Regarding the axoplasmic migration Baroness (1969) had pointed out that "axons are the link through which electrical and chemical information are transported from the perikaryon to the nerve ending and synapse". The studies of axoplasmic migration suggested that "the axon should not be viewed as an inert wire connecting two important but distant structures. Rather it appeared that there may be rapid transport of materials from some nerve cell bodies to some nerve endings, that many active processes both mechanical and chemical may occur within the axon and nerve ending." He also pointed out that "regulation of these processes may be an important means for regulating the function of the nervous system".

Accordingly the chemical make-up of the nerve cell seemed to depend on the type of axoplasmic material that migrates. An alteration in the axoplasmic flow rates would naturally result in the selective accumulation of the materials and which might in turn influence the nerve cell metabolism. Such a conclusion was based on the investigations of Moore (1965); Tower and Wherrette; Wherrette and Tower (1971); Wedge (1975) who showed the role of the brain acidic and basic proteins in the functional organisation of the nervous tissue. Evidently in the present investigation also the selective accumulation of proteins as observed in the cathodal and anodal tissue as induced by voltage gradient were
found to alter the nerve cell metabolism. These studies and the studies mentioned above have given a new idea to the author that the study of flow rates of different materials of axoplasm in various nervous disorder may throw light on the clinical importance.

The medulla oblongata of sheep brain is selected only to bring out a change in the chemical make up of the axons. (Vide pages 1 to 7 for details). This approach made the author also to study the relationship between the cellular protein make up and the hormonal action. The results obtained in the second chapter clearly indicated the above relationship. These results might have clinical and pathological significance in view of the non-enzymic protein modulator activities on both enzyme activities and on the hormone activities either favourably or unfavourably. For example recently Ng et al., (1974) partially purified a peptide from the human urine having potentiating action of insulin in the isolated rat diaphragm and in the rabbits and rats. He viewed that deficiency of production of such peptide might lead to decrease in the sensitivity to insulin. Such protein types including the protein types observed in the anodal axonal tissue may have clinical value. This is more so because of the therapeutic value of certain protein types on the brain. For example, the altered levels of glutamate dehydrogenase and decarboxylase were restored to normal level by feeding the protein casein to the under nourished rats (Rajalakshmi et al., 1974 a, b). For another example when protein feeding was reduced from 20% to 2% in monkeys severe anorexia, pericocular oedema, tremors, atrophy of visceral organs, fatty liver, hypo albuminaemia and depressed serum levels of essential amino acids were observed (Enwemwe and Worthington, 1973). Chronic diabetes entering the clinics were found to respond
favourably to high amounts of protein in the diet (Joslin, 1959). The treatment with casein was found to have positive effect in 66% of adults suffering from diabetics (Srinivasan, 1957; Srinivasan, et al., 1971). The anodal and the cathodal axonal tissues, representing different protein types, were found to have differential response to insulin transport of glucose. The contained metabolism in these axonal tissues was also found to vary in the present investigation. These results and the results cited above by the other workers seemed to indicate the possible significant role of the brain proteins in the functional organisation of the brain. An alteration in the normal axoplasmic protein ratios may have adverse effect on the nerve cell metabolism. Under these circumstances the recent investigations of Faerman et al.,(1974) might be recalled who showed a relationship between the impairment of glucose transport and impotence in the diabetics. Faerman et al.,(1974) made first study of the autonomic nervous system in the corpora cavernosa of impotent diabetics which strongly supported the idea that their sexual impotence was due to a neurological lesion of the nerve fibres which control erection. This is one of the examples of the effects of impairment of glucose transport on the nervous system.

The present investigation may represent to some extent the possible basic mechanism behind the role of proteins in the regulation of brain functions as well as on the augmentation of the hormonal action.