

The results of Table 1 show quite clearly that Neorobin reduces at least 50% more ammoniacal silver nitrate than Chrysarobin. This increased reducing power of Neorobin may be theoretically accounted for if we consider the chemistry of Chrysarobin. As ordinarily prepared Chrysarobin contains varying amounts of chrysophanic acid. In an alkaline solution, Chrysarobin is easily oxidized to chrysophanic acid due to the absorption of oxygen from the air. Liebermann has shown that Chrysarobin has the chemical structure of a reduced quinone, whereas chrysophanic acid is a dioxy-methylantraquinone. Therefore, the power of Chrysarobin to absorb oxygen is due to the presence of the reduced quinone group which is oxidized to chrysophanic acid.

Neorobin is a reduction product of Chrysarobin. It is quite probable that the chrysophanic acid naturally present in Chrysarobin is reduced, thus increasing the reducing power of the substance as a whole. In other words, the greater reducing action of Neorobin is due to the presence of a quinone which has been partly produced by the reduction of chrysophanic acid in Chrysarobin. In our opinion this explains the greater affinity of Neorobin for oxygen.

V. CONCLUSIONS AND SUMMARY.

Neorobin dissolves readily in acetone producing a golden yellow solution. Chrysarobin also dissolves easily in the same solvent but forms a dark red solution. This difference in color in acetone is important as this fact can be utilized as a simple differentiating and identity test for Neorobin and Chrysarobin.

Neorobin is primarily a reduction product of Chrysarobin and is neither a tin compound nor a complex acetate.

Using the reduction of ammoniacal silver nitrate as a criteria of reducing power, Neorobin is at least 50% more active as a reducing agent than Chrysarobin.

If, as is generally admitted, the therapeutic action of Chrysarobin is primarily due to its reducing action, then Neorobin should be at least 50% more active therapeutically.

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LEECHES—HOW TO DISPENSE THEM.*

BY OTTO RAUBENHEIMER.

The leech, Latin *Hirudo*, plural *Hirudines*, has been used since the earliest times. Family quarrels then, the same as to-day, ended with a black eye or other bruises, and leeches were then employed as a relief. The Bible does not mention such an occurrence about Adam and Eve or their descendants, but states in Proverbs XXX, 15: "The leech hath two daughters, crying Give, Give."

In old Indian medicine leeches were used, according to Susruta in his "Ayur-Weda," supposed to date back to 1300 B. C. The followers of Hippocrates (about 400 B. C.), the father of the Greek school of medicine, did not employ leeches, as they preferred blood-letting. Plinius (about 50 A. D.), the celebrated Roman historian, in his "Historia Naturalis" describes the uses of leeches for withdrawing

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blood. Avicenna (980-1037), the King of the Arabian physicians, devotes an entire chapter to leeches in his works.

Before the advent of the Norman conquerors English medicine was entirely in the hands of the Saxon "leeches," whose folk medicine is preserved in the "Leech-Book" of Bald and other Anglo-Saxon "Leechdoms." No doubt the use of leeches was responsible for the coinage of these words. Perhaps the greatest advocate of leeching was François Joseph Victor Broussais (1772-1838), the son of a Breton physician who served for three years as an army surgeon in Napoleon's campaigns. With methods which were Napoleonic, and with therapeutics which were sanguinary, he leeches the patient over the entire body, applying as many as 50 leeches at once. As a consequence the consumption of leeches in France rose from two million in 1824 to thirty-two million in 1833, verily an increase!

I must not forget to mention that the Zoölogy of the last British Pharmacopœia (1914) includes leeches. Erroneously the monograph in that standard is entitled "Hirudo—Leeches," truly not a credit to the Latin knowledge of the compilers.

The writer runs an old-fashioned and old established (1874) drug store, with the proud motto—"No Cigars, No Candy, No Ice Cream, No Soda Water, But I Do Sell Pure Medicines." Here in this atmosphere free from the lunch room odor my armamentarium consists of drugs and preparations from the vegetable, mineral and animal kingdoms. Among the latter are leeches, prominently displayed in a number of glass jars in different parts of the store, including one in the show windows. Anything moving, anything odd, arouses the curiosity of the public, and my reputation as a "leecher" has spread far beyond the "City of Churches." Besides, this leech business is also profitable, as they are retailed at \$1.00 per head without any trouble; in fact, patients are only too glad to be able to obtain them. A friend in need is a friend indeed!

HOW TO DISPENSE LEECHES.

For years and years I put the leech when called for into a small tin box or, when several leeches were wanted, into an ointment jar, with the addition of a small quantity of water, as the leech should not be allowed to become perfectly dry. However, the customer is usually inexperienced as to how to apply them, unless he is a prize-fighter accustomed to black eyes and bruises. The average man or woman is usually somewhat afraid that the leech will not suck at the right place, or may even crawl into the eye.

I remember that many years ago leeches were applied by being put into glass tubes, so-called leech tubes. I do not know whether these tubes are still manufactured. At any rate, my present method is to place the leech, when asked for, into a perfectly clean glass test-tube, add a little fresh water, and cork it. It is very essential that the test-tube be new and clean, as leeches are very susceptible to chemicals, and consequently will not suck, or will even die.

I usually select a rather narrow test-tube and in that case place the leech in it so its large end, or its large sucker, is toward the sealed end of the tube. If the test-tube is wide enough I do not pay any attention to this, as the leech can easily turn around in the tube. It should be remembered that the posterior extremity of the leech terminates in the large sucker, which is merely used for hanging on objects, but that the anterior extremity is the small sucker, or head, with

its triradiate jaw which pierces the patient's skin and sucks out the patient's blood.

HOW TO APPLY LEECHES.

It is essential that the surface of the skin where the leech is to be applied is perfectly clean. All medicine, even such a simple preparation as witch hazel, must be thoroughly washed off. Even soap odor or taste is objectionable, and the leech will persistently refuse to take hold. After all, such a little leech is mighty particular! Before applying the leech in the test-tube it is best to rinse him off with a little water. This water douche will stimulate and refresh the leech so that he will be anxious to bite. Should he, however, refuse to do so, then place a drop of milk or blood on the very spot where you want him to suck, and the leech will invariably "fall" for such a decoy.

ADVANTAGES OF THE TEST-TUBE METHOD.

1. Clean, sanitary method of supplying leeches to patients.
2. The leech can live in the test-tube with water for some time, thereby facilitating transportation.
3. Ready for use.
4. Can be applied to the *exact spot where the leech is* required to suck. This is perhaps the greatest of all advantages and my idea based upon the old leech glass.
5. A better compensation can be derived.
6. Customers appreciate this service and convenience.

After all, at the price of \$1.00 per leech the pharmacist can well afford to "throw in" a test-tube.

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KEEPING ETHICS ALIVE IN A MODERN DRUG STORE.*

BY S. W. LEIDICH.

Sixty-five years ago Llewellyn's Drug Store was started in Philadelphia.

From the first, the aim of its founder was to conduct the business in such a way as to make consideration for the ethics of the medical profession a cardinal point in the conduct of the establishment. At the same time, it was of course recognized that the rights of the general public constitute the bedrock foundation upon which all commercial or professional transactions, as well as those of a social nature, must be based.

To nail such a purpose to the mast-head of a drug business in 1857 was not such a difficult task. At that time the average pharmacy was nothing more nor less than a pharmacy. Its stock was composed entirely of drugs, chemicals and such medical and surgical appliances as were in common favor.

No one ever thought of going to a druggist's for anything which did not, in some way, have to do with the tendency of the human machine to get out of order. In those "good old days" there were some pharmacists who would not even sell eau de cologne except on the doctor's order.

Those of us who happen to have been unborn at that particular period of the passage of time can hardly begin to appreciate the vast distance that separates 1857 from 1922, when measured by what has taken place in our line of activity—

* Section on Commercial Interests, A. Ph. A., Cleveland meeting, 1922.