salivary secretion estimation, and pain threshold determination.

Although in the course of these studies certain differences were observed between the disease group and the control group, the authors were unable to correlate idiopathic orolingual paresthesia or pain with any definite systemic factors. Seven of 35 patients associated onset of symptoms with previous antibiotic stomatitis or glossitis.

REFERENCES

THE CASE AGAINST MINERAL OIL


In spite of its many harmful properties, mineral oil still enjoys a considerable amount of undeserved popularity. Possibly, because of more sensational scientific advancement in other fields, no summary outlining the salient facts about mineral oil has appeared in medical literature for the past ten years. Previous reviews, though in many cases excellent, have failed to make an adequate appraisal of mineral oil therapy since its introduction to the profession. Therefore, in this article, we shall endeavor to view mineral oil historically; showing how one somewhat unscientific rationalization has helped sustain its popular use since it was introduced. We will discuss and document all its known untoward and undesirable effects and comment on these from the viewpoint of a proctologist who continuously comes in contact with the unhappy results of its administration.

Medical History of Mineral Oil

Crude mineral oil, known abroad as Oil of Gabin or Oil of Gabian, and known locally as Seneca Oil, has long been used for the treatment of constipation and other bodily ills (1,2,3,4,5) and is frequently noted in the literature from the mid-nineteenth century. Submitted May 22, 1952.

Physicians soon heard of remarkable results attributed to this preparation; and as can be understood, some speculation about its usefulness was aroused. In the year 1872, a gentleman by the name of Chesebrough developed for the first time, a refined petroleum product in semi solid form which was looked upon with interest by the profession (52). It is unfortunate that products of this type and their emulsions were used as nutrients and in some instances as substitutes for cod liver oil in the treatment of tuberculosis (7).

In 1885 Randolph, a Philadelphia physician, published a paper on this new form of petroleum (6). He found this substance lacking in nutritive qualities and declared it unfit as a substitute for cod liver oil. Singularly enough, it is to this same man that we attribute the distinction of being the first to suggest the use of refined petroleum as a possible treatment for constipation. Using the crudest of qualitative techniques, he deduced that mineral oil was not absorbed into the body and consequently was not dangerous. These findings were corroborated on an equally unsound basis by Hutchinson (7), who used only one patient in establishing his scientific facts. Even as late as 1936, the work done by these two men was still regarded as valid and reported by Sollman (8) as evi-
dence that mineral oil is an innocuous, non-absorbable substance.

Acting on the intelligence found in Randolph's paper, Lane (1,3), an extremely vocal English surgeon of considerable prominence, suddenly became the crusader on behalf of mineral oil as an adjunct to his newly devised surgical procedure for the relief of intestinal stasis. Probably no other single individual so ardently advocated the use of mineral oil to his associates. Ironically enough, Lane's comparatively rational surgical techniques were soon discarded, (9) while his arguments for the use of mineral oil lived on and even today, it is still considered an invaluable component of many physicians' armamentarium. As Morgan (9) has so aptly noted, "Arbuthnot Lane should have most of the credit, or possibly discredit for the present wide use of mineral oil."

In America, Kellogg (1), of the Battle Creek Sanitarium, and his colleagues used mineral oil on many hundreds of patients, and lauded it as a dietetic accessory. He maintained that it filtered off toxins, aided in the healing of lesions of the digestive tract, did not disturb digestion, was non-absorbable, was excellent for use in surgery and pregnancy, and was of great service in the treatment of obesity. Indeed, he stated that "Paraffin is useful in all forms of intestinal stasis no matter what the cause."

Kellogg made light of the side effects such as itching, involuntary discharge of oil, flatulence and the possible carcinogenic properties (which he claimed were removed by washing with water). Instead he contended that these resultant conditions together with frequent failure to produce results and its unpleasantness to take were far outweighed by its beneficial effects. At that time, few could be expected to withstand forever such publicity and fanfare without subscribing to the use of this new laxative which was also counted on to alleviate most other bodily ills as well. For instance: Pritchard (10) reported successful use of paraffin in cases of exophthalmic goiter, neurasthenia, melanosis, and other nervous disorders which he attributed to the chronic poisoning of the nervous system with the products of intestinal putrefaction. Binkerd (3) found it equally effective as a complete intestinal antiseptic, disinfectant and antiferment... although "harmless as pure water." Mineral oil was even used as an intratracheal instillation for the treatment of various respiratory affections (51). In fact, mineral oil has been responsible for numerous cases of lipid pneumonia due to either the indiscriminate use of nose drops containing mineral oil or to the regurgitation and aspiration of mineral oil when taken by mouth. Aspiration is more apt to occur when oil is taken at bedtime (53).

The introduction of mineral oil to the profession came at a time when essentially a vacuum existed in the therapeutic approach to the treatment of intestinal stasis. True enough, cascara had just been offered to the profession and various other new preparations were being made available; but none of these had a disciple to vehemently advocate their use as in the case of mineral oil. Then too, all these other preparations had definite drawbacks which were more readily apparent to the practitioner. The use of mineral oil by the profession gained phenomenal momentum and the few voices crying out against its use went unheeded. Even as early as the 1800's, there were those who knew and decried its indiscriminate use without proper toxicological studies (11,12), but before objective studies could be devised and adequate techniques developed, mineral oil as a prescription item had already won the field. This occurred in spite of the fact that there is no pharmacological evidence, even today, to justify the use of mineral oil and its emulsions other than its single function of softening or liquefying the stool (8,13,14).

The author does not throw stones from an ivory tower. My experience with mineral oil and its emulsions has been an extensive one. As a graduate in the 1920's, I went into practice thoroughly indoctrinated with the superiority of mineral oil as a bland, innocuous substance for the treatment of constipation. Before many years however, I became aware of the fact that taking mineral oil was a family ritual; for although I had prescribed mineral oil for the temporary relief of constipation for one member of the family, all too soon, a nightly draught for every member became standard procedure. Even today, it is not uncommon to see persons carrying quart and gallon bottles into the pharmacy to have them refilled with mineral oil. This observation prompted my interest in the possible ill effects, in addition to its excessive use as a nighttime cap with consequent establishment of the laxative habit. The following criticisms are the result of my own personal experience supported by a comprehensive survey of the literature.

**MINERAL OIL AND BOWEL HABITS**

Morgan (9,16) has summed up in masterful fashion, the salient facts about mineral oil as it affects bowel habits. (a) Mineral Oil lubricates the rectosigmoid and makes an abnormal reservoir of the rectum. The feces, instead of remaining in the storage areas of the colon and sigmoid, leak into the rectum. The rectum remains partially full at all times; whereas normally, it should be empty until just prior to defecation. Sufficient pressure to initiate defecation is lacking, but enough fecal material is present to cause symptoms of irritation. (b) Mineral Oil and feces remain after evacuation adhering to the rectal mucosa and are removed only with great difficulty. (c) Mineral Oil is capable of absorbing the fat soluble vitamins A, D, E, and K (17,18,19,20,21,22,24,25,29). Frequently, weight loss accompanies this process. (d) It also hastens the motility of the bowel content and thus prevents complete digestion. (e) Mineral Oil may interfere with the process of absorption throughout the lower intestines. By partially covering the surface area of the intestines and by interference with the action of digestive ferment, it may establish a mechanical barrier to absorption and digestion with consequent symptoms of "Indigestion."

**MINERAL OIL INFECTION**

Thiele (26) reports that mineral oil stools are compressed in passage through the anus, forcing an oily suspension of bacteria into the mouths of the anal crypts. He points out that practically all ano-rectal infections are secondary to cryptitis. In his experience, ano-rectal infections follow the administration of mineral oil too often to be coincidental. Thiele sup-