Chapter V

TRAINING OF WEAVERS AND JOBBERS FOR BETTER PRODUCTIVITY

Data from industry situations has been presented to show that operative training can improve loom efficiency in non-automatic loomshed by about 3% on an average and up to 12% in some specific cases. Thus a need for fresher as well as refresher training of weavers and jobbers has been established. The paper deals with all the questions related to setting up a weaver jobber training center at a mill - equipment, space and staff needed for training centre, selection procedures, syllabus for training and testing till the final placement of the operative in the department. Thus, a mill desirous of starting a weaver training center will find this paper a nearly complete 'project report' giving guidelines as a 'do it youself. It is shown that the financial gains from weaver jobber training are such at the entire (one-time) cost of training as recovered through improved productivity lone in 16 months. An average mill employing about 700 weavers on non-automatic looms stands to increase its annual profits by at least Rs.18 lakhs, when the performance of all poor performing weavers is improved to increase the average efficiency by about 3%.

TRAINING OF WEAVERS AND JOBBERS FOR BETTER PRODUCTIVITY

1.Ø. THE NEED OF TRAINING.

Weaver productivity and loom productivity are two important indices of productivity in loomshed. In this paper we will be concerned with loom productivity or loom efficiency since for a given mill these terms are similar to the extent it is influenced by the input of weavers and jobbers and the type of training that is required to improve this input.

The training helps to develop those skills and attitudes in a person that help him to carry out all the functions of the vacation efficiently. Skills can be acquired in many ways. One can acquire sufficient skills by watching how others do their work. In some cases properly designed demonstration can be enough to inculcate the required skills. In some other cases, a formal class room training coupled with demonstraion and practice would be needed for developing the required skills.

Historcally, in the Indian textile industry, weavers got trainiing by watching others and practising what they saw. The children and near relatives of weavers were allowed entry with tiffin-boxes in the loomshed. Many of them used this opportunity to operate the looms by watching others and often worked there without any stipend. In due course these trainees were given passes as substitute workers. Absorption of such unsystematically trained people, who were available in large numbers, has acted as a block to the progress of the movement for systematic weavers training in the textile industry. In the absence of any systematic training, it takes a very long time for a person to learn the vocation and in most cases one does not get to learn the "correct way' of doing the job even till his retirment. This lack of proper training to weavers can result in less than expected loom efficiency form even the experienced wavers and a still poorer performance of the substitue weavers. The poorer performance of substitue weavers is clearly reflected in decreased loomshed efficency during harvesting and marriage seasons when the proportion of substiute weavers is considerably high. Besides improvement in loom efficiency, proper tranining is expected to have very favourable impact on several other factors. The

fabric damage and the resulting valve loss will be reduced and so also the wastage. Training clarifies doubts, removes misconceptions, and promotes better understanding through clear definition of terms and improved familiarity with objectives; to illustrate: definition of what constitutes a damage in which sort, for example, length of missing end, size of floats, numbers of mispicks and double picks. Since training emphasises a rational and logical approch to work and to solve problems - both techincal as well as personal and administrative - it lays down foundation for better employer - employee relationship and hence for fewer grievances. Above all, proper training improves capabilities of the operator and makes him more versatile and capable handling a wide range of products, and creates an atmosphere (or a culture) where better traditions will be passed down to the successors. All these factors in turn, will have a favourable impact on productivity.

2.Ø THE NEED OF TRAINING: QUANTITATIVE ASSESSMENT.

The foregoing discussion shows that systematic training for weavers is very desirable. This desirablity will become a need if, and only if, the weaver training pays for itself. It will therfore be interesting to examine the contribution that the systematic training

of weavers can make to the improvement of loomshed efficiency and hence to the profitability of a mill.

Table I shows the extent of excess losses in percent loomshed efficiency due to various human dependent factors. These figures are based on anlysis of data from technological surveys of weaving departments conducted by ATIRA in over 40 mills. The excess loss in efficency bacause of looom stoppages in each case was calculated by first finding from the ship studies the actual loss and then substracting from this the loss that was expected for the observed loom performance (i.e.incidence of warp breaks, etc. and of gaiting knotting of beams) and considering satsfactory timings and methods of carrying out the operation. Excess loss the due to lower loom speed was calculated from the data of actual and nominal loom speeds and considering 3% and 0.5% reduction in loom speed due to slippage as normal for group drive and individual motor drive respectievly.

It will be seen form Table I that excess loss in efficiency due to causes 1,2,3, and partly 6 are mainly because of weavers and 4 & 5 and partly 6 are mainly because of jobbers. As can be seen, the excess losses due to weavers in non - auto loomshed are quite large and in autosheds compartively quite small. This is so

because, as a class, auto loom weavers are usually selected and trained more carefuly than non - auto loom weavers. In the case of non - auto looms, the range of excess losses between mill in percent efficiency is Ø.Ø to2.Ø due to weavers attending and 1.Ø to 8.Ø due to waiting for weavers attention i.e. interference. Excess loss due to weaver attending shows that on an average the weavers take longer than normal time in carrying out operations such as mending warp weft breaks, changing shuttle, etc. The excess loss due to interference indicates that the work practices followed by weavers are improper, that is, the weavers are not habituated to give priority in a right sequence for attending to looms when more than one of them are stopped.

Excess loss in efficiency due to weavers being ways and due to long time take in beam changes and in repairs is often due to the habits and the culture prevailing in a mill.

The above discussion and the data in Table I show that there is a substantial scope for increasing loomshed effeciency through proper selection and training of weavers and jobbers. On an average the percent efficiency in non - auto loomshed can be increased by 5 to 6% and in some specific cases by as much as 1Ø to 2Ø%.

Two more important inferences can be drawn from examination of data of Table I: (1) Since the data in Table I pertains to weavers already engaged in the trade, these indicate the urgent need for 'refreshed training', besides the training of freshly recruited trainees, and (2) As seen from Table I, a large proportion of the improvement in the loom efficiency will be brought about by reducing loom interference or by improving work organisation. It has been our experience that among the various skills that need improvement, the one concerned with work organisation improvement is the easiest of all to acquire. Hence there is a very bright chance that mills which undertake refresher training will be richly rewarded for a relatively small effort. In this paper, therefore, we are deaing with organsing fresher training as well as refresher training.

3.Ø ORGANISING TRAINING FOR THE POSITION OF WEAVERS

The information in this section has been compiled such that it is of immediate use for the mill desirous of starting weaver training centers. The weaving managers can use this information for submitting to respective management directly as project proposal for weavers training . The mills which have already

established training center will find it useful for "comparting notes" and for improving upon thir own system wherever found deficient.

For starting a training centre systematic and extensive informantion is required on the type of course - content for the training, methods of proper selection of trainees, essential equipment and facilities required for running the training center efficiently and some tips on actually carrying out the training function and assessing the success of training. For collecting information on these topics, a suitable questinnaire was designed and information was collected from mills having a good reputation for running weaver training centre. Thus besides our own experience, this study group has used a much wider base for making recommendations for syllabus, time schedules, test methods and for conduction training. Still, however, these set of recommendations should be taken as guidelines. A mill which wishes to start a centre should give due weightage to its product - mix and to local and regional influences for adopting the recommened procedures to its own circumstances.

3.1 THE SYLLABUS.

The Group considers that a freshly recruited trainee will take about 1Ø weeks to get familiar with important motion and mechinsms and for attaining the minimum standard of carrying out operations to weave on a loom. Further, at least he should be given another 12 to 14 weeks period to acclimatize himself with the functioning of loomshed and for getting ready to discharge all duties of a good weaver. Therefore, the total duration of training should be about 6 months. Although the theme of this paper is 'training for productivity', the design of the syllabus will be faulty if it does not give due consideration to developing skills required for duites other the productivity: Control of damage, control of waste, care of loom and its accessories. A complete syllabus should also provide for improving general knowledge about textiles, factory laws, union activities group behaviour and mass discipline.

3.2 THE SELECTION OF TRAINEES.

Proper selection of employees is pre-requiste for the development of an effective work force in any industrial organiation. While appointing a person, one is really making a prediction. This prediction is that

the persons recruited through proper selection procedure would prove to be better for the organisation than the candidates recruited without proper selection. When one invites applications for trainees all that one has got with him is some bio-data information. The selector may have references or recommendation from others. He may also talk to the candidate and take physical measurements: height, weight, etc. All of these can be used for screening the candidates but information of this kind does not adequately help the selector in determining the suitability of a candidate for the job. All that he does is to eliminate the obviously unfit but not necessarily to select the one most likely to succeed at the job! Each job requires a specific set of abilities and aptitudes on the part of the job holder. It is these inherent characterstics of a person which determine how fast he would be able to develop the job skills and what potentialities he has for becoming an efficient performer. These inherent characrteristics of an individual remain more or less stable over the years, and hence can be used as predictors of future performance. It should, however, be kept in mind that abilities and aptitudes simply tell us whether the person is suitable for the job or not. These do not ensure high quality or quantity of performance. A person who possesses the right kind and amount of

required abilities and aptitudes may or may not turn out to be efficient performer. This is so because the efficiency depends on several other factors apart from aptitudes and abilities, namely willingness to learn and sincerity in work, etc. But a person who does not possess the abilities and aptitudes needed for a good performer on the job he cannot possibly become an efficient performer. Therefore there is need of simple tests that can objectively measure the performance abilities and aptitudes for the weaver's position of weaver. ATIRA has developed tests for selecting training for the position of weaver. These tests can be easily administered on condidates by mill personnel with only a little training in administering and scoring the tests. It has been the experience of the group that these tests are very effective in eliminating persons who are not likely to be successful as weavers. The study group strongly recommends the use of these tests in selection of trainees.

3.3 ESSENTIAL AMENITIES AND EQUIPMENTS FOR TRAINING

The essential requirements discussed here envisage simultaneous training of 2 batches each of maximum 20 weavers but staggered by 3 months at the starting point.

(a) Space.

The training centre for weavers will require a class room and a shed for housing looms. The training room should be located in a comfortable place where lthe noise leval does not exceed 7Ø deciblkes; a quiet and cool place enchances better communication and increases rate of learning. A 6 m x 1Ø area for class room is condidered adequate. For housing looms and equipment, an area of 16Ø sq.m. should be available. The training shed should also house a store room and an office for the training staff. It will be desirable that the class room and the training shed are in close vicinity.

(b) Equipments.

The class room should essentially be equipped with the following:

i) Benches, Tables and chairs.

ii) Black- board.

iii) Spaerparts and accessories of looms.

iv) Samples of damaged fabrics

v) Teaching aids like loom motion chart, loom maintenance charts, loom setting chart, accident prevention charts, design, draft and peg plan of simple and other common weavers.

The main equipments of the training shed are the following:

i) Seven working looms:-

Two looms of large width-both plain.

Two looms of small width-one plain and one Drop Box

Two looms of medium size-one plain and one Dobby Drop Box

One loom for dismentaling and assembiling to demonstrate re-setting of important motions.

ii) Ten Dummy Looms equipped with cotton, wire and flat steel healds.

c) Staff.

For training two batches each of 120 weavers staggered by 3 months at the starting point, it is suggested that minimum of 2 trainers are employed. Both the trainers should at least hold diploma in textile manufacture. The senior trainer should have at least 5 years of practical experience in loomshed and the junior trainer a minimum of 3 years practical experience in loomshed. The senior trainer should be at least of a senior assistant rank. Both the training

should be reponsible to the weaving manager. The training should be helped by senior weaving officer of the rank of senior assistant weaving master in delivering out table techinical organisational lectures. The trainer should also have the facility of enrolling services of a experienced jobber and two experienced weavers for practical demonstration, when required.

3.4 TRAINING METHODOLOGY.

Learning to organise the work properly, inculcating the correct attitude towards work and imbibing a sense of descipline are as important as learning the main elements of technical skill itself. The main element of training for weaver have already been described in the syllabus. The duration of training for each elemnt has also been suggested. The trainer should insist that this time sechedule is adhered to and that all major land marks in terms of speed of work such as given in table are crossed before time or on due date. A proportion of that lecture time should be reserved for imbibing a sense of work disciline and proper attitudes to work. This point has been discussed in detail while

considering 'Refresher Training'. The trainer should be a stickelor for punctuality. Neatness and cleanliness of work should be marked at all stages of work knotting pick finding, re-starting and overcoming starting marks, etc. This is the right stage of introducing the "Zero defect" concept; perfect job should be discharged at the very first attempt, and it should not require any mending. The importance and the methodology of correct work orgaisation should be explained and demonstrated in detail. The weaver should give priority to take up that operation which takes less time in preference to others which take longer time. For expample, if three looms stop simultaneously one for shutlle change, one for warp break and the third for shutlle trap the weaver should first chage the shuttle, next mend warp breaks and then only attend to the shuttle trap. Suppose the loom for shutlle change stops after the weaver has already started work on the loom stopped for shuttle mending of which is likely to take a long time, then he should postpone this mending and change the shuttle on the other loom and then again resume mending the shuttle trap. It has been experienced that this way the weaver can reduce machine interference very near to the expected values in any cases by 5 to 6% In other words in many mills the correct work

organisation can help to increase the efficiency by 5 to 6%. The advantages of following correct work organisation are so attractive that a fresh weaver will make all attempts to absorb it if he is exposed to it systematically. This should be done. After successful completion of the class room training, the trainees should be put to work along with efficient and experinced weavers who are consistent good performers. The training in to the loomshed should be mainly organised by the jonior trainer. He should check the daily record of production and damage and also arranfge for inspection of fabrics as suggested in the next section on 'Assessment of Trainees'. Besides keeping a record of efficiency and damages, the trainer should spend sufficient time will the trainees to observe their work methods and attitude to work and work situation. A simple format given in Table 1-3 can be used to record their work practices in loomshed. It is obsential that periodic review meetings are held where the work practices can be discussed collectivaly and also individually. Thus during practical training in the loomshed, there will be some overlap of the actual training and the assessment. While the junior trainer is busy organising and conducting practical training, the senior trainer

can take up next batch for class room training. This cycle can continue such that two batches of 20 weavers each can be trained simultaneously. The actual number of trainees per batch, however, should be adjusted according to the need of the mill.

3.5 ASSESSMENT OF TRAINEES.

The assessment of the proficiency of weavers in the main elements of a weaver's job is simple and can be carried out objectively without any difficulty. The trainers should be more careful in assessing the practical training when the training has been put in the loomshed. His proficiency of work should be assessed in different loom stoppage rates. The expected average loom stoppage rates. The expected average loom efficiency for 2-looms and 4-looms to weaver allocation can be computed from the average loom stoppage rate or from total operations per unit time with the help of table given in Appendix II. The stoppage rates need not determined by observations on looms weaverwise. The average rates for the sorts run on his looms would prove sufficiently accurate for most situations. A comparison of computed and actual efficency will indicate whether the trainee has in fact attained the right speed of work and whether has absorbed the proper method of organising his work. It is suggested that the consistency of

prudution should over at least 2 consecutive weeks during which time the fabrics. The date on damages provided by the grey folders from only a general guildline. It is suggested that for each weaver at least 1ØØØ meters of fabric be examined metre around the 5th month according to some pre-set inspection standards. The inspection standards given in Appendix III A can be used for this purpose. The incidence of defects should be compared againt the proforma given in Apponidx III During the period of assessment sufficient attention should be given to attendance, grievances and attitude to work. Attempts should be made to ascertyain whether individual trainees have a genuine interst in undertaking a weavers job. Before considering placement, non-interested trainees should be re-scrutinized and may be encouraged to take up alternative jobs.

4.Ø REFERSHER TRAINING.

The need for refresher training has already been emphasized. Section 2.Ø and Tables I show that on an average loom efficiency can be improved by 3-4% through refresher training. The contents, the duration and methodology of refresher training will be discussed in the this section.

4.1 THE REFRESHER TRAINING PROGRAMME.

The basic difference in the training of fresh and exprienced weaver lies in the fact that while freshers need help in acquiring new knowlege and skills, the experienced weavers need help in learning the wrongly acquired skills, knowledge and work methods and re-learning the correct ones. A study conducted by ATIRA shows that the weavers in high efficiency group in the following respects:

i) Coming before the beginning of the shift to their looms.

ii) Taking charge from the previous shift weaver and checking the machines, warp faults, condition of accessories, damages etc. at the beginning of the shift.

iii) Informing the jobber supervisor if the machines need their attention.

iv) Doing proper patrolling when the machines are running.

v) Good handling of the machine interference situations i.e. starting the loom that ought to be started first when more than one loom has stopped.

vi) Keeping the extra shutlle ready.

vii) Changing the shuttle on a running loom.

viii) Taking precautions to prevent loom stoppage and damage.

ix) Not depending upon jobber for minor errors that can be done by the wavers themselves.

x) Healthy relations with neighbouring weaver, reliever, jobber and supervisor.

Considering these points,a suitable refresher training programme has been designed for experienced weavers and is given in Appendix IV.

4.2 ORGANISING REFRESHER TRAINING OF WEAVERS.

(a) Whom to Train:-

Although it is believed that all the weavers irrespective of their efficiency record would benefit from refresher training the priority has to be given to those who need it most the less efficient performers. For selecting the really poor performers, a two step analysis of weavers performance is necessary comparison of efficiency of weavers working on the same looms in differenrt shifts and of all weavers with respect to the average shed efficiency. To ensure that the comparison is done correctly, it is necessary to ensure that the method followed for calculation of efficiency of each weaver is correct and it takes areas of the factors which are beyond the control of the weaver. The average

efficiency should be based on at least six months data. For comparing efficiency of two shift weavers working on the same looms, data from one mill, for the purpose of illustration are presented in Table II, column 2. In this mill the average difference in efficiency between weavers working on the same set of looms is 2.7%. This difference in efficiency is largely because of the difference in effectiveness of the weavers in carrying out loom operatons. This is the minimum gap that should be bridgeable by proper training of the so weavers who give lower efficiency. As a first step selection for training can be done only of these weavers whose efficiency is less by 1% or more than the other shift weavers. In the example given, 77% pairs of weavers are such where the differnece in the efficiency between the two weavers is 1% or more. Therefore approximately 38% of the total weavers may be indentified for training.

The above referred basis for selection, however, may exclude those weavers who are though poor performers but have not been identified because their counter parts in other shifts are either equally poor or still poorer. It is, therefore, necessary to identify also such weavers. One of the simplest way for this can be to identify weavers whose efficiency is less than the average shed efficient. For the example given, the data

on this as presented on coulumn 4 of Table II. It will be seen from the data that at least 41.5% of the weavers given efficiency below the general average. The efficiency of the these weavers should be taken up for close scrutiny by taking into account the sorts works and the condition of the looms. Based on thses factors, for each weaver expected loom efficiency should be computed. If his actual average efficiency is less by 1% or more than the computed efficiency, the should be considered for training. Amongst the weavers identified for training by this method,there may also be many of those who were identified as poor performers by comparing shiftwise counter part weavers. The final list for trainees should, therefore, be prepared by scrutinsing both sets of comparisons.

(b) How to Train:-

Once the weavers who need training have been identified they can be grouped into batches of upto twenty weavers each. These batches can be trained by the mill trainer (if the mill has one) or by the department technicians. The classes for those weavers need to be held in a room away from the loomshed. The training room would require a blackboard, arrangements for seating about twenty persons, samples of damaged fabrics and loom accessories.

The classes can be held for two to four hours per day depending upon the convenience. The selected weavers and the trainer will have to be relieved to their routine responsiblities for the duration of training classes. Some mills find it more covenient to appoint substitute workers and relieve the weavrs for attending the clases.

The timings of substitute weaver can ne fixed in a manner so that he can relieve to workers one each from two shifts for attending the classes. some other mills ask their weavers either to came before the shift for the for the class or to stay on after the shift for attending the class. In order to emphasize the importance attached by the mill to refresher training it is destirable that senior persons in the department should also take a few sessions. Moreover the top managment should meet each batch of trainees at least once to encourage them in their endeavour.

The first job of the Trainer after inentifying the weavers who need training is to make them understand as to why they are being trained. The experienced weavers might not be willing to undergo refresher training and it is the trainer's responsibility to make them realize that everybody can benefit from training, though to different extents. Once the trainees see that the training is trying to help them in improving their

skills and that in on way attending the classes would harm their interests they would be perpared to attend classes.

In the initial sessions the trainees can be told of the factors which created differences in the efficiency of weavers. Here, the trainer has to emphasize that the factors which create these differences are under the control of weavers themselves; many weavers hold strong belief that they cannot improve efficiency because causes of low efficiency are factors which are not with their control. The total thrust during refresher training should be such that the 10 itmes listed earlier are improved. The trained weavers would need to be observed in the department as a follow up of training to see whether they follow every important item taught in the classroom. The jobbers and other technicians taking rounds in the department would have to poing out specific lapses to weavers whenever these are noticed. (This implies, that the jobbers and supervisors should know thoroughly what to expect from a trained weaver.)

(c) TRAINING FOR NEW SITUATIONS.

Besides starting a programme of refresher training on an overall basis as discussed above, it would be desirable to introduce 'special refresher course' when a major change in type of work is planned. Examples of wuch a major change, which would need learning of new components of skills and of different type of interference handling, are as follows: introduction of warp stop motion; change from cotton to manmade fibres, especially filament weft, introducting high speed automatic looms in place of older autolooms, changing over from 2-loom to 4-loom allocation etc. Such special refresher programmes would help weavers to adjust quickly to the changed demands of the job. Such training would also help to improve the acceptance of the proposed by the weavers themselves.

4.3 EXPERIENCE WITH REFRESHER TRAINING.

A few mills have imparted refresher training to their weavers. The weavers selected for training were those who consistently know loom efficiency loss by 1% or more than their counter part weaver in other shifts. These loss efficient weavers were trained in controlled studies, for 4 hours per day for 6 to 8 days. The effect of training was observed for three months following the training. It was found that the rtraining resulted in improved efficiency by 2.5% on an average. In some weavers the improvement was as much as 12%. It should be noted that as many as 85% of the trained weavers show improvement and maintained the improved performance.

5.Ø TRAINING OF JOBBERS AND PIECERS.

5.1 The Syllabus:- The Group is of the opinion that the main elements in the training of jobbers and beam piecers should be similar because a beam piecer has the chance of becoming a jobber in course of time and he often works as a substitute jobber. Therefore, the training of beam piecers has not been discussed spearately.

Tradintionally, the senior and efficient weavers are promoted to the post of a jobber, in the plain loomshed, the Group, however, feels that the industry should consider recruiting ITI trained technicians (turner fitter) for this post. The period of training of ITI technicians would have to be longer in comparison to that of experienced weavers because in the initial period of six months the ITI technicians will have to go throught the complete training of a fresh weaver. These techincians will be eligible for the training of a fresh post of a jobber only after successful completion of the weaver training and 2 months experience as a weaver.

The main elements of training for the post of a jobber are given in Appendix: It will be seen from the table that the total duration of training for a jobber selected from among the experienced weavers will be about 18 weeks and for ITI trained techincians it will be 50 weeks in all.

5.2 Facilities Needed for the Training centre.

The requirements of space, equipment and staff can largely be met with the facility set-up available for the training of fresh weavers. The process control instruments available with S.Q.C. department can be borrowed and some others can be procured. The training shed should be additionally equiped with a small workshop consisting of grinder, drill, ect.

5.3 Selection of Trainee.

Most often a trainee will be seleceted from among the efficient weavers in the mill. It has been recommnded above that ITI trained technicians can be recrutied for training and subsequent placement as jobbers. ATIRA has developed suitable tests for the selection of Tacklers for Automatic Looms. These tests have been found effective in screening out the potentially inefficient tacklers. The Group feels that the same tests can be used with advantage for the selection of trainees for the post of jobber and beam piecers. For refresher training the weaving manager in consultaion with his staff should identify those jobbers who require intense practical training. Like weavers,

the average efficiency of their sections can be a guiding factor for the selection of jobbers for the refresher training programme; the jobber whose average efficiency for over 6 months is less than 2% than this counter part should be first identified for training. Further if the efficiency of any section is low because of items 4,5 and 6 (Table I), the jobber should be given intense practical training on loom tunring, maintenace practices and problem solving. If however, the efficiency is low because of items 1,2 and 3, the jobber will need training in handling and helping his weavers to improve the contribution mainly through improved work practices on the part of weavers. A syllabus for refreshor training of jobber is given in appendix VI.

5.4 Training Methodology for Jobbers.

In order that the training of the jobber becomes economical, it is suggested that the number of trainees per batch should be about 15. Naturally all of these cannot be absorbed immediately. So after training, they will have to go back in the department as weavers and as and when a vacancy arises, on the basis of merit-cum-seniority the trainee can be given badlli and finally be absourbed as jobber beam piecer. When the number of unabsorbed trained jobber and beam piecers reduces 5, preparations for training a further batch of

15 trainees should be started. Thus, unlike weavers, the training of jobbers and beam pieceers is not likely to be a continuous activity. When a batch of jobbers and beam piecers is being trained at the training centre, the training of one batch of weavers will have to be skipped. In this way, training of the jobbers and beam piceers will not create any extra strain either financially or physically on the training centre of a mill.

The refresher training for the jobbers and the beam pricers will have to be condensed. It is suggested that the weaving manager in consultation with his staff identifies from the existing jobbers those who require intensive practical training. The rest of the jobbers can be given the condensed classroom training for about one week. For those who reqire intense practical training, it is suggested that an efficient jobber be associated with both the jobbers - the trainer and the trainee should work together. For the duration of the training this will reduce the workload of the trainee jobber and thus allow him to learn loom settings etc. at eases.

5.41 Training of Jobber as a Technician.

A jobber is a technician; he is resopnsible for tuning and setting loom mechinisms so that the loom functions smoothly and produces cloth free from defects of the kind which occur due to faulty loom mechanisms and settings: e.g. reppiness, poor cover, starting marks, floats etc. Therefore, it is essential that he possesses sufficient technological causes and effect insight into functioing of a loom and resulting possible fabric defects. He should be able to appreciate how a change in a particular sotting (say a change from late shedding to early shedding) affects fabric quality, damage, warp weft breaks, consumption of accessories, etc. Such relevant theoretical input should be given during trianing. He should also be exposed to modern concepts and tools like, process control in loomshed, process control instruments for looms, testing of loom accessories. For those jobbers who require intense practial training, as suggested earlier, and efficient jobber be associated for a period of at least 1 month when both the jobbers - the trainer and the trainee should work together for the duriation of training. This will reduce workload of the trainee and thus allow him to spend more time in acutally

practising correct practices. The trainer too, would be willing to undertake this kind of responsibility because he gets some one else to share his workload, besides getting a recongition of his superior conpetence.

5.42 Training Jobbers as a Loader and Manager of Weavers.

A jobber is the first link that connects the technologist supervisors with he weavers and his position repersents the first step in the management hirerarchy. This position of a jobber can be effectively used for communicating them. Therefore, training of jobbers for effectrively leading this group of weavers is very important. In many cases it may not be the techincal competence of the jobber but his handling and guiding of the weavers that helps to improve efficiency in his section. In fact section wise shap efficiency data, though limited, show that loss of efficiency due to item 4,5 to 6 (Table I) is not very differnt between the high efficiency and the low efficiency sections in a loomshed. it is because of items 1,2 & 3 that the efficiency of the whole section is low. This means that the contribution of weavers is very singinficant in infulencing the efficiency of the

whole department. It can be inferred that a jobber who insists and ensures that his weavers follow correct work organisaion, will achieve higher efficiency. This point should be brought home during the training of the jobbers. The jobbers should understand very clearly as to what is meant by correct work organisation of a weaver. A jobber should nct only know advantage of proper work organisation, but also be able to help his weavers to follow the right methods.

6.Ø THE COST AND BENEFITS OF ESTABLISHING A TRAINING CENTER.

It is statutoty that every mill trains a speified minimum unmber of weavers per year. In practice, such training is not given very systematically. Therefore, the industry does not get the due advantage from this law enforced by the Government. But does the industry realize how much is it losing but not undertaking training of workers sericusly. It will be interesting to illustrate this point on the basis of typical data from the industry. In the opinion of the Group, the following cost would be incurred on establishing and running a training centre.

CAPITAL COST.

(1) Building.

i) Classroom.	60 spuare metre	= Rs.50,000
ii) Training Shed	60 spuare metre	= Rs.80,000
iii) Furnishings		= Rs.10,000

(2) Equipment.

i) 7 looms in running conditions	= Rs.50,000
ii) 10 Dummy Loom	= Rs. 5,000
iii) Tools, aids, Miscellaneous 1 Drill & Grinder.	= Rs.10,000
	Rs,2,05,000

RECURRING COST PER YEAR

i) Salaries of Trainers inclusives of parks and benefits.	= Rs.36,ØØØ
ii) Interest on Capital	= Rs.3Ø,75Ø
iii) Depreciation	= Rs.11,ØØØ
iV) Miscellaneous - Power, Stationary, Teaching aids, Spare Parts, Overtime.	= Rs. 2,ØØØ
v) Stipend for 4Ø trainees for 6 months @ Rs.23Ø/- per month	= Rs.55,ØØØ
	Rs.1,34,95Ø
Trining Cost per Trainee	= RS. 5,4ØØ

On the bast of typcal data presented in Table I and II, it is quite safe t assure that as a result of proper training, on an average the loomshed efficiency data as repersentstive of the industry.

1) Average working life of a freshly trained weaver (years)	=	3Ø
2) No. of working days per year	=	284
3) Average selling price per metre(Rupees)		7.Ø
4) Average contribution per metre(Rupees)		2.8Ø
5) Average production per shift weaver on 4 loom, metres.	=	11Ø
6) Annual production per weaver(Metre)	=	31,24Ø

7) Extra production from 3% increase in efficiency due to training (Metres) = 937.2

8) Increase in cash inflow @ 2.80 metre = 2,624

9) Therefore pay back period for training (years) = 1.3

10) And annual gains for an average mill employing 700 weavers per day(Rupees) = 2624x700

= 18,36,800

In fact the total gain from proper training comes to much than in the above example which shows gains from increase in production alone. There would also be a substantial reduction in the incidence of fabric defects by providing proper training. Systematic data are though not available on the effect of training on fabric damages, however, on the basis of general experience of the group, it can be assumed that for an average mill with 5% value loss, at least about 2.5% is because of weaving and of this about 1.0% is weaver's contribution. For an average mill with annual rate of about 11 crores, a reduction of 1\2% value loss because of improved weaver practices resulting from proper training will result into an additional profit of Rs.5.5 lakhs. Besides, systematic training can help in reducing losses due to absenteeism, grievances, negligence of machine and accessories.

7.Ø CONCLUSTION.

Training of weavers and jobbers in loomshed is very essential for improving profitability of a mill an average mill employing about 7ØØ weavers per day can increase its annual profitability by at least 23.5 lakhs after training of all weavers. Besides substanitial financial gains, training of operatives will also improve employer employee relataions, reduce grievance, leading to better understanding of the company objectives and create and environment where better traditions will be passed down to the successors. Above all, training improves skills and versatility of an operative making him capable of handling wide range of products. The mills should resort to training of weavers and jobbers without loss of time.

TABLE I

EFFECT OF HUMAN FACTORS TO LOSS IN LOOMSHED EFFICIENCY

Excess Loss Over that Expected for a loom performance

Cause	Non-Auto Looms		Auto looms		Remarks
	Average	Range	Average	Range	Major Reasons of Excess Loss
Loom Stopages					
1.Weaver Attending. working of	0.5	0.0-2.0	0.2	0.0-1.0	Basic knowledge of work and speed of the weavers not satisfactory.
2.Waiting for Weavers Attention.	2.5	1.0-8.0	0.3	0.0-2.0	Work methods of weavers not satisfactory + the reason given for weaver attending if this loss is also in excess.
3.Weaver Away	0.4	0.2-4.0	0.0	0.0-0.2	Practices/Habits,Extra Duties.
4.Beam Changes	0.4	0.0-3.0	0.5	0.0-6.0	Long time taken by jobbers/Beam Gaiters.
5.Loom maincenance. (excluding looms stopped for over hauling and shortage of parts)	0.2	0.0-3.0	0.5	0.0-4.0	Competence of jobbers, schedules & adherance.

Loom Speed

6.Lower than nominal due to belt slippage	1.5	1.0-12.0	1.0	0.0-3.5	Operatives tamperi▸ with the drive(hal· pully,slackening, lubricating drive belts,etc.)

TABLE II

DISTRIBUTION OF LOOM EFFICIENCY OF WEAVERS IN A MILL

Difference in % Efficiency between two weavers working on the same looms in A and B Shifts		Average Efficiency	
Difference in Effeiciency % (more than)	% of Weavers	Average Efficiency % (Less than)	% of Weavers
6.Ø1	6.8	.71	1.8
5.51	9.9	72	3.3
5.Ø1	12.4	73	4.8
4.51	17.3	74	7.9
4.Ø1	26.6	75	12.5
3.51	32.1	76	22.7
3.Ø1	36.4	77	31.9
2.51	46.3.	78	41.5
2.Ø1	53.1	79	51.4
1.51	67.7	8Ø	61.Ø
1.Ø1	78.4	81	73.6
Ø.51	88.3	82	85.Ø
Ø.Ø1	1ØØ.Ø	85	1ØØ.Ø

Total No. of Weavers : 324

No. Of pairs of Weavers : 162

Average cifference in

Efficiency % of a pair : 2.71

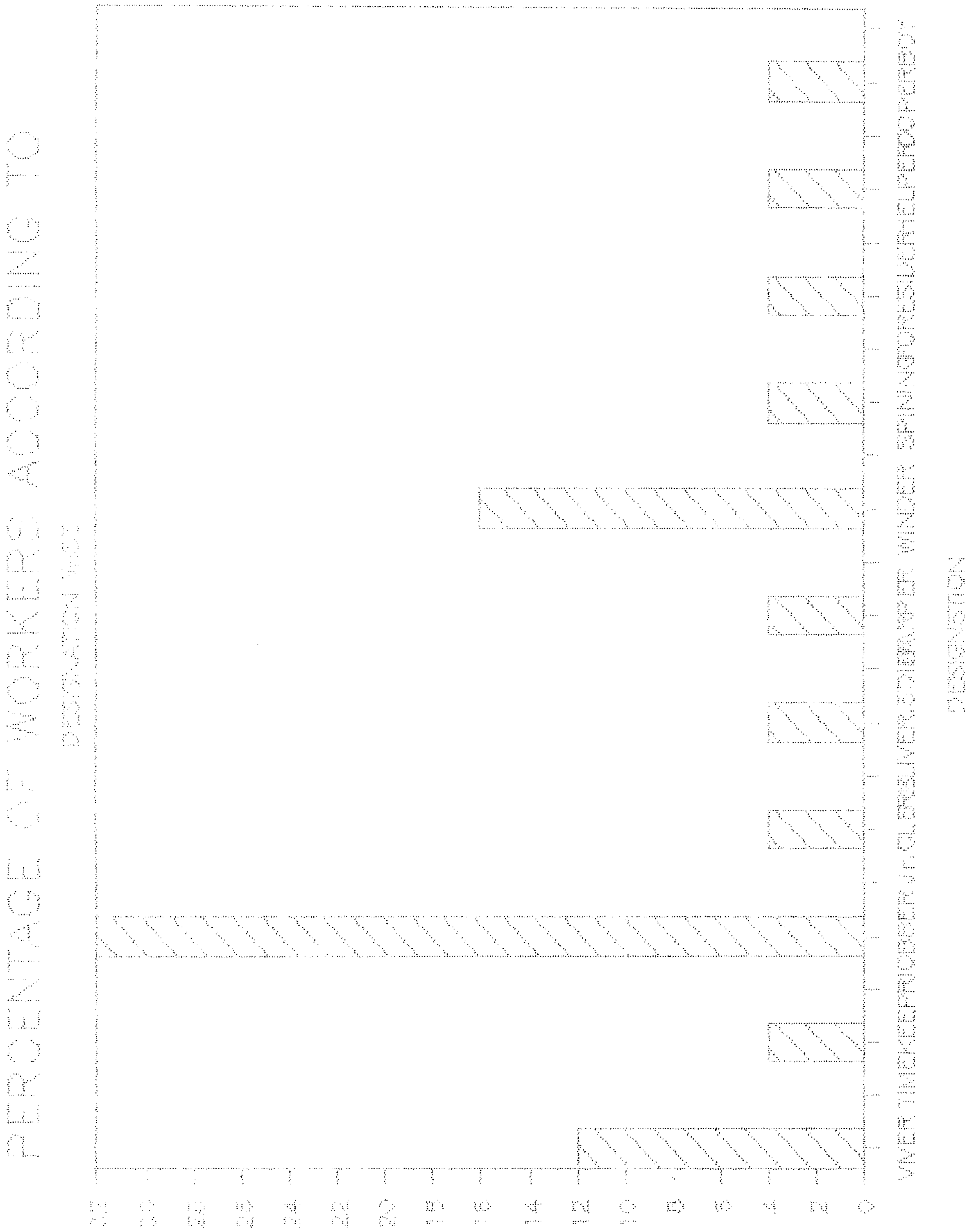
Average Efficiency %

of the shed :78.7

Percentage of workers according to Designation wise.

DESIGNATION	NO.OF WORKERS	PERCENTAGE
VIVER	3	12 %
TIMEKEEPER	1	4 %
JOBBER	8	32 %
JR.CLERK	1	4 %
RELIVER.SIDER	1	4 %
WARPER	1	4 %
WINDER	4	16 %
SPINING	1	4 %
FORESIDER	1	4 %
HELPER	1	4 %
DOPERBOY	1	4 %

Table No.1 shows analysis of the workers according to disignationwise. From this table we conclude that the most of workers work as a jobber (32%). 16 % workers work as a winder, where as we consider that very few workers work as helper,foresider,doperboy etc.


PERCENTAGE OF WORKERS ACCORDING TO
DESIGNATION

Agewise percentage of workers employed in the mill.

Age group	No.of Workers	Percentage
25-29	2	8 %
3Ø-34	5	2Ø %
35-39	5	2Ø %
4Ø-44	8	32 %
45-49	4	16 %
5Ø-54	-	-
55-59	1	4 %

This table shows the following facts.

1) Major no of workers belong to the age group 4Ø to 44 years

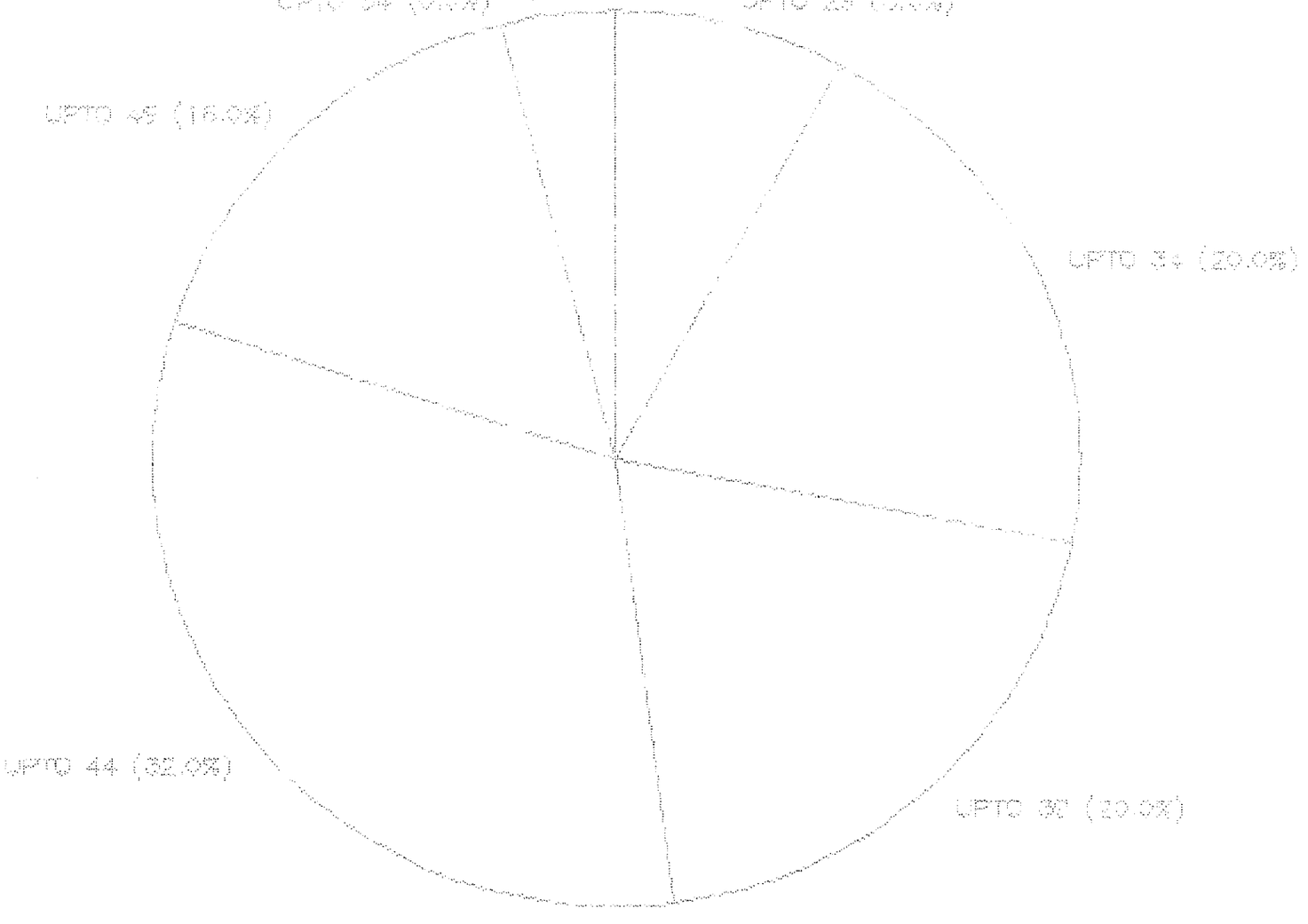
2) Minor no of workers belong to the age group 55 to 59 years

3) 4Ø% of workers come under the age group 3Ø to 39 years

So what ?

AGEWISE PERCENTAGE OF WORKERS

EMPLOYED IN THE MILL

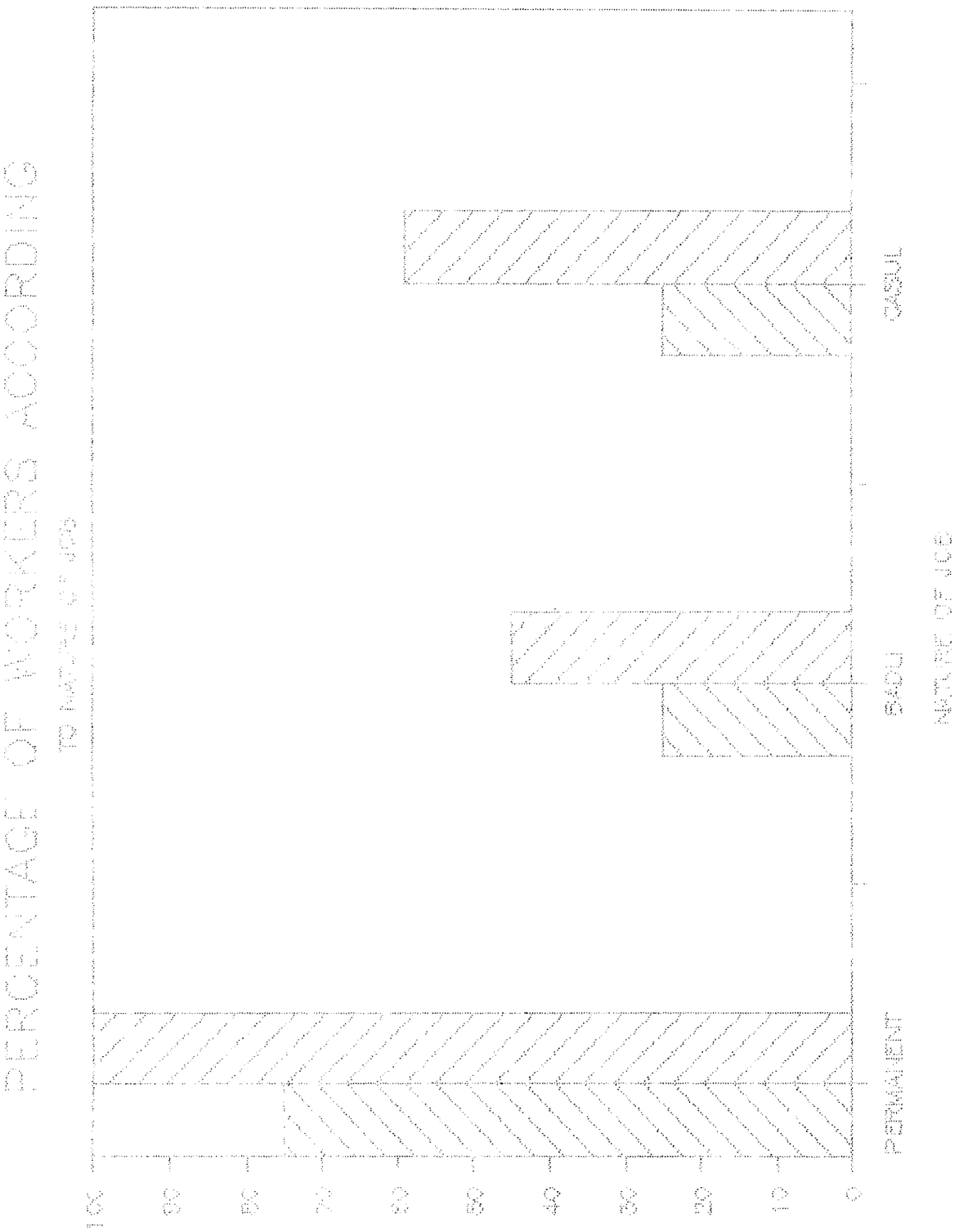


Percentage of workers according to Nature of job

Nature of job	No.of Workers	Percentage
PERMANENT	15	75 %
BADLI	5	25 %
CASUAL	5	25 %

of what?

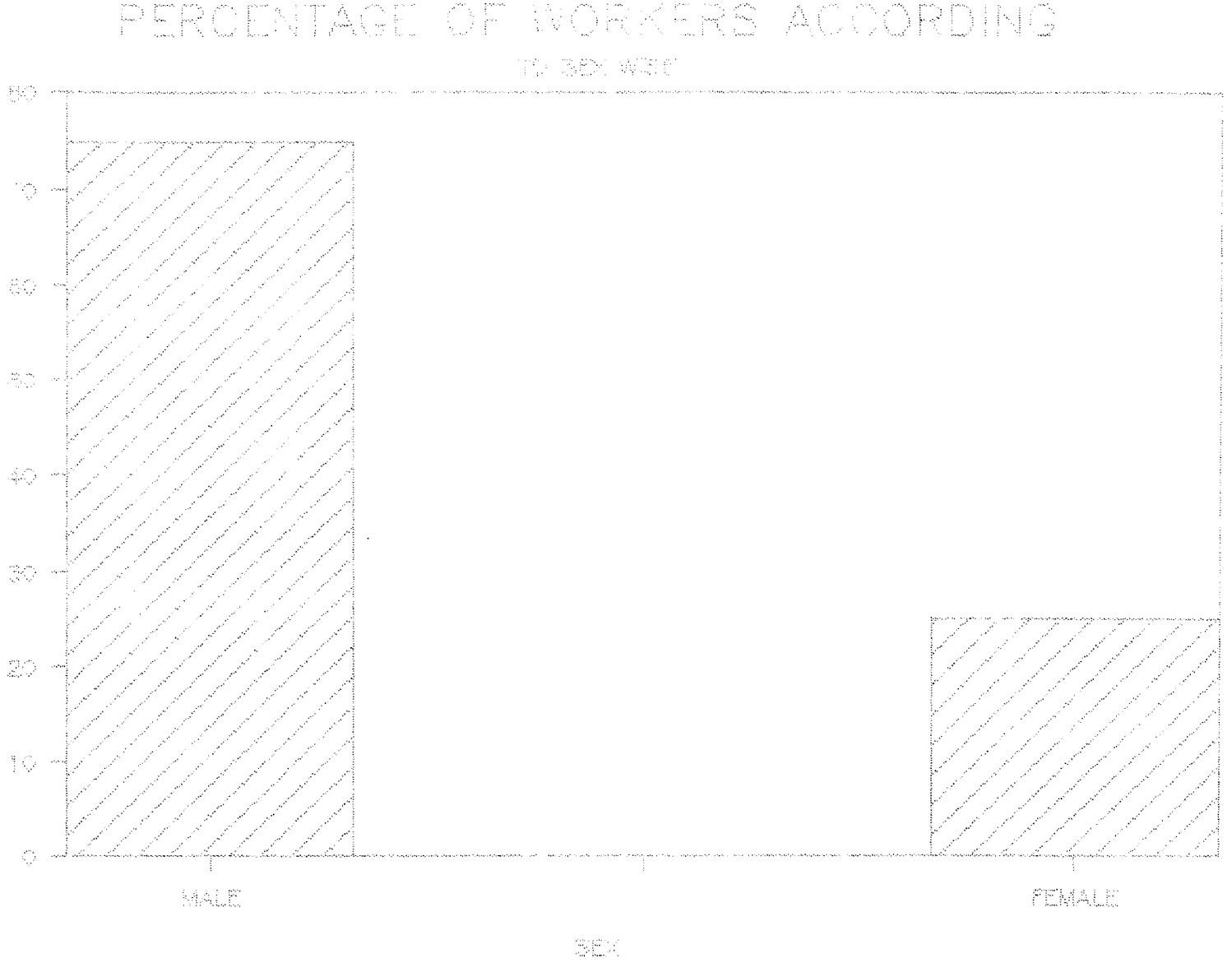
From the above table we can conclude that maximum workers from permant category.


PERCENTAGE OF WORKERS ACCORDING
PERMANENT
CASUAL
NATURE OF JOB
100
90
80
70
60
50
40
30
20
10
0

PERCENTAGE OF WORKERS ACCORDING TO SEX WISE.

SEX	No.of Workers	Percentage
MALE	20	75 %
FEMALE	5	25 %

This table shows that maximum no.of workers belong to male category.


PERCENTAGE OF WORKERS ACCORDING
50
40
30
20
10
0
MALE
FEMALE

Percentage of workers according to caste wise.

CAST	No.of Workers	Percentage
HINDU MARATHA	19	76 %
HINDU(MANG)	1	4 %
HINDU MARATHA (O.B.C)	1	4 %
MUSLIM	1	4 %
SANGAER	2	8 %
BHANDARI	1	4 %
	25	100 %

The above table shows that majority of the workers from Hindu-Maratha caste. Minimum no.of workers come from other castes.

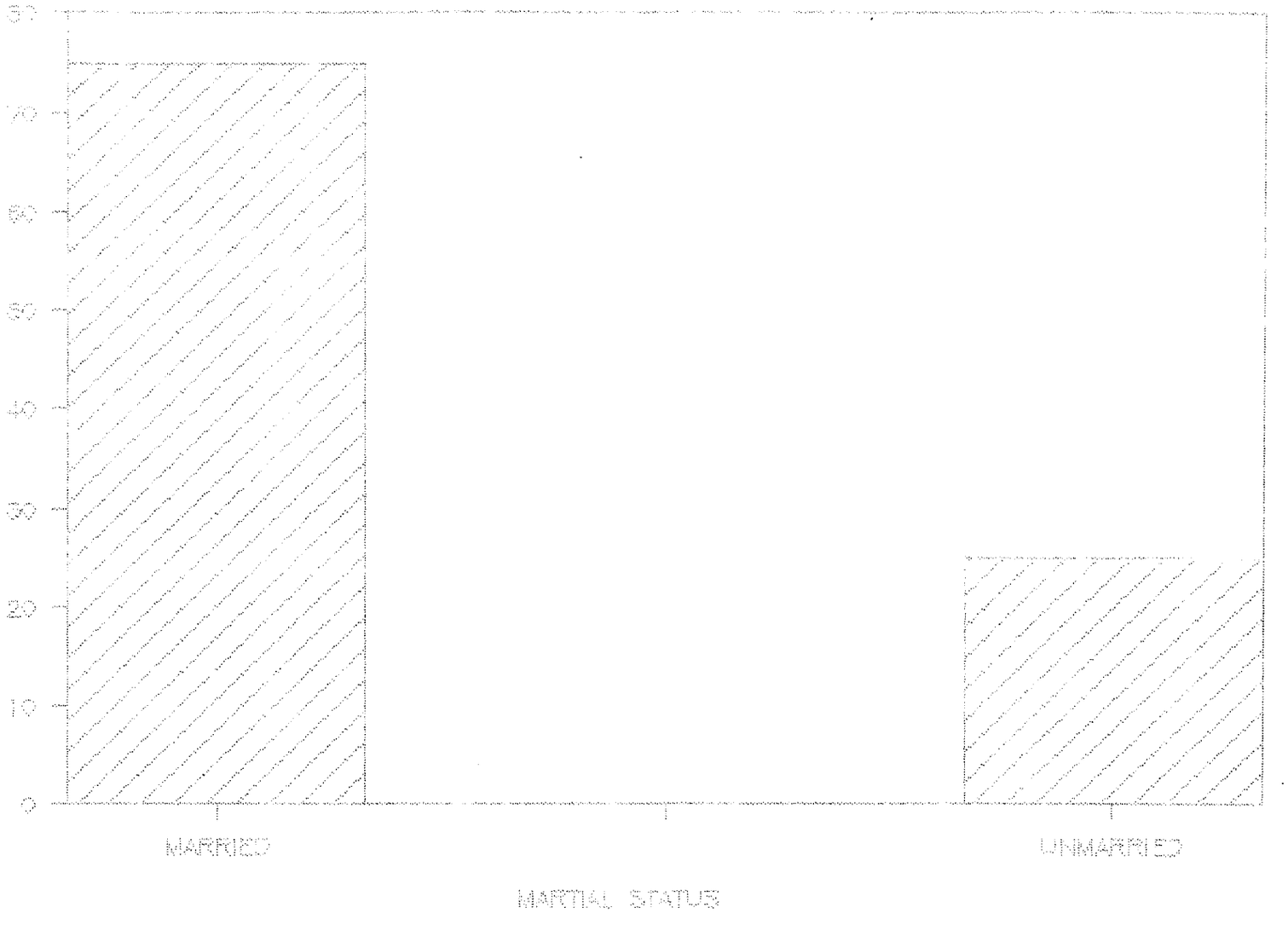
PERCENTAGE OF MUNICIPALITIES
ACCORDING TO CASTE WISE
BHANDARA (4.08)
SANGLI (8.08)
MUSLIM (4.08)
HINDU MARATHA (75.08)

PERCENTAGE OF WORKERS ACCORDING TO MARTIAL STATUS.

Martial status	No.of Workers	Percentage
MARRIED	2Ø	75 %
UN MARRIED	5	25 %
	25	1ØØ %

The above table shows maximum workers are married.

PERCENTAGE OF WORKERS ACCORDING TO MARITAL STATUS



Percentage of workers according to distance wise.

K.M.Class	No.of Workers	Percentage
1-5 km.	15	6Ø %
6-1Ø km.	4	16 %
11-15 km.	5	2Ø %
16-2Ø km.	1	4 %
21-25 km.	Ø	Ø %
	25	1ØØ %

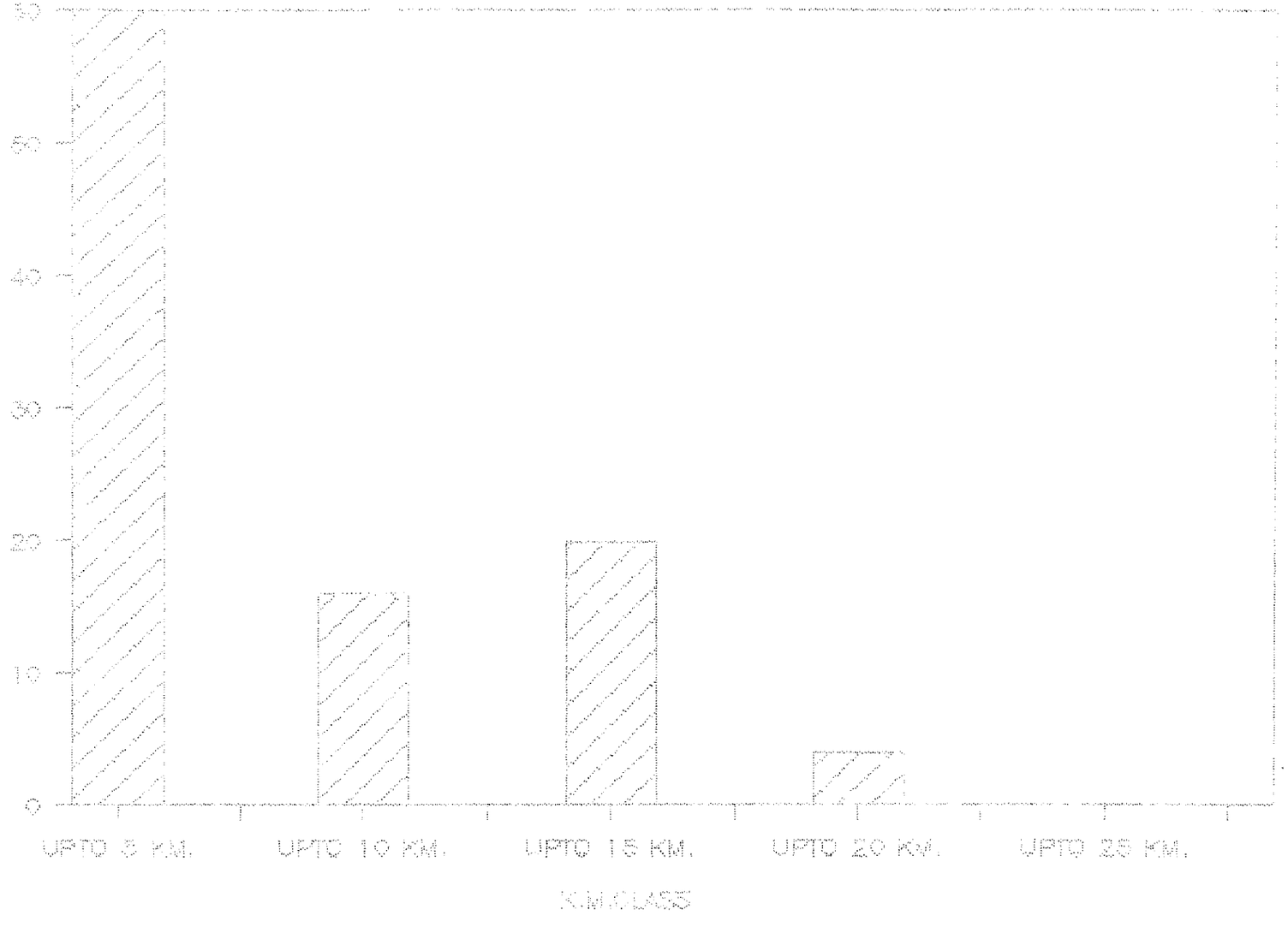
The above table shows that the no.of workers according to distance wise observed that majority of workers(6Ø%) come from 1 to 5 k.m.

16% came from 6 to 1Ø k.m.

2Ø% came from 11 to 15 k.m.

4% came from 16 to 2Ø k.m.

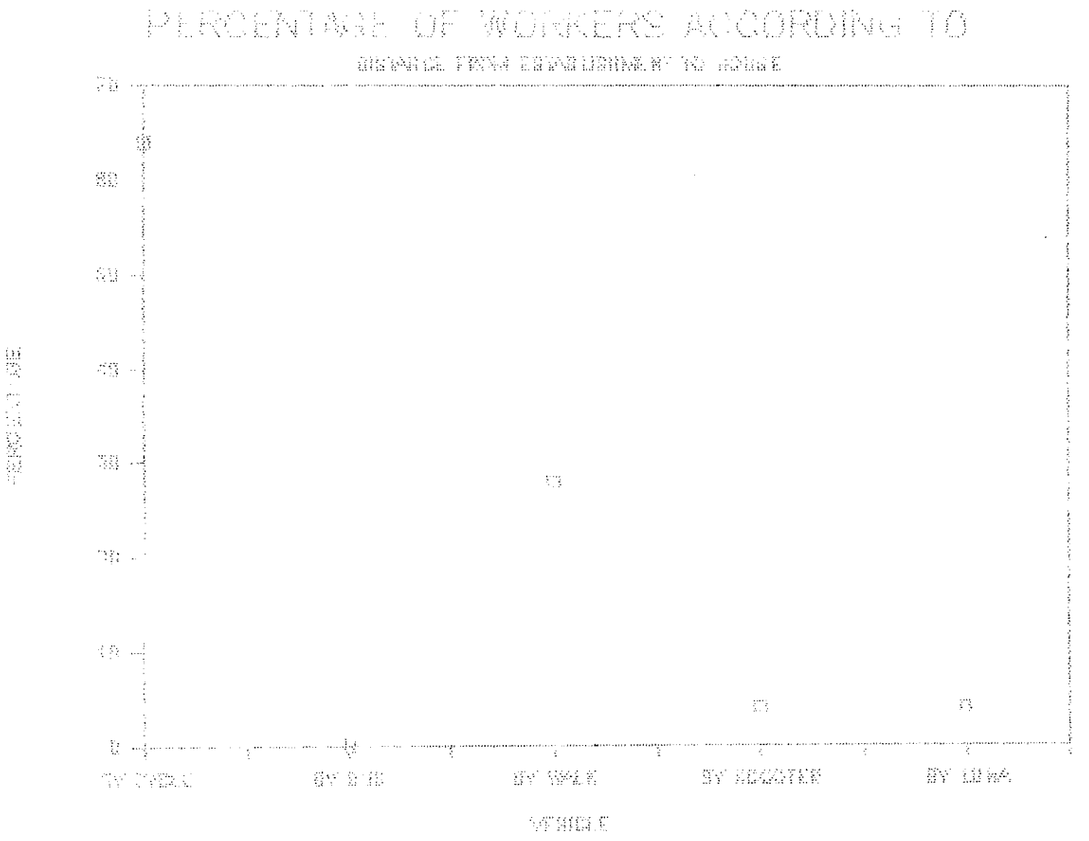
So what?


PERCENTAGE OF WORKERS ACCORDING TO
DISTANCE WISE
60
50
40
30
20
10
0
UPTO 5 KM.
UPTO 10 KM.
UPTO 15 KM.
UPTO 20 KM.
UPTO 25 KM.
KM.CLASS

Percentage of workers according to distance from this establishment to your house.

Vehicle	No.of Workers	Percentage
BY CYCLE	16	64 %
BY BUS	Ø	Ø %
BY WALK	7	28 %
BY SCOOTER	1	4 %
BY LUNA	1	4 %
	25	1ØØ %

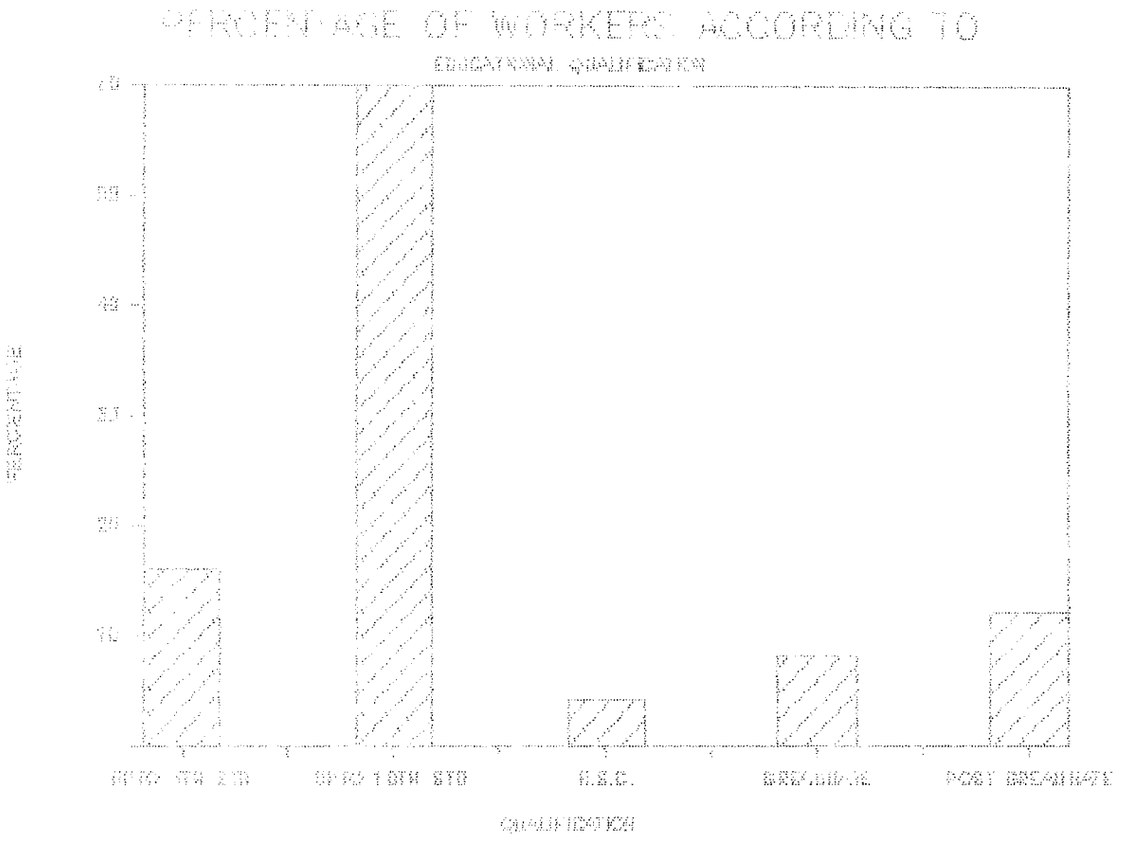
This table shows that maximum no.of workers come to mill by cycle 4% of workers come to mill by scooter. 4% of workers come to mill by luna. 28% of workers come to mill by walk.


PERCENTAGE OF WORKERS ACCORDING TO
BY VEHICLE

Percentage of workers according to educational qualification

QUALIFICATON	No.of Workers	Percentage
1 TO 5 STD	4	16 %
6 TO 1Ø STD	15	6Ø %
H.S.C.	1	4 %
GRADUATE	2	8 %
Post. Graduate	3	12 %
	25	1ØØ %

1) This table shows that 6Ø% of workers in 6 to 1Øth std.
2) 12% workers post-graduate.
3) 8% workers graduate
4) 4% of workers H.S.C only.

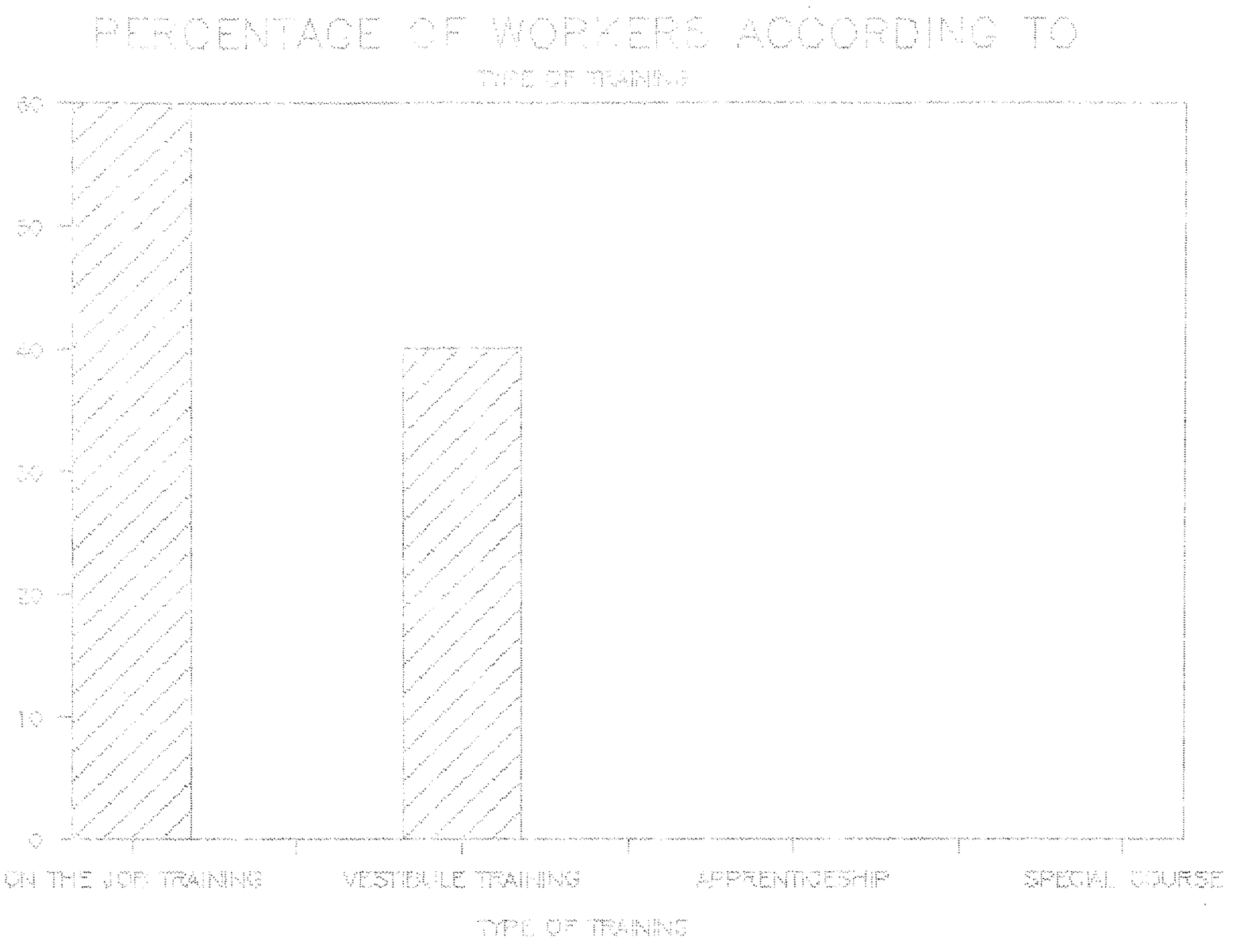

OF PERCENTAGE OF WORKERS ACCORDING TO
EDUCATIONAL QUALIFICATION
PERCENTAGE
QUALIFICATION
M.S.C.

Percentage of workers according to type of training.

TYPE OF TRAINING	No.of Workers	Percentage
ON THE JOB TRAINING	15	6Ø%
VESTIBULE TRAINING	1Ø	4Ø%
APPRENTICESHIP	Ø	Ø%
SPECIAL COURSE	Ø	Ø%

The above table shows that the classification of workers according to type of training.

1) The majority of workers work on the job training method (6Ø%).
2) 4% of workers work in vestibule training method.


PERCENTAGE OF WORKERS ACCORDING TO
TYPE OF TRAINING
60
50
40
30
20
10
0
ON THE JOB TRAINING
VESTIBULE TRAINING
APPRENTICESHIP
SPECIAL COURSE
TYPE OF TRAINING

Percentage of workers according to experiencewise

YEAR	No.of Workers	Percentage
1 TO 3 YEAR	13	52 %
4 TO 6 YEAR	2	8 %
7 TO 9 YEAR	Ø	Ø %
1Ø TO 13 YEAR	1	4 %
14 TO 17 YEAR	1	4 %
NO TRAINING	8	32 %
	25	1ØØ %

This table shows that percentage of workers according to experiencewise.

1) 4% of workers 4 to 7 years

2) 4% of workers 1Ø to 13 "'

3) 52% of workers 1 to 3 """

4) 32% of workers nc Excerience.

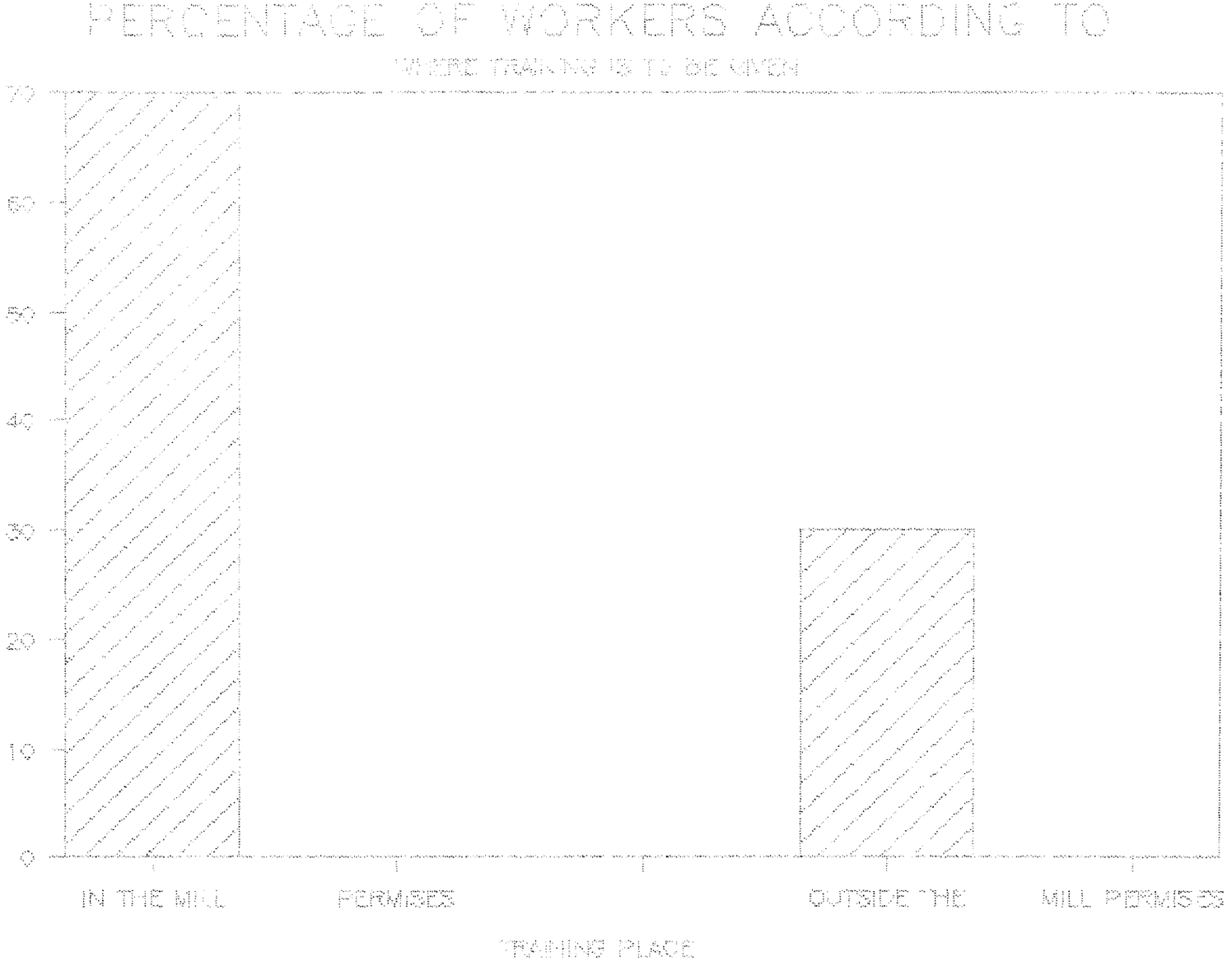
PERCENTAGE OF WORKERS ACCORDING TO EXPERIENCE

Percentage of workers according to where training is to be given.

TRAINING PLACE	No.of Workers	Percentage
IN THE MILLS PREMISES	14	7Ø %
OUTSIDE THE MILLS PERMISES	6	3Ø %
	2Ø	1ØØ %

From this table we can observe that 7Ø% of workers opinion that training should be given in the mills premises.

very few % of workers i.e.6% opinion that training should be given out of mills premises.


PERCENTAGE OF WORKERS ACCORDING TO
WHERE TRAINING IS TO BE GIVEN
70
60
50
40
30
20
10
0
IN THE MILL
PREMISES
OUTSIDE THE
MILL PREMISES
TRAINING PLACE

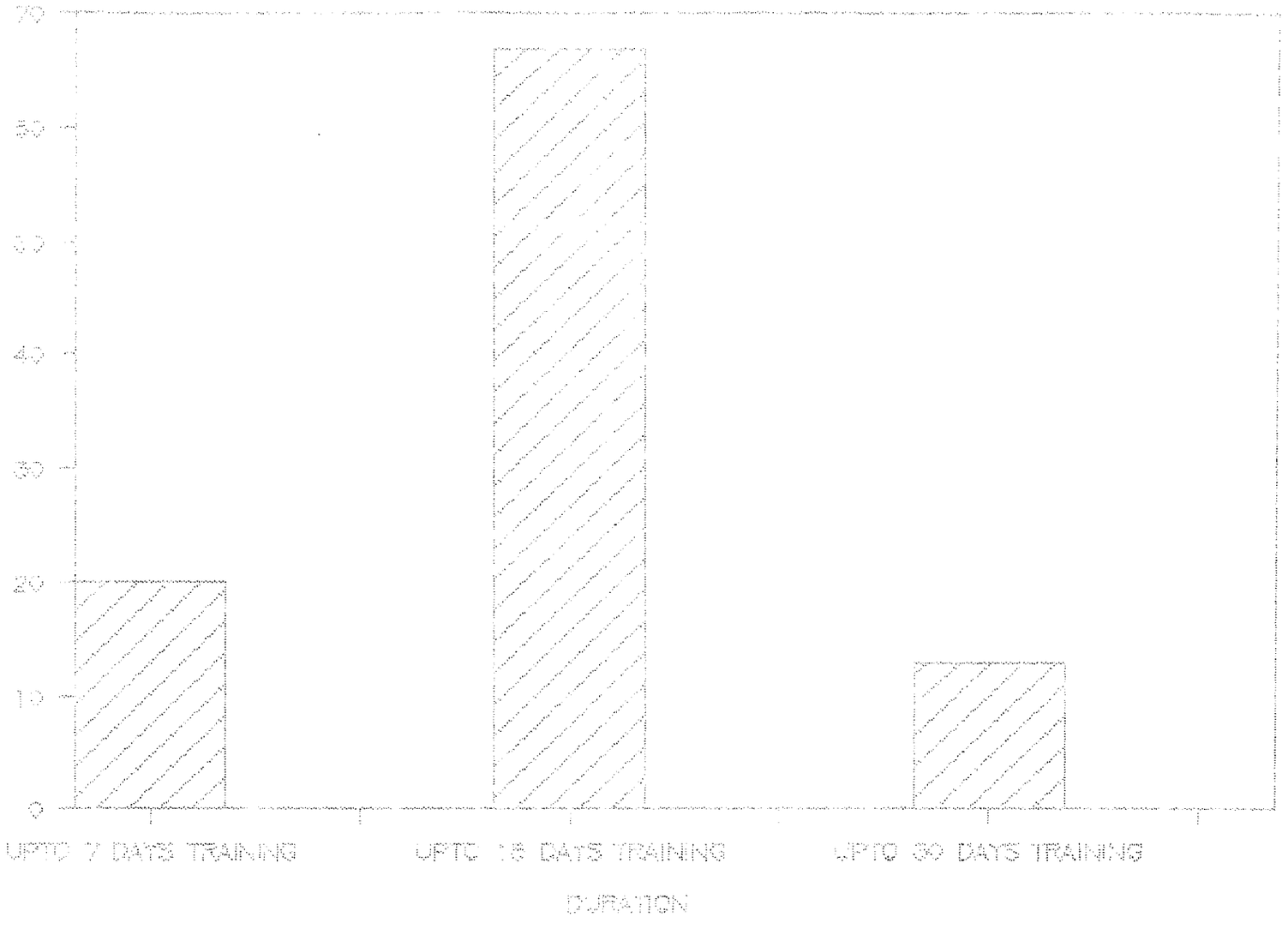
Analysis of the workers according to duration of training programme.

Duration	No.of Workers	Percentage
7 days training.	3	2Ø %
15 days training	1Ø	67 %
3Ø days	2	13 %
	15	1ØØ %

1) 67 % of workers suggested that the training programme ought to be 15 days.
2) 13% of workers suggested that the training programme ought to be 3Ø days.

3) 2Ø % workers suggested training programmes should be for 7 days.

ANALYSIS OF THE WORKERS ACCORDING TO DURATION OF TRAINING PROGRAMMES

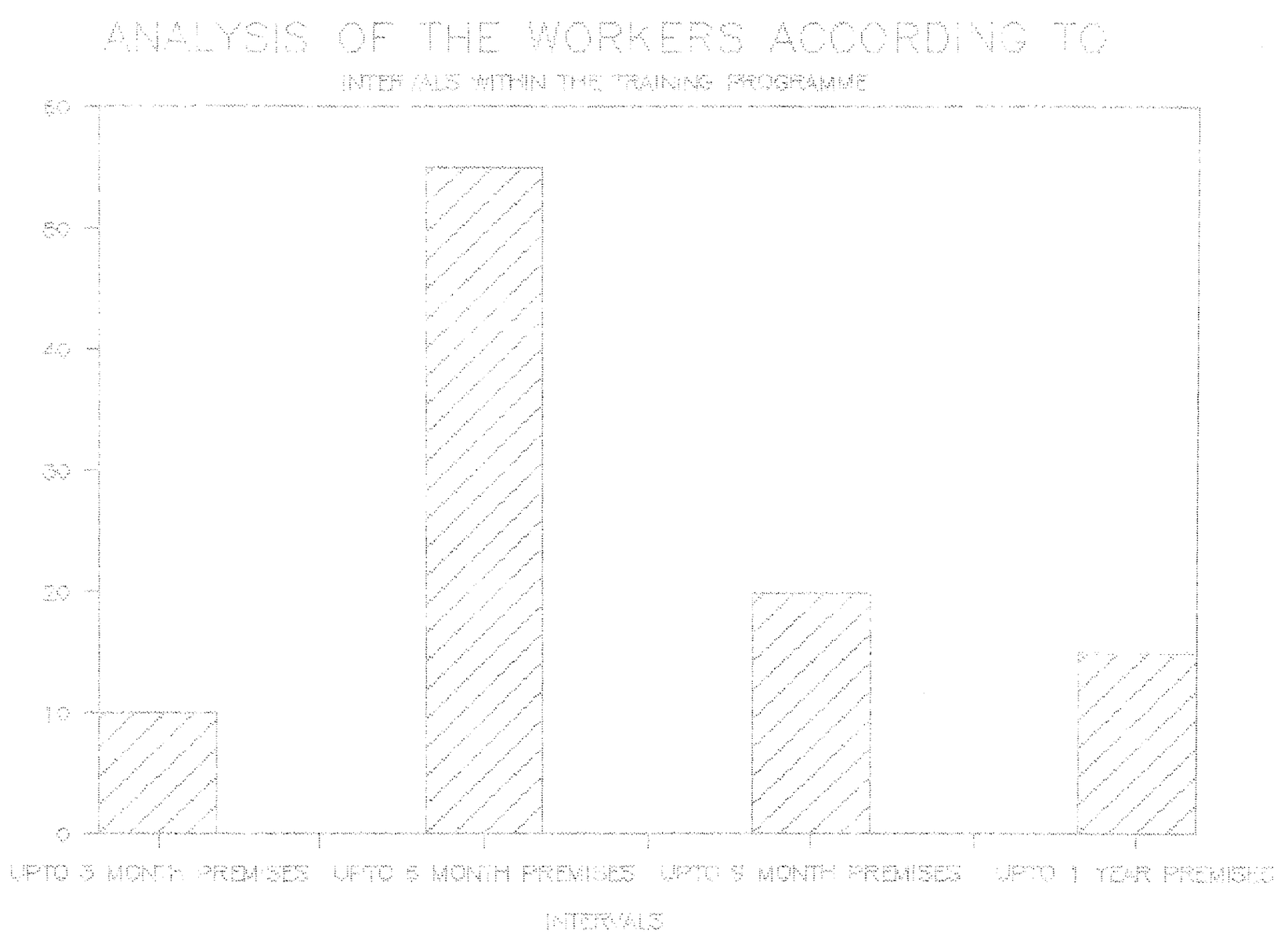


Analysis of the workers according to intervals within the training programme are conducted

INTERVALS	No.of Workers	Percentage
1 TO 3 MONTH	2	1Ø %
4 TO 6 MONTH	6	55 %
7 TO 9 MONTH	4	2Ø %
1Ø TO 1 YEAR	3	15 %
	15	1ØØ %

This table shows that percentage of workers according to intervals within the training programme.

1. 55% worker's 4 to 6 months
2. 2Ø% workers 7 to 9 ""
3. 1Ø % workers 1 to 3 ""


ANALYSIS OF THE WORKERS ACCORDING TO
INTERVALS WITHIN THE TRAINING PROGRAMME
60
50
40
30
20
10
0
UPTO 3 MONTH PREMISES
UPTO 6 MONTH PREMISES
UPTO 9 MONTH PREMISES
UPTO 1 YEAR PREMISES
INTERVALS

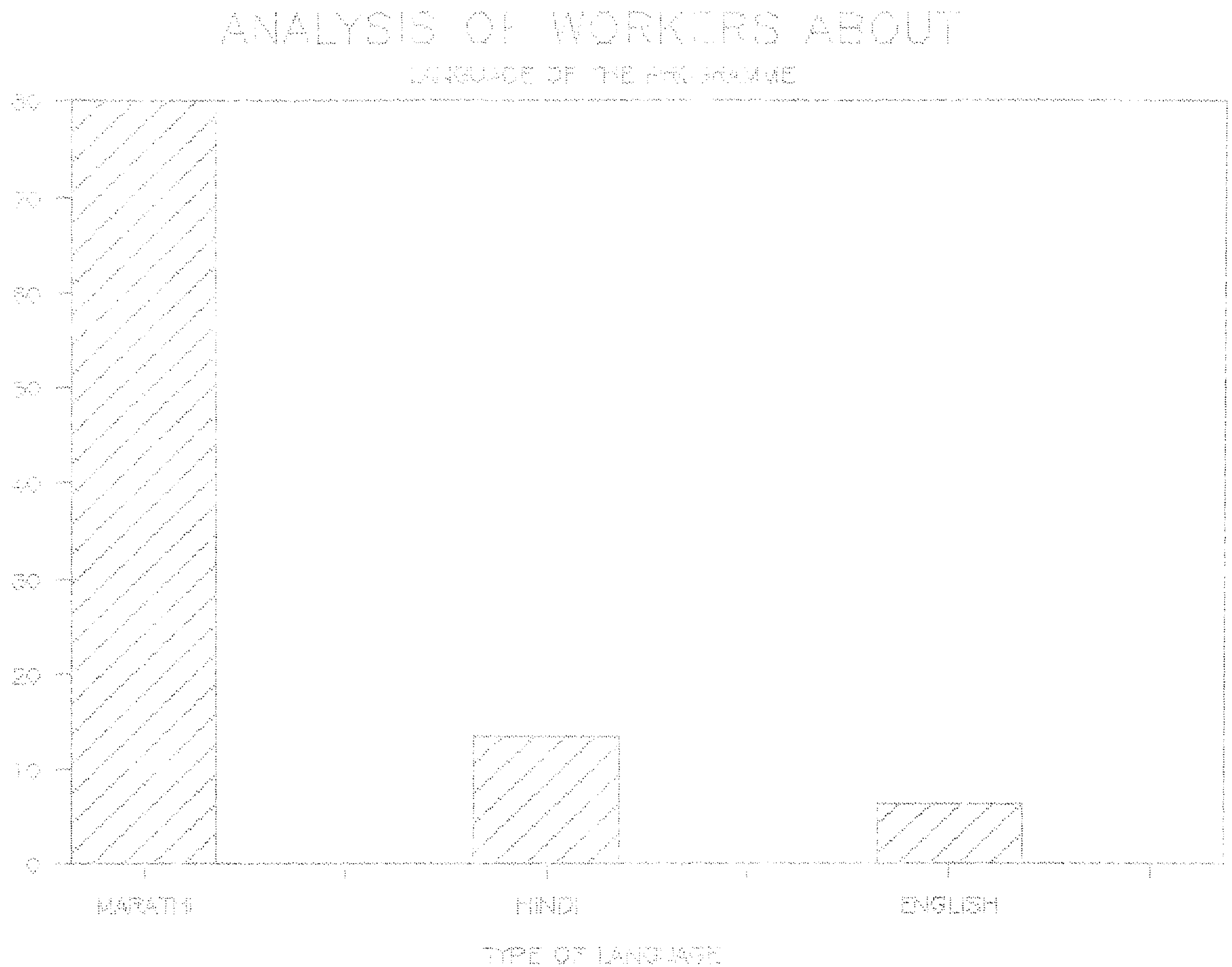
Analysis of workers about language of the programme.

TYPE OF LANGAUGE	No.of Workers	Percentage
MARATHI	12	8Ø %
HINDI	2	13.5 %
ENGLISH	1	6.5 %
	15	1ØØ %

* 8Ø % OF WORKER'S ARE OF THE OPINION THAT THE TRAINING SHOUSD BE IN MARATHI LANGUAGE ONLY.

* 13.5% OF WORKERS ARE THE OPINION THAT THE TRAINING SHOULD BE IN HINDI LANGUAGE.

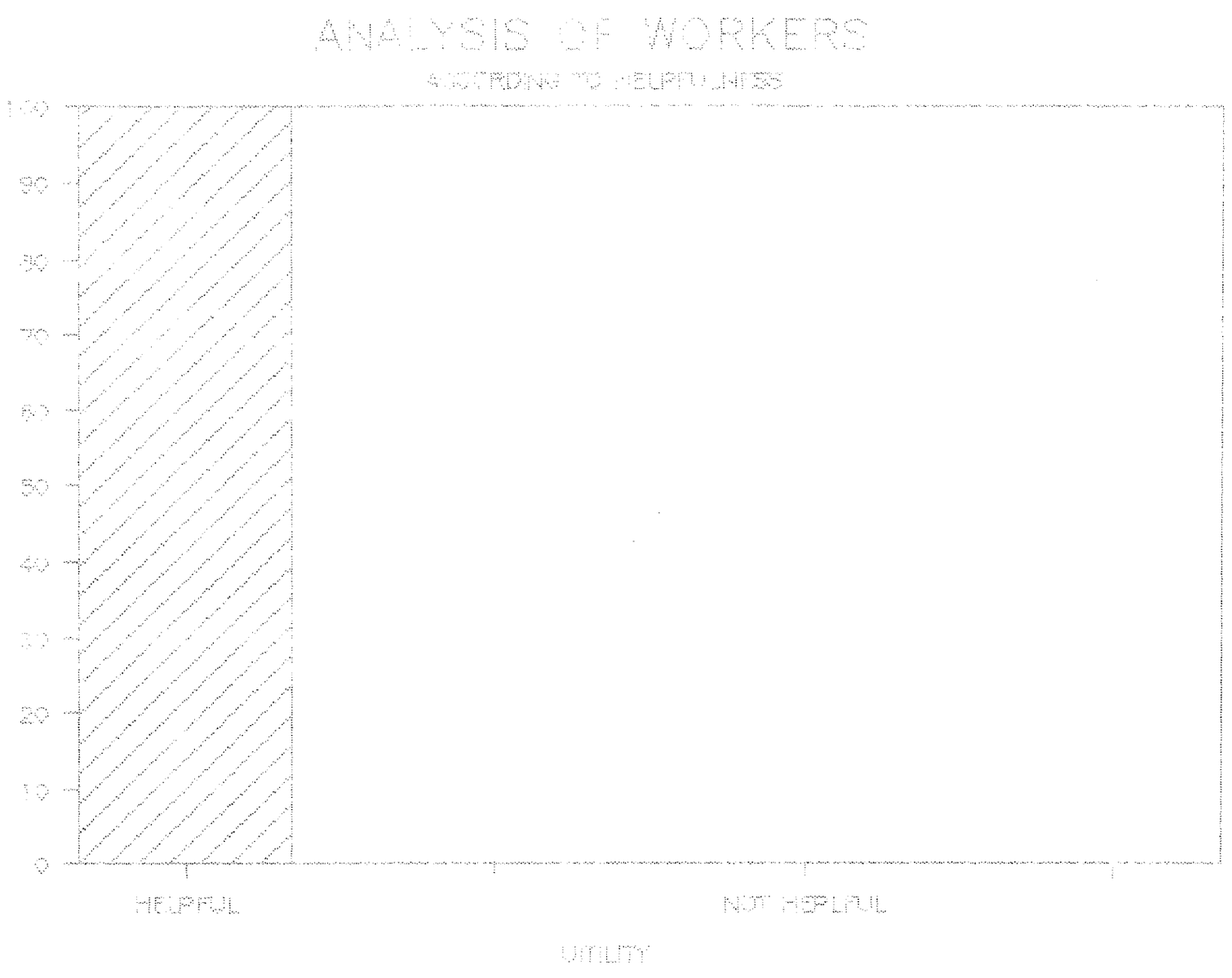
* VERY FEW OF THE WORKERS RECOMENDED THAT THE TRAINING SHOULD BE CONDUCTED IN ENGLISH ONLY.


ANALYSIS OF WORKERS ABOUT
LANGUAGE OF THE PROGRAMME
80
70
60
50
40
30
20
10
0
MARATHI
HINDI
ENGLISH
TYPE OF LANGUAGE

ANALYSIS OF THE WORKERS ACCORDING TO HELPFULNESS.

UTILITY	NO.OF WORKERS	
HELP FUL	25	100 %
NOT HELPFUL	0	0
	25	100 %

TRAINING PROGRAMME IS HELPFUL IS THE OPINION OF THE ALL WORKERS.


ANALYSIS OF WORKERS
HELPFUL
NOT HELPFUL
UTILITY

ANALYSIS OF THE WORKERS ACCORDING TO SATISFACTION FROM THE TRAINING TYPE.

TRAINING TYPE	No.of Workers	Percentage
PRACTICAL	9	6Ø %
THEORTICAL	2	13.5%
DEMONSTRATION	4	26.5%
	15	1ØØ %

1. MOST OF THE WORKER'S SUGGESTED THAT MORE STRESS SHOULD BE GIVEN FOR THE PRACTICAL WORK.
2. 13.5 % WORKERS SUGGESTED THAT THEORITICAL KNOWLEDGE SHOULD BE GIVEN FOR THE WORKERS.
3. 26.5 % WORKERS SUGGESTED THAT DEMONSTRATION METHOD SHOULD BE USED FOR TRAINING.

ANALYSIS OF WORKERS ACCORDING TO

SATISFACTION FROM THE TRAINING TYPE