unpublished data, Ph.D. thesis).

Amongst the most renowned scientists from the world, who worked on the Ichneumonidae are, Viereck (1902–1928), Roman (1903–1943), Cushman (1921–1942), Cameron (1885–1912), Morley (1900–1915), Szepligeti (1905–1916), Uchida (1924–1960), Seyrig (1932–1952), Cheesman (1936), Townes (1945) and Heinrich (1930–1980).
In the later half of the present century task-force surveys that formulated eye-catching contributions by Townes, Townes and Gupta (loc. cit.); Townes, Momoi and Townes (1965); Townes (1969); Townes and Townes (1966 – 1973); Townes and Chiu (1970) and Gupta (1987) and many others. Their works embody synoptic catalogues, keys, generic diagnosis, distribution, host parasitoid index etc. of the Ichneumonidae.

The pioneer workers who exploited the Indian Ichneumonidae were Linnaeus (1758), DeGeer (1952–78), Fabricius (1781), Brulle (1846), Smith (1857–1878), Walker (1860) and many others. Effective and elaborative work on the Indian Ichneumonidae commences after the commoration stone laid by Cameron at the end of 19th century. Subsequent follower of the Cameron was Morley who compiled the detailed information of Indian Ichneumonidae under the title "The Fauna of British India". Later, Cushman (1934), Beeson and Chatterjee (1935) and Rao (1953) followed the same and made the access to the young taxonomists in the next future.

The works of Gupta and others are mostly on Ichneumonids from northern, northeast and Southern parts of India; and few from countries like, U.S.A. and U.K. Maharashtra, represents central India, an advanced agricultural area and represents a significant fauna.

The works on the Ichneumonidae from Central India; Maharashtra: In the form of Ph.D. thesis are those by Nikam (1970), Bandelu (1976), Heble (1981), Kanhekar (1985) and Nikam (1986). Their works in part have been published (Nikam, 1970,
Heble, 1981), Nikam (1986 in press). The present work is the sixth attempt from Marathwada and third from Maharashtra on taxonomy of Ichneumonidae which includes erection of two new genera, determination of 18 species, one subspecies and new records of three taxa from eight different subfamilies of family Ichneumonidae.