Institutions is an old craft, at which the British are said to excel. Sometimes, however, it is better to be less spectacular and adapt the old tradition to the new circumstances, and this the College is doing with notable success. But among today’s circumstances is an increasing intrusion of politics and bureaucracy on medicine. Professional institutions have a special duty to see that professional initiatives remain where they belong. Fortunately the College has a long experience to draw upon.

**Hypnosis in Medicine**

Though in 1955 a B.M.A. subcommittee on the medical use of hypnosis reported that “hypnosis is of value and may be the treatment of choice in some cases of so-called psychosomatic disorder and psychoneurosis,” it cannot yet be said that it has a clearly defined place in the management of the physically ill. This is probably a consequence of the dearth of adequate research into the efficacy of hypnotherapy in various disorders—quite apart from the aura of Mesmer and the music-hall which still surrounds the subject. The controlled trial of hypnotherapy in a large series of patients with asthma, organized by the Research Committee of the British Tuberculosis Association and reported at page 71 of the B.M.J. this week, is therefore welcome.

Hypnosis is a useful method of inducing anaesthesia for surgery and childbirth, but its ability to induce physical changes is most easily seen in the response of certain skin disorders—for example, warts and ichthyosis. Other medical conditions in which hypnotherapy has been reported to be effective include peptic ulcer, post-gastrectomy dumping syndrome, migraine, and unstable diabetes. These are all disorders of function, though with a physical basis, and usually have a prominent emotional component also.

Asthma exemplifies this type of disorder, and hypnotherapy is reported to have benefited patients who suffer from it, even those in severe status asthmaticus. Hypnotherapy may improve patients with asthma in two distinct ways—through physiological improvement (decreasing airways resistance) and through psychological improvement (decreasing awareness of airways resistance). In the British Tuberculosis Association’s study pulmonary function tests did not give different results in the hypnotherapy and control groups, though there was a significantly greater trend towards improvement over the year in females in the hypnotized group. Nevertheless independent clinical assessors detected marked improvement in a higher proportion of the hypnotized group.

The most important factor in the response to hypnotherapy appears to be the depth of trance achieved by the subject. About 10% of people are resistant to hypnosis and only 10–20% are capable of reaching the deepest level of trance, characterized by spontaneous amnesia and response to post-hypnotic suggestion. The latter capacity declines with age. In the British Tuberculosis Association’s trial 97% of the patients were satisfactorily hypnotized, probably because they strongly wanted to be relieved of their disease, but only 6% achieved a state of deep trance. In addition to the patient’s susceptibility the skill of the therapist is relevant, a fact demonstrated in this trial. Other factors said to be associated with a good response to hypnosis are age below 30 years, illness of less than 2 years’ duration, mild degree of the illness, and some particular emotional trigger. None of these was confirmed in the present trial.

The B.M.A. subcommittee described hypnosis in the following terms: “A temporary condition of altered attention in the subject which may be induced by another person and in which a variety of phenomena may appear spontaneously or in response to verbal or other stimuli. These phenomena include alterations in consciousness and memory, increased susceptibility to suggestion, and the production in the subject of responses and ideas unfamiliar to him in his usual state of mind. Further, phenomena such as anaesthesia, paralysis and rigidity of muscles, and vasomotor changes can be produced and removed in the hypnotic state.” The mechanism through which these various phenomena are effected remains a matter for speculation. Purely psychological hypotheses are being supplemented by attempted explanation in terms of brain physiology. It is suggested that the altered attention is mediated by the ascending reticular activating system and its cortical connexions by a process of attenuation of the sensory input. But the fact that normal cortical potentials are recorded after appropriate stimuli in persons with hypnotically induced anaesthesia and deafness indicates that attenuation of sensory messages does not occur below the cerebral cortex. Though a satisfactory explanation is still awaited, hypnotherapy can be used empirically with benefit to patients, as the British Tuberculosis Association’s trial shows. It is to be hoped that more physicians will be encouraged to explore its possibilities.

**Calcitonin in Man**

In 1962 D. H. Copp and colleagues reported a new hormone, calcitonin, which lowers the concentration of calcium in the blood. Since then porcine calcitonin has been synthesized, human calcitonin isolated, and its amino-acid composition determined. Synthetic human calcitonin is therefore likely to become available.

Calcitonin is secreted by “C” cells, which are embryologically derived from the last branchial pouch. These cells...
are found mainly in the thyroid gland of mammals and the ultimobranchial body of non-mammals. In man calcitonin has also been found in parathyroid and thymus tissue, so that complete deficiency of calcitonin in association with absence of thyroid is unlikely.

Hypercalcaemia is the stimulus for release of calcitonin, and its hypocalcaemic and hypophosphataemic action is due to inhibition of bone resorption. When the rate of bone resorption is high, as in generalized Paget's disease, small doses of calcitonin lower the blood calcium. However, in normal adult man bone is resorbed at a relatively low rate, and even large single intravenous injections of calcitonin do not cause hypocalcaemia. An action of calcitonin on the kidney causing increased excretion of phosphate has been reported in man and animals, but the significance of this finding is not yet understood.

A substance with calcitonin-like activity may now be extracted from normal human plasma. It causes hypocalcaemia and hypophosphataemia in the assay rat, has a log-dose response virtually identical to purified porcine calcitonin, and inhibits resorption of bone in tissue culture. Though proof is lacking, the material is probably calcitonin. A rough estimate of the secretion rate of calcitonin in adults is between 100 and 1,000 Medical Research Council units per 24 hours. If this extracted calcitonin is biologically active, then it is reasonable to suggest that it is acting to oppose the bone-resorptive action of parathyroid hormone. It is possible, therefore, that the effect of parathyroid hormone on absorption of calcium from the gut in the maintenance of a normal serum calcium is more important than previously realized.

So far only medullary carcinoma of the thyroid has been shown to secrete excessive amounts of calcitonin. This tumour originates from C cells, and its study might reasonably be expected to shed some light on the effects of excessive production of calcitonin. Three of the cases described in the B.M.J. this week by Dr. M. Tubiana and colleagues and three more previously reported have included data on serum-calcium levels in association with excessive secretion of calcitonin. Three patients were normocalcaemic, two (Cases 1 and 4 in the present report) were mildly hypercalcemic, and one was hypocalcaemic.

The absence of any consistent effect on the serum calcium is at first sight difficult to understand. There are three possibilities. Firstly, the calcitonin from the C cell tumour may be biologically inactive in man. Secondly, excess calcitonin may be compensated by an increase in secretion of parathyroid hormone. Thirdly, the serum calcium may be normal when bone resorption rates are reduced if dietary calcium is adequate.

No evidence is available to confirm or refute the first suggestion, and assays of parathyroid hormone have been reported in only one patient. This patient, who was hypocalcaemic and had widespread metastases and diarrhoea, showed a four-fold increase in the assay level. Dietary calcium was probably inadequate or unavailable and was likely to have been responsible for the hypocalcaemia in the presence of a reduced rate of bone resorption. The parathyroid glands in another patient were macroscopically and histologically normal, and urinary excretion of phosphate was in the low normal range. Secondary hyperparathyroidism in this patient is therefore unlikely.

If calcitonin secreted by these tumours diminishes resorption of bone, then normal values of serum calcium would depend largely on absorption of calcium from the gut. That this situation may occur is suggested in a recent report describing a case of osteopetrosis in a growing child in whom restriction of dietary calcium led to severe hypocalcaemia. Resorption of bone, therefore, may not always play a significant part in maintaining the correct level of serum calcium. The hypocalcaemia noted in cases 1 and 4 of the present report is more difficult to explain, but we are not told how many calcium estimations these figures represent nor at what time of day blood was taken. In the absence of bone as a buffer for ingested calcium, fluctuations in serum calcium values might be expected.

The recent recognition of medullary carcinoma of the thyroid as a new endocrine disease has certain practical consequences. Firstly, the diagnosis may be confirmed and the results of therapy followed by serial assays of plasma calcitonin. Secondly, prophylactic thymectomy may be considered when the tumour is still apparently localized to the thyroid, because the frequent appearance of the disease in the mediastinum may represent further primary tumour sites rather than metastases.

Little is known about abnormalities of calcitonin secretion in other diseases. The thyroid gland in pseudohypoparathyroidism has been reported to contain increased calcitonin levels and there is some evidence from animal studies that thyroid C cells are increased in osteopetrosis. But determinations of plasma calcitonin are required before any definite conclusion may be drawn.

The therapeutic use of calcitonin is still in an experimental stage. It is known to be active in man, and large doses may turn out to be the safest and most effective treatment of hypercalcaemia due to increased resorption of bone. It may also help in the treatment of Paget's disease, osteoporosis, and possibly malignant metastases in bone. So far only porcine calcitonin has been used in man, and the effectiveness of the human material awaits confirmation.