

ELIXIRS
AND
FLAVORING EXTRACTS
THEIR HISTORY, FORMULÆ, AND METHODS
OF PREPARATION

BY

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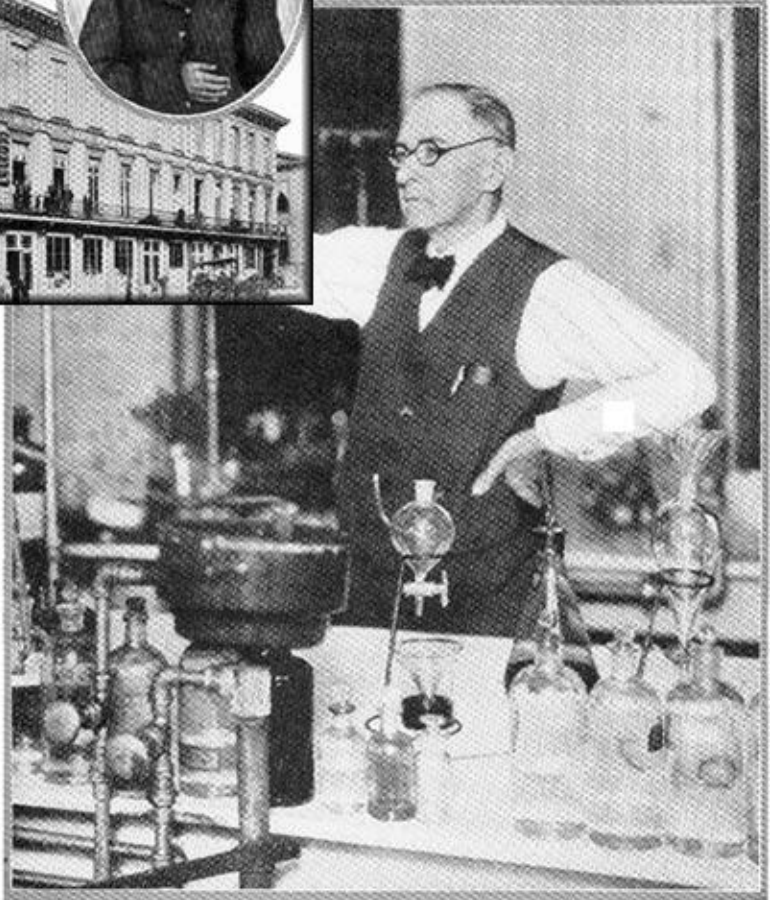
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John Uri Lloyd (c.1862)
As an apprentice for W.J.M.Gordon,
Druggists (Background)



John Uri Lloyd, 1929, at eighty

EDITOR'S NOTE: John Uri Lloyd (1849-1936) founded Lloyd Brothers Pharmacy in Cincinnati, and was responsible for the formulation of a body of plant extracts called Specific Medicines (following the recommendations of Scudder). The pharmacy closed in the early 1960's, but his legacy is still present as the Lloyd Library, (the largest library of medical plant books in the world), the Lloyd Extractor, his pioneering work in colloidal chemistry, and several bestselling works of fiction, including "Stringtown on the Pike and the mystical "Etidorhpa".

He began as a raw apprentice in 1862 to W.J.M.Gordon in Cincinnati. When he finished the apprenticeship (a three or four-year stint), he re-apprenticed with ANOTHER pharmacist, George Eger, in order to learn German pharmacy. By the time he met up with two famous medical radicals, Dr. John King and Dr. J.M.Scudder, he was so expert at PHYSICAL pharmacy that, now in his late 20's, he was offered the position as the director of the H.M.Merrell and Co. Laboratories, at that time the primary manufacturer for both Eclectic and Physio-Medical pharmaceuticals. He and his ill-fated brother (the premier mycologist of the age) eventually bought out Merrill...and Lloyd Brothers was begun.

The three editions of Elixir Formulæ were written to attempt codification of a wildly chaotic...and dangerous state of affairs in American Medicine. They became THE standards for 15 years...and helped lead the way for the first National Formulary of 1888. Because of his alliance with medical radicals ("the Loyal Opposition") he was blacklisted from the first N.F. congress, locked out by hardliners in the American Pharmaceutical Association. Since the whole thing was his brainchild, and he was de-facto editor of the first N.F., the uproar amongst REAL pharmacists was so great (they ALL used his book) that the old guard was promptly booted out and he was elected for the first time as President of A.P.A. Shunned again ten years later (again for his association with the "Enemies of Medicine"), the rank-and-file AGAIN re-elected him president. EIGHT times in 45 years the attempt was made to kick him out as a member of the American Pharmaceutical Association...all attempts soundly failed, since he was the most famous supporter of the working pharmacist...a grass-roots druggist whose soda-fountain recipes were famous.

The culmination of his work (in my opinion) was the Third Revision of "King's American Dispensatory" in 1898, 2200 pages of the best PLANT Pharmacy ever assembled. For the last 20 years of his life, he expended his near-mythic reputation in pharmacy writing curmudgeonly *emeriti*-type articles in Pharmaceutical journals in futile attempts to draw his fellow pharmacists away from chemical reductionism and back into viewing plants as *entities*, not sources of drug compounds. That he was twice elected president of the American Pharmaceutical Association is a stunning tribute to his stature, since he was an infamous gadfly and "irregular", always proudly flaunting his lack of formal education, devotion to plant medicines, and Eclectic roots, mostly moribund issues in his later years, since "regular" medicine had clearly prevailed. This was the equivalent of Dr. Andrew Weill being appointed Surgeon General or Adelle Davis being elected President of the American Medical Association.

Radical though he was, he was still a MAN of his times, and should be forgiven his failure to acknowledge the existence of TWO genders in pharmacy

He was perhaps the only true American alchemist. Michael Moore

PREFACE.

WERE pharmacists united in opposition to elixirs, and sufficiently independent to warrant them in saying that they are unnecessary preparations, and that they would not manufacture or dispense them; or could pharmacists so influence and control physicians as to positively prevent them from prescribing elixirs; or were the past numbers of all our pharmaceutical journals possessed by, or readily accessible to, each and every pharmacist in the country—there would then be no necessity for, nor utility in, the publication of a work upon elixirs and the methods of preparing them. At the present time there undoubtedly exists a demand for this class of preparations, and, in order to improve, as well as retain, their legitimate trade, our pharmacists are, in a measure, compelled to dispense them, as they do not desire to displease their medical patrons by any indications of what might be considered as offensive dictation. Such being the case, and as a large number of the pharmacists of this country are not possessors of the past numbers of pharmaceutical journals, we have been induced to prepare this little work.

In presenting these formulæ, the result of years of actual laboratory experience, and the careful study of the back numbers of all our pharmaceutical journals, we cannot doubt that they will be valuable to pharmacists, and that the investment will quickly return to each purchaser more than the outlay for the book.

Upon this question of elixirs we find our American pharmacists greatly divided: some decidedly object to them, no matter under what considerations or circumstances, and obstinately refuse to listen to a favorable word for any one of them; others uphold that carefully prepared elixirs, in which the disagreeableness and offensiveness of certain drugs entering into their composition are more or less masked, are to be commended. Not infrequently the opponents of elixirs are quite violent in their denunciation of them, and more especially as being of too complex a character; and yet these very objectors will favor other mixtures and preparations that are still more complex, and fully as unscientific as the majority of compound elixirs. On the other hand, the advocates of elixirs frequently associate incompatibles in their preparations, thereby rendering them valueless.

By this course they weaken the cause they are endeavoring to sustain, as the articles they present to the public prove to be unreliable. In our opinion, there is an intermedium, a conservative position, between those who unreservedly condemn and those who indiscriminately recommend, and it will be found that there are many excellent pharmacists occupying this position who argue that, with judgment in selection and skill in manipulation, a line of elixirs may be produced that will favorably compare with the products of other sections of pharmacy, and that in their preparation as much science and competency may be displayed as in making other classes of pharmaceuticals.

In the present work we have endeavored to point out defects, as well as incompatible combinations; and though at first glance the impression may be conveyed that we entertain a positive hostility to elixirs, yet, as it must be admitted by every one that there is considerable room for friendly pruning, we trust that our remarks will be received in the same kind spirit as that in which they are made, and that we will not be reproached for being unnecessarily censorious. And notwithstanding that our criticisms may appear to be severe, we believe them to be fair and unprejudiced, and of such a character that both the advocate and the opponent of " American Elixirs " may derive both satisfaction and benefit from their perusal.

J. U. L.

PREFACE TO THE SECOND EDITION.

WITHIN three months from the appearance of the first edition of this book, the publishers have notified us that a second is demanded. This encourages us to believe that our work is not wholly unappreciated. We issued the first edition with misgivings. We feared that the class of preparations embraced under the name elixir would not prove sufficiently interesting and valuable to warrant the publication of a work devoted exclusively to this subject. Then, too, various problems arose when we attempted to untangle the intricate elixir history, to reconcile incompatibles, to criticize judiciously, and to prevent our prejudices from occasionally influencing our remarks. These and other points rendered our labor by no means pleasant. However, the favor with which the first edition has been received, and the many words of approval regarding it, lead us to believe that our

labor has not been lost. We cordially invite pharmacists to notify us of any troublesome formula in this book, to correspond with us concerning elixirs in local use, if omitted by it, and to advise us of any historical oversight.

J. U. L.

PREFACE TO THE THIRD REVISED EDITION.

As two former revisions of this little work have each been honored with a call for several editions, and as there is at the same time a palpable decrease in the sale of trade elixirs, there seems to be ample room for the conclusion that preparations of this class are passing from the hands of manufacturing chemists into those of the pharmacists themselves. This fact, notwithstanding an admitted decrease in the consumption of elixirs, will suffice to account for a third revision. The addition of about thirty new formulæ brings the total of the present edition to two hundred and seventy one; and, with the benefit of experience, many of the older formulæ have been modified and improved. Thanks to the cordial interest with which it has been favored by the profession, and friendly correspondence received from many of its members, we are enabled to present with each revision many valuable alterations in the processes. We desire at once to thank them heartily, and to beg them to show a continued interest in the same friendly way.

J. U. L.....CINCINNATI, November 10th, 1891.

ELIXIRS.

THROUGH the courtesy of Dr. Charles Rice, to whom application was made by the author for notes on the derivation of the word "elixir," we are enabled to present his reply verbatim, and in addition presume to say a few words concerning the "elixir" of the past and of the present which may interest the reader:

DEAR FRIEND:—In reply to your inquiry concerning the etymology of the word "elixir," I would say that the word is proximately derived from the Arabic *الأكسیر* (*al-iksîr*), being composed of the article *ال* (al or el) and *أكسیر* (*iksîr*).

The latter is an arabicized form of the Greek word *ξηρίον* (*xirion*, the *η* (*ē*) being pronounced like *ee*). This derivation was first recognized and announced by Fleischer in 1839, but it seems to have been overlooked by later writers. Hermann Kopp, the historian of chemistry, in his "Beitragte zur Geschichte der Chemie" (1869, p. 209), quotes a number of passages from later Greek authors and from writers of the alchemistic school, in which he shows that the Greek *ξηρίον* and the Arabic *el-iksîr* are identical in signification, but he fails to notice their etymological identity. The Arabs cannot pronounce an initial *ξ* (*x*) without placing an auxiliary or supporting vowel in front of the double consonant, thus making (*iksîr*). This peculiarity of avoiding an initial double consonant (*sc*, *sp*, etc.) occurs also in other languages, for instance in Spanish, where we have *espera*, *escila*, *espíritu*, etc.

The word *ξηρίον*, in medical works, means any "dry powder" (from *ξηρός*, dry), such as is used for dusting wounds. In alchemy it was used to denote the magical transformation powder so much sought after, a pinch of which would convert a whole mass of base metal into gold. *Iksîr*, in this sense, is identical with another interesting Arabic term, viz., *كيميا* (*kîmiyâ*, from which our word *chemi-stry* is derived, but which is itself derived from the Greek). This was also applied to a concrete thing, namely, the substance supposed to be capable of making gold. For instance, we meet such expressions as

صنعة الكيمياء (*ṣanatu-l kīmiyā*), "the making of the kimiya," and صنعة الاكسيم (*ṣanatu-l iksîr*), "the making of the iksîr," both meaning the same thing.

In later, technical language, "Elixir" was used to denote various preparations more or less alchemistic. It was, for instance, synonymous with "Liquid Tincture," the first step in the preparation of the philosopher's stone; and there was a white and a red elixir distinguished. Or, it designated any compound preparation of supposed "sublime" properties, reputed to prolong life and to ward off disease.

Sincerely yours, CHARLES RICE.

By referring to the letter of Dr. Rice it will be seen that at an early period the term elixir designated "the magical transformation powder so much sought after, a pinch of which would convert a whole mass of base metal into gold." Afterward the word was used "to denote various preparations more or less alchemistic," and it is to be presumed that curious or potent liquids were gradually introduced and included among powders. Finally, the word elixir was applied only to liquids, but these, like the original magical powder, were supposed to possess the power of transmuting base metals into noble metals.

Dr. Rice states that particular emphasis was once placed on a white and a red elixir. From a curious little work in our possession, bearing date 1682, we present, for the reader's inspection, a facsimile of the processes recommended for making these preparations; and that the quaint formulæ may be rendered more intelligible, we give a facsimile of a table which explains the characters employed in the book, as follows:

An Explication of Characters used in this Book."

☉ <i>Gold.</i>	A. F. <i>Aqua Fortis.</i>
☽ <i>Silver.</i>	A. R. <i>Aqua Regis.</i>
♁ <i>Iron.</i>	S. V. <i>Spirit of Wine.</i>
☿ <i>Mercury.</i>	≅ <i>Sublimate.</i>
♃ <i>Jupiter.</i> ¹	≡ <i>Precipitate.</i>
♀ <i>Venus.</i> ²	a a a <i>Amalgama.</i>
♄ <i>Lead.</i>	∇ <i>Water.</i>
♁ <i>Antimony.</i>	△ <i>Fire.</i>
* <i>Sal armoniac.</i>	

¹This name was applied to Tin when the book was written

²This name was applied to Copper when the book was written.

Elixir Album.

Sublime ☿ three times from Vitriol and Salt-petre, then in hot Sand fix it so, that in strong heat it may not rise, which may be performed in three weeks time: Then Calcine it in a close Reverberatory Δ , and it will be ready for solution. Then take the Water which distilled over in Subliming the ☿, and dissolve in it a little *, and ☿ ♁mate; with this solution mix Calcined Vitriol to the thickness of Honey, digest *in fimo* one and twenty days: Then distill by degrees a little at a time (for it yieldeth a very fiery Spirit) let the Recipient be large. When all is come over that will, rectifie it; then in this Spirit dissolve the afore-said fixed ☿, so is the *Menstruum* prepared.

Then take a white Calx of \mathcal{U} , pour upon it so much of this *Menstruum* as will cover it, let it stand eight days as before. Repeat this till the Calx will take in no more of the said *Menstruum*, then let it stand till it become first black, and then white, Subliming it self above the *Caput Mortuum*, from which carefully separate the white, and that is *Sulphur naturæ Jovis*, which put into a little Matrass and fix it, (which may also be done by frequent ♁mation) make also *Sulphur naturæ* ♃ in the same manner, and with the same *Menstruum*, which dissolve into Oyl in *B.* with which imbibe the said *Sulphur naturæ Jovis* until it be fusible, and then it will transmute \mathcal{U} into ♃.

Elixir Rubrum.

Take Vitriol of ☿ well purified by Solutions and Coagulations, unite it with Liquor of ☿ ♁mate and *, then distill a ∇ from it in Ashes; then having stood (cold) twenty four hours, distill more ∇ from it. Repeat this until the remaining Matter be well broken; then joyn all the distilled waters to it again, and digest it *in fimo* for 40 days: Then distill its Spirit, with which imbibe the remaining Earth; dry it with a gentle heat, then imbibe again, and dry as before: Repeat this till the Earth hath imbibed all its ∇ . Then distill it, and you shall have a Philosophical ☿, and what Sublimeth is the Sulphur, which keep apart. Repeat the imbibition and distillation, till no more Sulphur will ascend; with this Sulphur imbibe half its weight of the ☿, put them into a Matrass, which Seal Hermetically, and fix them together; and this Work must be repeated four times, every time with the same proportion of the said Philosophical ☿. Then fix this Matter in a Vessel Sealed Hermetically by degrees of Δ , and all the colours will appear one after another, until it become white, and lastly, to an incombustible red.

Take one part of this red Powder, cast it upon ten parts of Sublimed ☿, set it to putrifie for thirty days, and it will become Oyl, which being Projected upon boyling ☿, will transmute it into pure \odot .

The said red Powder being infused in Wine over Night, and drank in the Morning, Cureth most Diseases in Mans Body.

It will be observed that the white elixir, "Elixir Album," can only produce silver, while the red elixir, "Elixir Rubrum," will transmute mercury into pure gold. We call attention to the red powder which is formed near the completion of the process in making elixir rubrum, and which is used to prepare the magical "oyl," and to the assertion that this same red powder "cureth most diseases in man's body." Here we have an approach to the elixir of life (elixir vitæ) of the alchemists, together with the properties ascribed to the philosopher's stone. In this connection, a quotation from the writings of that celebrated author of the eighteenth century, Boerhaave, is of interest concerning the elixir vitæ, which, in Boerhaave's language, was "one of the chief things which the alchemists promise." Their aim was to "discover an artificial body of such virtue and efficacy, as that being applied to any body of any of the three kingdoms, it shall improve its natural inherent virtues, so as to make it the most perfect thing in its kind. Thus, for instance, if applied to the human body, it will be come an universal medicine, and make such a change, both in the solid and fluid parts thereof, as shall render it perfectly sound, and even maintain it in that state, until the parts being slowly worn away and spent, death gently and without a struggle takes possession."

We find, therefore, that the alchemists, by the term elixir, intended to designate substances which could either convert base metals into gold or silver, or could prolong life and heal the sick, or embody both properties; and also, that this substance might be either a liquid or a solid. We do not generally accredit the alchemists with a desire to heal diseases after the manner of physicians of the present day, and doubtless the majority searched only for riches. However, while they mostly desired gold and silver, they realized that the use of only an ordinary amount could be enjoyed in the usual lifetime allotted to man. Again, many of these infatuated men were on the brink of the grave when their hopes seemed most likely to be realized, and of vital importance would be the possession of a substance which could prolong life. Hence we find that some of them were searching directly for gold, or the philosopher's stone by means of which all base metal could be changed into gold, while others desired most the elixir of life, "elixir vitæ," which could extend life and change old age into youth. Indeed, as incentives to their labors were the assertions that these wonderful elixirs had been discovered by others, and we quote from "The Birth of Chemistry" that "S. Thomas Aquinas was, like his master (Albertus Magnus), a magician. We are told that between them they constructed a brazen statue, which Albertus animated with his

elixir vitæ.”

Culi asserted that “he converted fifty thousand pounds weight of base metals into gold,” and is said to have furnished his king with six millions of money. Paracelsus (born 1493, died 1541) is generally accredited with instituting a new era in the study, for he was prominent in showing that alchemy, which flourished in his day, and of which he was a zealous student, could be of value to physicians, and that the knowledge derived from their investigations could be turned to advantage in the treatment of disease. Like the old alchemists, however, Paracelsus surrounded his process with mysterious expressions, and disjointed them until they were incomprehensible.

Paracelsus undoubtedly borrowed freely from those who preceded him, and failed to credit them for such instruction. Good authorities trace the application of chemistry in the healing of diseases far back of the day of Paracelsus. “M. C. Clerc thinks there are indications of chemical medicines in Thaddeus the Florentine, who lived in the thirteenth century, in Albertus Magnus, Friar Bacon, and Isaac Hollandus. Helmont has taken pains to show that Basil Valentine was prior to Paracelsus by a hundred years” (*Boerhaave*).. Of Basil Valentine the same author remarks: “He would seem to have been the first who applied chemistry to medicine; for after every preparation he never fails to give some medicinal use thereof. Paracelsus, Helmont, the elder Lemery, and many others of modern fame, owe a great part of what is valuable in them to this autllor; so that it is not without reason that he is judged the father of the modern chemists and the founder of the chermical pharmacy.” “About the middle of the fifteenth century lived Basil Valentine, a German Benedictine monk, who led the way to the internal administration of metallic rnedicines by a variety of experimnts on the nature of antimolly” (*Dunglison*).

He originated the “Elixir Proprietatis,” stating that it was so potent as “to continue health and long life to the utmost possible limits” (*Boerhaave*). This wonderful elixir was concocted by cumbersome processes from such simples as saffron, aloes, and myrrh; and notwithstanding Paracelsus claimed that by using the vaunted elixir proprietatis “he should live as long as Methuselah,” he died a broken wreck in his forty-seventh year. We find that this elixir, which is a record of Paracelsus’ egotism, has been recognized in our dispensaries and in the older pharmacopœias, with more or less alteration, even to the present day. Boerhaave gave five different processes for making it, each of which produced, in his opinion, a most potent remedy. As a curiosity, and to illustrate the wonderful properties attributed to these concoctions in those days, and to the virtues of which even such a chemist as Boerhaave could certify, we reproduce from his “Elementa

Chemiae,” which was published in 1724, the formula and uses of his

ELIXIR PROPRIETATIS WITH DISTILLED VINEGAR.

“Take choice aloes, saffron, and myrrh, of each half an ounce, cut and bruise them, put them into a tall bolt-head, pour twenty times their own weight of the strongest distilled vinegar thereon, let them simmer together in our little wooden furnace for twelve hours: now suffer the whole to rest, that the fæces may subside, and gently strain off the pure liquor through a thin linen; put half the quantity of distilled vinegar to the remainder, boil and proceed as before, and throw away the fæces. Mix the two tinctures together, and distil with a gentle fire till the whole is thickened to a third; keep the vinegar that comes over for the same use; and what remains behind is the *Elixir Proprietatis*, made with distilled vinegar.

THE USES.

“Thus we obtain an acid, aromatic medicine, of great use in the practice of physic; for when externally applied, it cleanses and heals putrid, sinuous, and fistulous old ulcers, defends the parts from putrefaction, and preserves them by a true embalming virtue; it also heals ulcers, and cures gangrenes in the lips, tongue, palate, and jaws. It has the same effects in the first passages, when used internally, as often as putrefied matter, corrupted bile, concremented phlegm, worms, and numberless distempers proceeding from these four causes, are lodged or seated therein. Again, it has nearly the same effects in the blood and *viscera*, as may easily appear from knowing the virtues of the three ingredients when dissolved in a subtile vinegar. It is to be taken in a morning upon an empty stomach, at least twelve hours after eating; it is given from a drachm to two or three for a dose in sweet wine or mead, or the like, walking after it, or having the belly gently rubbed. If taken in a larger dose, and with a somewhat cooler regimen, it always purges; if in a less dose, and often repeated, it cleanses the blood by secreting thick urine; and generally performs both these operations successively. But if taken plentifully, while the patient is in bed and the body well covered, it acts as an excellent sudorific; and afterward usually purges, and proves diuretic, and thus becomes very useful; whence I conceive that this is the best acid *elixir proprietatis*, good in numerous cases, and at the same time safe.

“Paracelsus declared that an elixir made of aloes, saffron, and

myrrh would prove a vivifying and preserving balsam, able to continue health and long life to the utmost possible limits; and hence he calls it by a lofty title 'the elixir of propriety' to man, but concealed the preparation, in which Helmont asserts the alcahest is required."

Through the eighteenth century elixirs were numerous, and although their former alchemistic properties were cast aside, physicians seemed to attribute to them virtues scarcely less than those ascribed to the famous elixir vitæ. They were also surrounded with mysteries, and their compositions were most carefully concealed. Prominent physicians individualized themselves by attaching their names to tinctures of herbs extracted with spirit of wine or with acid solutions, and these names have been handed down to us and are still in use. It must not be inferred, however, that these men gave their treasures openly to competitors, for we find that great care was employed to cover their processes and to conceal the constituents of these compounds, and at the present day we find it difficult to decide as to the authenticity of such as Daffey's Elixir, Helmont's Elixir, Mynsicht's Elixir, Vigani's Elixir, etc., etc. Indeed, many of the old works give several formulæ for preparing a single elixir, and often all the processes were impracticable. Thus we find that with each revision of the older pharmacopœias and dispensatories these formulæ have been altered and simplified, and as the outcome we refer to some of our well known tinctures, which have sprung from and are modifications of ancient elixirs:

ELIXIR SALUTIS gave us Compound Tincture of Senna.

ELIXIR PAREGORICUM gave us Camphorated Tincture of Opium.

ELIXIR PROPRIETATIS gave us Compound Tincture of Aloes.

ELIXIR STOMACHICUM gave us Compound Tincture of Gentian.

ELIXIR SACRUM gave us Tincture of Rhubarb and Aloes.

With one exception the name elixir has become obsolete with the foregoing tinctures, and that one, *paregoric*, will doubtless, in a moderate period of time, exist as a relic of history.

The elixir of the period we have just considered was in reality a compound tincture, or a modification of what we call a compound tincture. Hooper's Medical Dictionary of 1820 defines the elixir as "a term formerly applied to many preparations similar to compound tinctures." We find, also, that the old elixirs were disagreeable and bitter. There was no desire to render them pleasant; indeed, the aim

seemed to be the concoction of mixtures as nauseating as possible, and the physician who could produce the nastiest, and which were followed by the most severe torture to the patient, seemed the best man. His motto might well have been—

“I puke. I purge, I sweat ’em,
And if they die, I let ’em.”

In connection with this phase of the elixir question, we find that of the elixirs named in the “New Dispensatory,” London, 1770, but one contained sugar or any form of sweetening. This view of the elixir is still prevalent in Europe, and the German Pharmacopœia of 1879 recognized twelve preparations under the name of elixir, none of which were sweetened. The idea accepted in our country at the present time regarding what should be the attributes of an elixir is strictly an Americanism. The term Cordial would better define the sweetened and flavored pharmaceuticals which we shall now consider historically as

AMERICAN ELIXIRS.

One of the popular elixirs of the present day is advertised to have been introduced in the year 1830. Our respected friend Mr. Chas. A. Heinisth writes us as follows:

“I send you a copy of an old label for a ‘Cordial Elixir of Quinine’ my father formerly made. This label I remember appeared old when I first worked in the store in 1838. How long it had been used is more than I can say or remember. This Cordial Elixir of Calisaya was composed of quinine, cloves, cinnamon, bitter orange peel, capsicum, sugar, and dilute alcohol.”

Mr. Heinisth enclosed us a copy of the original label, taken from one of the bottles which was in the cellar of the store in 1838. We take the liberty to reproduce it, and our readers will note that it closely resembles the elixir labels of the present day:

“CORDIAL ELIXIR OF QUININE.

“This excellent preparation is particularly recommended to persons of delicate habit and weak stomach. It increases the appetite, facilitates digestion, and is well adapted to all persons living in low and marshy countries, where ague and fever prevail, and also for those who are exposed to damp and wet weather. It is taken with success by

persons weakened by fever and ague, or by a copious perspiration produced by the heat of summer. Persons recovering from bilious fever should use it freely, to prevent a relapse. From half a wineglass to a wineglassful is to be taken once or twice a day, as occasion may require.

“Prepared and sold by John T. Heinisth, Druggist, East King St., Lancaster, Pa.”

The first of these trade preparations which the writer can recall was thrown upon the market in this city (Cincinnati) about 1863, under the name “Sim’s Cordial Elixir of Calisaya.”

The first published formula that I have found for any of this class of preparations, under the name Elixir, is the formula we give for Elixir of Calisaya by Mr. Alfred B. Taylor, from the Journal of Pharmacy, January, 1859. The Druggists’ Circular of same date states that up to that time no formula for that preparation had been published.

It was of a beautiful red color, nicely flavored, and very pleasant to the taste, and it was the forerunner, or at least among the first, of the line of pharmaceuticals subsequently scattered so abundantly over our country. Afterward the “Elixir of Calisaya and Pyrophosphate of Iron” appeared, and then “Calisaya, Pyrophosphate of Iron, and Strychnine.” Soon traveling agents for pharmaceutical houses began to court physicians and so licit them to specify particular brands when prescribing, thus necessitating duplicates upon the apothecaries’ shelves of the same preparation, and about the year 1874 the elixir mania was at its height. The burden thus thrown upon our pharmacists was considerable—more in the aggregate than most of us can realize. Elixirs of the same name, and which should have been identical, were duplicated, or multiplied, in the same store, and each differed in appearance and flavor from all the others. If a prescription was filled with an elixir of calisaya prepared by one maker, it could not be refilled with that of another, since such a course would render it liable to be returned by the purchaser as a different medicine from that obtained at first. Physician of the highest reputation were accustomed to specify the brand of elixir desired, and the writer can remember that time and again he has hurried to distant portions of the city searching for an elixir of a particular make and which was not in stock, although several substitutes for what should have been the same preparation were on the shelves. In addition to the above-named aggravation, combinations, or rather associations, of substances incompatible under

all ordinary conditions were advertised under the name elixir, and substances perfectly insoluble in the menstruum employed were represented as being dissolved; and to add to these questionable features, quinine and combinations of quinine were asserted to be in a soluble form and nearly tasteless. It is needless to consider this phase of the subject longer, for all are familiar with the result. The burden was too great; elixirs as a class were severely criticized, and many pharmacists and physicians included those which were worthy among those which were indifferent and bad. The reaction which followed was disastrous to the interests of the men who unintentionally brought it about (elixir manufacturers), for physicians largely ceased ordering elixirs of special make, and pharmacists threw their influences against the preparations compounded by manufacturers of these specialties. The writer aims simply to give a brief synopsis of the history of the class of pharmaceuticals under consideration, and does not wish to argue in favor or against them; and the elixir of the present day has been reached.

Throughout this country the preparation of elixirs is gradually passing from a few wholesale manufacturers into the hands of the many pharmacists. Quantities of elixirs are prescribed, but their preparation has extended over the entire country instead of being confined to a few localities. Physicians have their favorite elixirs and prescribe them, but these elixirs must, as a rule, be unquestionable. In many instances, however, incompatibles are undoubtedly brought together at the expense of the final product, drugs insoluble in the menstruum are supposed to be represented by the resultant elixir, and tedious, round about methods are employed where simple, direct processes can be substituted. Before considering elixirs individually, it is but just to review their history during the past twenty years, for many pharmacists have not the necessary works at their command, and reference is constantly made to the action of the societies which considered them and the men who early made them a study.

The Committee on Unofficial Preparations appointed by the American Pharmaceutical Association in 1870, was Professor J. Faris Moore, M.D., who included in his report to the Society (1871) a series of elixirs, and this was the first general recognition these preparations received from that body. In the year following the appointment of the committee (1871), Mr. Ottmar Eberbach read a volunteer paper before the Society at its meeting in Cleveland, Ohio, in which he gave the result of his analysis of several commercial elixirs. The paper provoked considerable discussion, and resulted in the following:

Resolved, That a committee of five be appointed by the President to take into consideration the subject of elixirs and similar unofficinal preparations in all its bearings upon pharmacy, and, if deemed proper, to report suitable formulæ for the guidance of the members of this Association.”

In 1872 Professor C. Lewis Diehl contributed an interesting paper on the elixir subject. It was read before the Louisville College of Pharmacy, and afterward published by the pharmaceutical journals, and by this means several admirable formulæ were introduced. Many of these processes are still used and accepted as standard, being preferred by pharmacists to those afterward offered as improvements. Next (1873) the committee appointed by the American Pharmaceutical Association made a minority report (including many formulæ), which was that of the chairman of the committee, Mr. J. F. Hancock, and which, after some discussion, was adopted, and the following resolutions were offered by Professor J. M. Maisch:

Resolved, That the report be adopted, with the recommendation that these formulæ be used by the members of the Association, and that the Secretary be instructed to send a printed copy with the report to the medical societies of the United States, with the suggestion that physicians, if prescribing elixirs at all, prescribe only such formulæ as have been adopted by this Association. The object is to attain, as nearly as possible, a uniformity in the United States.”

Resolved, That Mr. J. F. Hancock be appointed the Committee on Unofficinal Formulas.”

At the meeting of the Society which followed, in Louisville, Ky.. 1874, the Committee on Unofficinal Formulæ failed to introduce elixirs. However, Mr. Ebert, of Chicago, presented a series of elixir formulæ, based upon those of Professor C. Lewis Diehl, and prepared by a committee under the supervision of the Chicago College of Pharmacy, and suggested that they be revised or adopted by the Society for general use. After an animated discussion, Mr. Peixotto offered a resolution, which, amended by Mr. Roberts, was adopted, as follows:

Resolved, That a committee of three be appointed, to whom shall be referred the formulæ of elixirs presented by the Chicago College of Pharmacy, said committee to examine the formulæ and

carefully compare them with the formulæ adopted at the last annual meeting, or which may be submitted to them, to modify any or all formulæ if necessary, and to report to the next meeting.”

At the next meeting, 1875, the committee reported a number of formulæ, some differing from those previously adopted by the Society, others new. Since that time many formulæ have been introduced through the “Report on the Progress of Pharmacy,” which is the portion of the Proceedings of the American Pharmaceutical Association devoted to a review of the advance of pharmacy during the year, but there has been no other official consideration of these preparations.

In reviewing the work to which we have referred, we shall simply say that in many instances experience has demonstrated that there are defects in the formulæ which may be overcome. It was not to be expected that the work of these committees could be perfect, and while from necessity we often deviate in manipulation from the formulæ offered by the committees, we feel that, inasmuch as the proportions of the medicinal ingredients are retained by us, our formulæ may be considered as answering the requirements of the American Pharmaceutical Association. Twenty, nineteen, and sixteen years have passed since these committees successively reported, fully the time required between two revisions of our Pharmacopœia, and doubtless the members of the committees have individually revised many of their processes, profiting by these years of experience and by the criticisms of others. In connection with the elixir question and the American Pharmaceutical Association, we must not overlook the valuable paper presented by Mr. R. W. Gardner at the meeting in Saratoga, 1880, and which embraces more formulæ than had elsewhere, to our knowledge, been compiled at that time, and to which we often refer in the work which follows. We must not overlook the series of formulæ adopted by the Newark Pharmaceutical Association in 1876, and those adopted by the Associated Committees of the National College of Pharmacy and the Medical Society of the District of Columbia. The formulæ recommended by both of these bodies were published in the various pharmaceutical journals and served a good purpose.

Lastly (1884), the “New York and Brooklyn Formulary” appeared and presented an excellent (though limited in number) line of elixir formulæ, which work being adopted by the American Pharmaceutical Association, Pittsburgh, 1885, and enlarged under the

title "National Formulary " (1888), is now the most complete authoritative treatise on elixirs. In this edition of our work we have made the proportions of the drug ingredients conform to those of that publication for such elixirs as are common to both. We will add that the "National Formulary" should be in the hands of every pharmacist.

Compound elixirs have now multiplied until their number is such as to be burdensome. The problem regarding proportion of ingredients was one that early commanded our attention, and which we endeavored to systematize, in the absence of authority, so as to conform, if possible, to some general rule. The necessity for some such action may be illustrated as follows:

Elixir of phosphate of quinine contains one grain of quinine in each fluidrachm.

Elixir of pyrophosphate of iron contains two grains of pyrophosphate of iron in each fluidrachm.

What shall be the proportion of phosphate of quinine and of pyrophosphate of iron in each fluidrachm of elixir of phosphate of quinine and pyrophosphate of iron? Again,

Elixir of phosphate of quinine contains one grain of quinine in each fluidrachm.

Elixir of phosphate of cinchonidine contains one grain of cinchonidine in each fluidrachm.

Elixir of phosphate of cinchonine contains two grains of cinchonine in each fluidrachm.

What shall be the proportion of the several ingredients in the elixir of phosphate of quinine, cinchonidine, and cinchonine ?

If each fluidrachm of this last elixir contains the amount of each ingredient which is present in the same amount of the simple elixir of that substance, we will have four grains of the combined alkaloids, an unreasonable quantity for a preparation of the character of an elixir.

In consequence of examples similar to those above named, and which demanded some regular plan of procedure, if such could be devised, we have for many years attempted to systematize the matter, and our efforts have met with some success. In making compound elixirs, where it was possible, we have represented in each fluidrachm the aggregate amount of alkaloids which would be present were the several elixirs mixed together in equal quantities. We believe that, as a rule, under the conditions which confront us in the problem of compound elixirs, physicians desire the associated action of smaller amounts of the several ingredients rather than the full dose of each. It

is true that, for obvious reasons, this rule cannot always be upheld, but where it has been practicable we have endeavored to carry it out.

The proportion of strychnine in the elixirs of commerce has never been uniform, and even the men who seem to have made elixir formulæ a special consideration vary one from another. Some use one grain of strychnine to sixteen fluidounces of the finished elixir, which is the one-hundred and-twenty-eighth part of a grain to each fluidrachm, while others use severally one-hundredth, one-sixtieth, and one-fifty-first of a grain. Strychnine is far too violent and poisonous a substance for such a range of proportions, and in our opinion it is to be regretted that, even though ignoring elixirs as a class, our Committee upon Revision of the Pharmacopœia did not authorize some proportion which pharmacists could adopt in order to further a uniformity in these preparations.

Since the foregoing was written the National Formulary has authorized the making of elixirs containing strychnine compounds in which one and one-quarter grains of strychnine or of the strychnine salt are used in preparing sixteen fluidounces of the elixir. Thus the authoritative proportion of strychnine has been accepted approximately as the one-hundredth part of a grain to each fluidrachm. In accordance therewith, in the body of the present edition of our work on elixirs, the strychnine proportions in these elixirs are made to conform to that strength.

In making solutions of strychnine we usually convert it into a soluble salt by means of acetic acid. This forms a combination which in our experience is best for associating strychnine with the entire list of substances which are used to form the compound elixirs containing that alkaloid. In some instances the elixir in which the strychnine is to be placed has an alkaline reaction and may decompose the salt; yet as the elixir contains some alcohol, and besides has as a menstruum a solvent action different from that of water, it does not necessarily follow that precipitation of the alkaloid will result. However, it is well to be cautious, and should a white, flocculent precipitate occur in elixirs containing strychnine and which are alkaline in reaction, this precipitate should be considered as dangerous and care exercised in dispensing the elixir.

In all the formulæ where it is practicable we have introduced fluid extracts instead of crude drugs. This we consider advantageous for several reasons, and fluid extracts may now be readily obtained to represent nearly every plant used in medicine. In many instances we object to certain drugs under any consideration as the foundation of an

elixir, and we have not hesitated to criticize freely where the medicinal principles of the drug cannot in our opinion be extracted or held in solution by the elixir. However, if the menstruum precipitates these principles from the fluid extract, it will probably refuse to extract them from the crude drug, so that little if any advantage will accrue in this direction from the use of the crude material. We vary from the methods employed by the committee appointed by the American Pharmaceutical Association regarding the manner of mixing a tincture or fluid extract with the menstruum. If they are mixed directly together, precipitation results immediately of much of such substances as are insoluble in the resultant menstruum. This produces a preparation which pharmacists and physicians refuse to accept as an elixir. True it is that these substances may be inert and that filtration will separate them; yet the nature of the case is such that filtration is only of temporary benefit, and even after several filtrations the precipitation continues. This trouble may be overcome to a great extent by following the old process for making medicated waters, that is, by triturating the fluid extract or tincture with magnesium carbonate, or with some other inert powder if this substance is inadmissible, after which the simple elixir is added and the mixture filtered. By this process the insoluble materials are separated at once, which is preferable to having the precipitation extend over days and weeks. Besides, the surface exposure caused by the trituration of the fluid extract with the magnesium carbonate may favor the saturation of the menstruum in the manner it does with essential oils under the same conditions.

We have adopted a simple elixir which practically agrees with that of our Pharmacopœia (1883), although the method of manipulation differs somewhat. We object to elixirs which contain cinnamon, caraway, coriander, cardamom, or cloves (unless used as aromatic elixirs), for many persons are prejudiced against certain of these substances, and it is not unusual to meet persons with whom the flavor of one of the foregoing is unbearable. The simple elixir should, in our opinion, be as nearly as possible pleasant to the majority of persons, and we have no record of an objection to the flavor of lemon or of orange, separate or combined. Our formula for simple elixir, therefore, associates these substances in such proportion as to produce a very acceptable and grateful combination, the orange preponderating.

When we consider that in the pages which follow we find processes for making 271 different elixirs, we are confronted with the fact that these elixirs alone would fill the shelves of an ordinary

storeroom. The problem to be considered by pharmacists is that of finding the most convenient method which will enable them to dispense these combinations in a creditable manner without overstocking their shelves. This has been and is a consideration of pressing importance to the writer, and the trouble has been overcome, to a very great extent, by adopting a system which would permit the preparation of compound elixirs from those more simple, and in studying how to make the different elixirs from compatible ingredients. In many instances this is impossible without injury to the product, and yet, in the large majority of cases, pharmacists are able to extemporize and supply most demands from their stock of standard elixirs, which are those in most common use.

Some elixirs may be called permanent, but this term cannot be applied to the larger number. Associations of the alkaloids in acid solution only, or elixir of pyrophosphate of iron in alkaline solution, or others under certain conditions, might possibly be claimed as fairly permanent. However, the elixir of pyrophosphate of iron will decompose if exposed to the sunlight or even strongly diffused daylight, and it may gelatinize after a time if of acid reaction, while alterations will follow with the solutions of the alkaloids. Few organic bodies are permanent in solutions containing far more alcohol than is permissible with the modern elixir, and in consequence many elixirs will alter in appearance, or even precipitate, if they contain the substances which are supposed to be present.

In reviewing the formulæ which follow, the reader may criticize the number of different elixirs presented. This, we admit, is a fault, but one beyond our control, and some of the elixirs are seldom used, some are simply curiosities. This country is large, however, and if the reader will regard a certain preparation as one which should have been omitted, he may be surprised to learn that in other localities it is very much in demand. Time and again we have been surprised on learning of the local consumption of substances we scarcely thought commanded a sale, and, upon the other hand, we have excited comment over certain preparations scarcely known to others and yet made by us in quantities. In connection with this phase of the subject, we feel that our position is not that of a judge—a position occupied by certain committees—but that, as our subject is “elixirs,” it is our duty to consider them as a body.

We desire to call attention to the fact that it was our first intention to give the several processes and criticisms which have been made regarding each elixir introduced during the past twenty years.

This proved to be impracticable, and we were forced to draw the line sharply. If the reader will select as an example any one of the prominent elixirs, and hunt up the reviews, different formulæ, etc., regarding it which have appeared in the various pharmaceutical journals and the Proceedings of the American Pharmaceutical Association during that period, he will doubtless be astonished at the magnitude of the matter; and when it is remembered that recent years have given us several new and worthy pharmaceutical journals, and that elixirs are more or less considered by all of them, it will be seen that to give an intelligent and faithful *resume* in a work like ours would be impracticable.

Our aim has been to credit those who introduced special combinations and the journals whose pages we consulted to find their records, and yet it is likely that unintentional oversights and errors have been made.

In conclusion, we may say that we trust pharmacists will find our formulæ to present some advantages over a line of compilations, for they are not simply abstracts from the work that others have done.

ELIXIR FORMULÆ

1. ELIXIR ADJUVANS.

Fluid extract of orange peel,.... $\frac{1}{2}$ fluidounces
Fluid extract of coriander,..... $\frac{1}{4}$ fluidounces
Fluid extract of caraway,..... $\frac{1}{4}$ fluidounces
Fluid extract of wild-cherry bark,1 fluidounces
Fluid extract of licorice root,... $1\frac{1}{2}$ fluidounces.
Simple elixir,..... 14 fluidounces
Alcohol, $\frac{1}{2}$ fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Mix the fluid extracts and evaporate them to one-half of their bulk, at a temperature not exceeding 150° F. Triturate the remaining liquid in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol. The ingredients for this elixir were named in the *Druggists' Circular*, 1879.

The National Formulary presents a process for making this preparation in which the crude drugs are percolated and the elixir prepared from the percolate.

2. ELIXIR OF BROMIDE OF AMMONIUM.

Bromide of ammonium,..... 640 grains.
Simple elixir,..... $15\frac{1}{2}$ fluidounces.

Dissolve the bromide of ammonium in the simple elixir, and filter if necessary.

Each teaspoonful of the finished elixir contains five grains of bromide of ammonium.

The National Formulary directs the addition of thirty grains of citric acid to sixteen fluidounces of this elixir.

3. ELIXIR ALOES.
(COMPOUND TINCTURE OF ALOES.)

Aloes,..... 3 troy ounces
Saffron..... 3 troy ounces
Tincture myrrh,..... 2 pints.

Reduce the drugs to a coarse powder and macerate in the alcohol for fourteen days, stirring the mixture thoroughly each day; then filter.

(“The New Dispensatory,” London, 1770.)

4. ELIXIR OF VALERIANATE OF AMMONIUM.

Valerianate of ammonium..... 256 grains.
Simple elixir, ammonia water, carmine solution,
of each a sufficient quantity.

Dissolve the valerianate of ammonium in twelve fluid ounces of simple elixir, and bring this to the measure of sixteen fluid ounces by the addition of a sufficient amount of simple elixir. Then cautiously add ammonia water until in slight excess, and color with solution of carmine until decidedly red. Each fluidrachm (teaspoonful) of the finished elixir represents two grains of valerianate of ammonium, the same as that adopted by the American Pharmaceutical Association, 1873.

Valerianate of ammonium, especially if the valerianic acid is in excess, has, to most persons, a very offensive odor. This the addition of the ammonia water tends to subdue, but wherever valerianate of ammonium is free, or in aqueous solution, the odor will remain. If dissolved in officinal alcohol, however, it is scarcely apparent, but such a solution will not conform to our modern “elixir.” The addition of water to the alcoholic solution revives the odor.

The history of this elixir is of interest, since it was among the first of the popular elixirs introduced, and has retained its prestige to the present day. In an essay by Mr. Trovillo H. K. Enos, read before the Maryland College of Pharmacy, 1861, the statement is made that “a preparation known as Pierlot’s solution of valerianate of ammonium has long been used among physicians in Philadelphia; but the disagreeable taste and odor of the solution having been found

objectionable to patients, the pharmacists have been led to suggest some mode of disguising both, and presenting the preparation in an agreeable form for administration, without materially altering its effect; and the form of an elixir has been adopted." Mr. Enos then gave his formula, which was as follows:

Valerianic acid,.....1 fluidrachm.
Simple syrup,..... 1 fluidounces.
Extract of sweet orange peel,... 2 fluidrachms.
Alcohol,.....1 fluidounces.
Orange-flower water,..... ½ fluidounces.
Distilled water, carbonate of ammonium,
..... of each a sufficient quantity.

Dilute the valerianic acid with one-half fluidounces of water, and neutralize it with the carbonate of ammonium, add the alcohol, having previously mixed it with the fluid extract of orange peel, and then add the other ingredients and filter.

In 1863 Mr. Joseph Roberts accepted a query in the American Pharmaceutical Association, reading as follows: "What is the best formula for Elixir of Valerianate of Ammonium which shall be nearly free from valerianic odor, and elegantly aromatized ?" Having failed to reply, in 1865 Mr. J. Faris Moore gave a formula to the Society which in substance agreed with that of Mr. Enos, the principle being the formation of valerianate of ammonium from valerianic acid, by saturating it with carbonate of ammonium. At this day valerianate of ammonium is employed instead of the valerianic acid.

SOLUTION OF CARMINE.—This preparation has been used some twelve years by the writer, in preference to any "tincture" of cochineal. The fat in cochineal causes such preparations to putrefy in warm weather; and to extract the fat by means of ether from the powdered cochineal, previous to tincturing, is expensive and tedious. The term "tincture of cochineal" is scarcely appropriate as applied to the aqueous solutions made of cochineal, cream of tartar, and alum, and, as the object is simply to secure a coloring matter, the term might with equal propriety be applied to our solution of carmine, made as follows:

Carmine, No. 40,.....60 grains.
Distilled water, glycerin, of each,... .. 4 fluidounces.
Ammonia water,.....a sufficient quantity.

Powder the carmine and triturate with the water, gradually adding ammonia water until the carmine disappears and a dark-red liquid, free from insoluble matter, remains. To this add the glycerin, and mix. Should this solution ever become

murky, a little ammonia water will restore its transparency.

Solution of carmine is necessarily alkaline, and cannot be employed to color acid liquids. For all neutral or alkaline solutions it is admirable, and for soda-water syrups is far preferable to aniline red.

5. ELIXIR of VALERIANATE of AMMONIUM with CINCHONIDINE .
(ELIXIR OF VALERIANATE OF AMMONIA WITH CINCHONIDIA.)

Cinchonidine (alkaloid), 128 grains.
Elixir of valerianate of ammonium,
acetic acid,.....of each a sufficient quantity.

Triturate the cinchonidine in a mortar with acetic acid in amount sufficient to effect its solution, and add to this liquid elixir of valerianate of ammonium until the product measures sixteen fluidounces. If not of acid reaction, add cautiously acetic acid until it will redden blue litmus paper, and filter if necessary.

(All of the combinations of valerianate of ammonium and the alkaloids in elixir form should have an acid reaction. It is, therefore, to be understood, with the formulæ of this character which follow, that in case the elixir is alkaline it must be acidulated with acetic acid.)

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, and one grain of cinchonidine as the acetate of that alkaloid.

6. ELIXIR OF VALERIANATE OF AMMONIUM WITH
CINCHONIDINE AND CINCHONINE.

(ELIXIR OF VALERIANATE OF AMMONIA WITH CINCHONIDIA AND CINCHONIA.)

Elixir of valerianate of ammonium
with cinchonidine,8 fluidounces.

Elixir of valerianate of ammonium
with cinchonine, 8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, and a half grain each of cinchonidine and cinchonine as acetates of these alkaloids.

7. ELIXIR OF VALERIANATE OF AMMONIUM WITH CINCHONIDINE, CINCHONINE, AND STRYCHNINE.

(ELIXIR OF VALERIANATE OF AMMONIA WITH CINCHONIDIA, CINCHONIA, AND STRYCHNIA.)

Elixir of valerianate of ammonium
with cinchonidine,.....8 fluidounces.
Elixir of valerianate of ammonium
with cinchonine,..... 8 fluidounces.
Strychnine,.....1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and add the elixirs, having previously mixed them together. Filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-half grain each of cinchonidine and cinchonine, and one hundredth grain of strychnine. The alkaloids are in form of acetates.

8. ELIXIR OF VALERIANATE OF AMMONIUM WITH CINCHONIDINE AND PYROPHOSPHATE OF IRON.

(ELIXIR OF VALERIANATE OF AMMONIA WITH CINCHONIDIA AND IRON.)

Elixir of valerianate of ammonium
with cinchonidine,.....8 fluidounces.
Elixir of valerianate of ammonium
with pyrophosphate of iron,..8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one grain of pyrophosphate of iron, and one-half grain of cinchonidine, the latter in the form of an acetate.

CAUTION.—Excess of acid will cause the pyrophosphate of iron to gelatinize. Excess of alkali precipitates the cinchonidine. The elixir should be made as nearly neutral as possible, and remain transparent, by the use of acetic acid and ammonia water, as indicated by litmus paper.

9. ELIXIR OF VALERIANATE OF AMMONIUM WITH CINCHONIDINE, PYROPHOSPHATE OF IRON, AND STRYCHNINE.

(ELIXIR OF VALERIANATE OF AMMONIA, CINCHONIDIA, IRON, AND STRYCHNIA)

- Elixir of valerianate of ammonium
with cinchonidine,8 fluidounces.
- Elixir of valerianate of ammonium
with pyrophosphate of iron,..8 fluidounces.
- Strychnine,.....1¼ grains.
- Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and add this to the elixirs, having previously mixed them together. Use precautions suggested with elixir of valerianate of ammonium with cinchonidine and pyrophosphate of iron.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-half grain of pyrophosphate of iron, one-half grain of cinchonidine, and one-hundredth grain of strychnine. The alkaloids exist as acetates.

10. ELIXIR OF VALERIANATE OF AMMONIUM WITH CINCHONINE.

(ELIXIR OF VALERIANATE OF AMMONIA WITH CINCHONIA.)

- Cinchonine (alkaloid), 128 grains.
- Elixir of valerianate of Ammonium
diluted acetic acid, of each a sufficient quantity.

Triturate the cinchonine in a mortar with the acetic acid in amount sufficient to effect its solution, and mix with this elixir of valerianate of ammonium until the product measures sixteen fluidounces. If not of acid reaction, add cautiously acetic acid until it will redden litmus paper, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, and one grain of cinchonine as the acetate of that alkaloid.

11. ELIXIR OF VALERIANATE OF AMMONIUM WITH CINCHONINE AND PYROPHOSPHATE OF IRON.

(ELIXIR OF VALERIANATE OF AMMONIA, CINCHONIA, AND IRON.)

Elixir of valerianate of ammonium with
cinchonine, 8 fluidounces
Elixir of valerianate of ammonium with
pyrophosphate of iron,.....8 fluidounces

Mix them together. Use precautions suggested with elixir of valerianate of ammonium with cinchonidine and pyrophosphate of iron.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one grain of pyrophosphate of iron, and one-half grain of cinchonine as the acetate of that alkaloid.

12. ELIXIR OF VALERIANATE OF AMMONIUM WITH CINCHONINE, PYROPHOSPHATE OF IRON, AND STRYCHNINE

(ELIXIR OF VALERIANATE OF AMMONIA, CINCHONIA, IRON, AND STRYCHNIA.)

Elixir of valerianate of ammonium with cinchonine
and pyrophosphate of iron,..16 fluidounces.
Strychnine,.....1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and then add the elixir of valerianate of ammonium with cinchonine and pyrophosphate of iron. Observe precautions suggested with elixir of valerianate of ammonium with cinchonidine and pyrophosphate of iron.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one grain of pyrophosphate of iron, one-half grain of cinchonine, and one-hundredth of a grain of strychnine. The alkaloids exist as acetates. This preparation should be as nearly neutral in reaction as it is possible to make it.

**13. ELIXIR OF VALERIANATE OF AMMONIUM WITH
CINCHONINE AND STRYCHNINE.**

(ELIXIR OF VALERIANATE OF AMMONIA, CINCHONIA, AND STRYCHNIA.)

Elixir of valerianate of ammonium with cinchonine,.....16 fluidounces.
Strychnine,1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in sufficient amount to effect its solution, then add the elixir of valerianate of ammonium with cinchonine, and filter if necessary. If not of acid reaction, acidulate slightly with acetic acid.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one grain of cinchonine, and one-hundredth of a grain of strychnine as the acetate of that alkaloid.

**14. ELIXIR OF VALERIANATE OF AMMONIUM WITH
PYROPHOSPHATE OF IRON.**

(ELIXIR OF VALERIANATE OF AMMONIA AND IRON.)

Elixir of valerianate of ammonium,8 fluidounces.
" pyrophosphate of iron,8 fluidounces.
Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain each of valerianate of ammonium and of pyrophosphate of iron. It should have a slightly alkaline reaction.

15. ELIXIR OF VALERIANATE OF AMMONIUM AND QUININE.

Quinine (alkaloid),..... 32 grains.
Elixir of valerianate of ammonium,
diluted acetic acid,..... of each a sufficient quantity.

Triturate the quinine in a mortar with a sufficient amount of the acetic acid to effect its solution, then mix the liquid with enough elixir of valerianate of ammonium to produce sixteen fluidounces. If not of acid reaction, add acetic acid until it will change the color of blue

litmus paper to red.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, and one-fourth grain of quinine as the acetate of that alkaloid.

The National Formulary directs that thirty-two grains of hydrochlorate of quinine be dissolved in sixteen fluidounces of elixir of valerianate of ammonium. Thus each fluidrachm contains one-fourth grain of hydrochlorate of quinine. In former editions of our work we directed that one hundred and twenty-eight grains of quinine be used in making sixteen fluidounces in this elixir, but in the present edition, recognizing the authority of the National Formulary, have adopted the foregoing strength.

16. ELIXIR OF VALERIANATE OF AMMONIUM WITH QUININE AND CINCHONIDINE

(ELIXIR OF VALERIANATE OF AMMONIA WITH QUINIA AND CINCHONIDIA.)

Elixir of valerianate of ammonium
and quinine,..... 8 fluidounces.

Elixir of valerianate of ammonium
and cinchonidine,..... 8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-half grain of cinchonidine, and one-eighth grain of quinine, as acetates of these alkaloids.

17. ELIXIR OF VALERIANATE OF AMMONIUM WITH QUININE, CINCHONIDINE, AND STRYCHNINE.

(ELIXIR OF VALERIANATE OF AMMONIA, QUINIA, CINCHONIDIA, AND STRYCHNIA.)

Strychnine,..... $1\frac{1}{4}$ grains.

Elixir of valerianate of ammo-
nium with quinine and cincho-
nidine,.....16 fluidounces.

Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in sufficient amount to effect its solution, then mix with the elixir of valerianate of ammonium with quinine and cinchonidine.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-half grain of cinchonidine, one-eighth grain of quinine, and one-hundredth of a grain of strychnine. The alkaloids are in the form of acetates.

18. ELIXIR OF VALERIANATE OF AMMONIUM WITH QUININE, CINCHONIDINE, PYROPHOSPHATE OF IRON, AND STRYCHNINE.
(ELIXIR OF VALERIANATE OF AMMONIA, QUINIA, CINCHONIDIA, IRON, AND STRYCHNIA.)

- Elixir of valerianate of ammonium
with quinine and pyrophosphate
of iron,..... 8 fluidounces.
- Elixir of valerianate of ammonium
with cinchonidine and pyro-
phosphate of iron,..... 8 fluidounces.
- Strychnine,..... 1¼ grains.

Triturate the strychnine in a mortar with acetic acid in sufficient quantity to effect its solution, and add this to the elixirs, having previously mixed them together; and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-fourth grain of cinchonidine, one-eighth grain of quinine, one grain of pyrophosphate of iron, and one-hundredth grain of strychnine. The alkaloids exist as acetates. This elixir should be as nearly neutral as it is possible to make it.

19. ELIXIR OF VALERIANATE OF AMMONIUM WITH QUININE AND CINCHONINE.

(ELIXIR OF VALERIANATE OF AMMONIA WITH QUINIA AND CINCHONIA.)

- Elixir of valerianate of ammonium
and quinine,..... 8 fluidounces.
- Elixir of valerianate of ammonium
with cinchonine,..... 8 fluidounces.
- Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-half grain of cinchonine, and one-eighth grain of quinine, as acetates of these alkaloids.

20. ELIXIR OF VALERIANATE OF AMMONIUM WITH QUININE,
CINCHONINE, AND STRYCHNINE.

(ELIXIR OF VALERIANATE OF AMMONIA, QUINIA, AND STRYCHNIA.)

Elixir of valerianate of ammonium
with quinine and cinchonine,...16 fluidounces.
Strychnine,.....1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and add this to the elixir of valerianate of ammonium with quinine and cinchonine.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-eighth grain of quinine, one-half grain of cinchonine, and one-hundredth of a grain of strychnine. The alkaloids exist as acetates.

21. ELIXIR OF VALERIANATE OF AMMONIUM WITH QUININE
AND PYROPHOSPHATE OF IRON.

(ELIXIR OF VALERIANATE OF AMMONIA WITH QUINIA AND IRON.)

Elixir of valerianate of ammonium
with quinine,.....8 fluidounces.
Elixir of valerianate of ammonium
with pyrophosphate of iron,...8 fluidounces.
Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-half grain of pyrophosphate of iron, and one eighth grain of quinine. Observe the precautions suggested with elixir of valerianate of ammonium with cinchonidine and pyrophosphate of iron.

22. ELIXIR OF VALERIANATE OF AMMONIUM WITH QUININE,
PYROPHOSPHATE OF IRON, AND STRYCHNINE.
(ELIXIR OF VALERIANATE OF AMMONIA, QUINIA, IRON, AND STRYCHNIA.)

Elixir of valerianate of ammonium with quinine
and pyrophosphate of iron, 16 fluidounces.
Strychnine,1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and mix this liquid with the elixir of valerianate of ammonium with quinine and pyrophosphate of iron, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-half grain of pyrophosphate of iron, one-eighth grain of quinine, and one-hundredth of a grain of strychnine, the alkaloids being in the form of acetates. Observe the precautions suggested with elixir of valerianate of ammonium with cinchonidine and pyrophosphate of iron.

23. ELIXIR OF VALERIANATE OF AMMONIUM WITH QUININE
AND STRYCHNINE.

Elixir of valerianate of ammonium
and quinine,..... 16 fluidounces.
Strychnine,..... 2½ grains.
Acetic acid..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and mix this liquid with the elixir of valerianate of ammonium.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, one-fourth grain of quinine, and one-fiftieth of a grain of strychnine as an acetate of that alkaloid.

24. ELIXIR OF VALERIANATE OF AMMONIUM WITH STRYCHNINE.

Elixir of valerianate of ammonium, 16 fluidounces.
Strychnine,.....1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in sufficient amount to effect its solution, and mix this with the elixir of valerianate of ammonium. If not of acid reaction, add enough acetic acid to change blue litmus paper to red.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of valerianate of ammonium, and one-hundredth of a grain of strychnine as an acetate of that alkaloid.

25. ELIXIR OF VALERIANATE OF AMMONIUM WITH SUMBUL. (ELIXIR OF VALERIANATE OF AMMONIA WITH MUSK ROOT.)

Fluid extract of sumbul,.....2 fluidounces.
Elixir of valerianate of
ammonium, 14 fluidounces
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of sumbul in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the elixir of valerianate of ammonium, stirring well, and filter.

Each fluidrachm of the finished elixir represents two grains of valerianate of ammonium. and according to this formula each fluidrachm should contain the active principles of seven and one-half minims of fluid extract of sumbul. But, as a matter of fact, that amount will not dissolve in that quantity of the menstruum, the excess remaining in the filter paper.

26. ELIXIR ANTIGLAIREUX.

(ELIXIR FOR GLENORRHEA. LAVOLLEY'S PURGATIVE ELIXIR.
TINCTURA PURGGAS. TINCTURA JALAPÆ COMPOSITAS.)

Jalap,..... 8 troyounces.
Turpeth root,..... 1 troyounce.
Scammony,..... 2 troyounces.
Diluted alcohol,..... 96 fluidounces.

Mix the drugs and reduce them to a coarse powder, and macerate this in the diluted alcohol for ten days, stirring the mixture

thoroughly each day; then filter.

(American Journal of Pharmacy, 1881.)

27. ELIXIR ANTIGOUTTEUX DE VILLETTE. (DE VILLETTE'S GOUT ELIXIR.)

Brown cinchona bark, 25 troyounces.
Poppy petals, 12½ troyounces.
Sassafras bark, 6¼ troyounces.
Guaiac resin, 12½ troyounces.
Jamaica rum, 62½ pints.
Syrup of sarsaparilla, 39 pints

Mix the drugs and reduce them to a coarse powder, and macerate in the previously mixed Jamaica rum and syrup of sarsaparilla for fourteen days, stirring the mixture thoroughly each day; then filter.

(HAGER.—See New Remedies, 1878.)

28. AROMATIC ELIXIR.

Fluidextract of sweet orange peel,.....½ fluidounces.
Fluidextract of coriander seed,.....¼ fluidounces.
Fluidextract of angelica seed,.....¼ fluidounces.
Simple elixir,..... 16 fluidounces.
Carmine color, carbonate of magnesium,.....of each a sufficient quantity.

Mix the fluid extracts and triturate them in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, add solution of carmine, enough to give a nice red color.

This elixir is used as a flavor, and may be used instead of simple elixir if desired, as it is acceptable to many persons. The Newark Pharmaceutical Association (1871) recommended a formula on which the above is based.

The National Formulary commends a formula in which aromatic spirits is the base, practically as follows:

Aromatic spirits,..... 16 fluidounces.

Syrup and water, of each,24 troyounces
Purified talcum,.....1 troyounce.

Mix the aromatic spirits with the syrup, then add the water and the purified talcum. Shake well together and agitate occasionally for several days. Finally filter the mixture. This elixir is of the same strength as that recommended by the National Formulary.

29. ELIXIR OF IODIDE OF ARSENIC AND MERCURY.

Solution of iodide of arsenic and mercury (Donovan's solution),... .256 minims.
Simple elixir,..... a sufficient quantity.

Mix the solution of iodide of arsenic and mercury with enough simple elixir to produce sixteen fluidounces.

Each fluidrachm of the finished elixir contains two minims of solution of iodide of arsenic and mercury. Dose, one fluidrachm (teaspoonful), increased carefully to two or three fluidrachms, if necessary.

30. ELIXIR OF BEEF.

Extract of beef,..... 256 grains.
Simple elixir,..... 15 fluidounces.
Distilled water,..... $\frac{1}{2}$ fluidounces.

Triturate the extract of beef with the water, then gradually add the simple elixir, and filter.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of extract of beef. This formula was based on one given in the *Druggists' Circular*, 1878.

31. ELIXIR OF BEEF AND CITRATE OF IRON. (ELIXIR OF BEEF AND IRON.)

Elixir of beef,..... 16 fluidounces.
Water,..... $\frac{1}{2}$ fluidounces.
Citrate of iron and ammonium,....128 grains.

Dissolve the citrate of iron in the water, add the elixir of beef, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of extract of beef and one grain of citrate of iron.

This preparation is far from permanent. It deposits a precipitate by age, which evidently results from the reaction between the chloride of sodium, present in large amount in the beef extract, and the citrate of iron. The substitution; of chloride of iron for the citrate might prove advantageous. but the demand is for an elixir of beef with citrate of iron.

32. ELIXIR OF BEEF, IRON, AND CINCHONA.

Elixir of beef with citrate of iron,.....8 fluidounces.

Elixir of cinchona (alkaloidal),.....8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of extract of beef and represents two grains of officinal calisaya bark.

33. ELIXIR OF BLACK HAW.

(ELIXIR OF VIBURNUM PRUNIFOLIUM.)

Fluid extract of viburnum pruni-

folium,.....2 fluidounces.

Compound tincture of cardamom,1 fluidounces.

Simple elixir,.....13 fluidounces.

Mix the liquids, allow them to stand a few days, and filter. Each fluidrachm represents about seven and one-half grains of black haw.

ELIXIRS CONTAINING AMMONIO-CITRATE OF BISMUTH.

Ammonio-citrate of bismuth is not always entirely soluble in water, owing to the fact that it parts with ammonia and assumes a partially insoluble condition. It is well, therefore, to remember that a little ammonia water will facilitate the complete solution of ammonio-citrate of bismuth, unless the decomposition has proceeded beyond a certain limit.

In consideration of the above fact, elixirs containing excess of acids are incompatible with it, and the same is true of solutions of salts of the mineral acids. However, excess of acetic acid does not decompose it immediately, and salts of acetic acid are compatible with solutions of ammonio-citrate of bismuth, which is one reason why in elixir formulæ we use acetic acid in making solutions of alkaloids.

If an elixir containing ammonio-citrate of bismuth in connection with pepsin is not alkaline in reaction, or at least neutral, decomposition of the salt results, followed by precipitation. If it is alkaline, destruction of the pepsin follows.

If an elixir containing ammonio-citrate of bismuth and salts of the alkaloids is alkaline, the alkaloids are likely to precipitate; and if acid, precipitation results from decomposition of the bismuth salt. These incompatibles can only be associated by carefully avoiding any considerable excess of either acid or alkali. The alkali to be used in order to effect neutralization is ammonia water, and the acid, acetic acid.

We call attention occasionally to the above facts, in connection with special combinations which we are forced to consider, and we trust that the repetition will be excused, as we prefer to repeat rather than omit a word of warning where it may be necessary.

34. ELIXIR OF CITRATE OF AMMONIUM AND BISMUTH. (ELIXIR OF AMMONIO-CITRATE OF BISMUTH. ELIXIR OF BISMUTH.)

Ammonio-citrate of bismuth, 256 grains.
Simple elixir, ammonia water,
of each a sufficient quantity.

Dissolve the ammonio-citrate of bismuth in twelve fluid-

ounces of simple elixir, adding cautiously enough ammonia water to render the solution slightly alkaline, then bring to the measure of sixteen fluidounces by the addition of a sufficient quantity of simple elixir.

Each fluidrachm (teaspoonful) of the finished elixir represents two grains of ammonio citrate of bismuth, and is the same in strength as that adopted by the American Pharmaceutical Association, 1875. During warm weather the ammonia escapes to a greater or less extent from solutions of ammonio-citrate of bismuth; hence the addition of the ammonia water in order to insure a perfect solution. Should this elixir become cloudy from escape of ammonia, the addition of a little ammonia water will restore its transparency. It is incompatible with acids and salts of the mineral acids. The first formula brought to our attention, for an elixir of bismuth, was by Mr. Wm. C. Bakes in the *American Journal of Pharmacy*, 1867.

35. ELIXIR OF CITRATE OF AMMONIUM AND BISMUTH WITH PYROPHOSPHATE OF IRON.

(ELIXIR OF AMMONIO-CITRATE OF BISMUTH AND PYROPHOSPHATE OF IRON.
ELIXIR OF BISMUTH AND IRON. ELIXIR OF BISMUTH FERRATED.
ELIXIR OF IRON AND BISMUTH)

Elixir of citrate of ammonium and
bismuth,..... 8 fluidounces.
Elixir of pyrophosphate of iron,.8 fluidounces.

Mix them together.

Each teaspoonful of the finished elixir contains one grain each of ammonio-citrate of bismuth and of pyrophosphate of iron. This elixir should have an alkaline reaction.

36. ELIXIR OF CITRATE OF AMMONIUM AND BISMUTH WITH PEPSIN

(ELIXIR OF AMMONIO-CITRATE OF BISMUTH AND PEPSIN.
ELIXIR OF BISMUTH AND PEPSIN. ELIXIR OF PEPSIN AND BISMUTH.)

Elixir of citrate of ammonium and
bismuth,..... 8 fluidounces.
Elixir of pepsin,..... 8 fluidounces.

Mix them together, and if of acid reaction, cautiously add ammonia water until it is neutral or slightly alkaline.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain each of pepsin and citrate of ammonium and bismuth.

This preparation, we believe, is indebted for its value to the bismuth salt and alcohol. We doubt if the pepsin retains any of its digestive power, and in connection with the subject we direct attention to our remarks concerning pepsin.

37. ELIXIR OF CITRATE OF AMMONIUM AND BISMUTH WITH PEPSIN AND STRYCHNINE.

(ELIXIR OF AMMONIO-CITRATE OF BISMUTH, PEPSIN, AND STRYCHNIA.
ELIXIR OF PEPSIN, BISMUTH, AND STRYCHNIA.)

Elixir of citrate of ammonium and
bismuth with pepsin,..... 16 fluidounces.
Strychnine,.....1¼ grains.
Acetic acid,..... a sufficient, quantity.

Triturate the strychnine in a mortar with acetic acid in sufficient amount to effect its solution, and then add the elixir of citrate of ammonium and bismuth with pepsin. If of acid reaction, cautiously add ammonia water until it is neutral or even slightly alkaline.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain each of pepsin and ammonio-citrate of bismuth, and one-hundredth grain of strychnine.

The remarks we have made concerning strychnine and pepsin, in their respective positions, will apply with pertinence to this preparation; and although this elixir embraces a mass of pharmaceutical incongruities, it is among the most popular elixirs used by physicians. Were it not for this fact, the combination would not deserve a position.

38. ELIXIR OF CITRATE OF AMMONIUM AND BISMUTH WITH STRYCHNINE.

(ELIXIR OF AMMONIO-CITRATE OF BISMUTH AND STRYCHNIA.
ELIXIR OF BISMUTH AND STRYCHNIA.)

Elixir of citrate of ammonium with
bismuth,..... 16 fluidounces.
Strychnine,.....1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar, cautiously adding acetic acid until the alkaloid is dissolved, then add the elixir of citrate of ammonium with bismuth.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of citrate of ammonium and bismuth, and about one-hundredth of a grain of strychnine as the acetate of that alkaloid.

Strychnine is incompatible with alkaline solutions, and if a precipitate should occur while the elixir has an alkaline reaction, care must be taken that this precipitate is thoroughly mixed with the liquid before each dose is administered, inasmuch as the ammonio-citrate of bismuth is incompatible with an acid, this elixir must have an alkaline or at least a neutral reaction. However, although one and one-fourth grains of strychnine refuse to dissolve in sixteen fluidounces of water, it seems that the menstruum composing this elixir has the property of holding in solution the strychnine, even though it (the elixir) is alkaline, and thus the general incompatibility of the constituents is overcome.

39. BITTER ELIXIR.

(ELIXIR AMARUM.)

Extract of buck-bean,..... 2 troyounces.

Extract of orange peel,.....2 troyounces.

Dissolve them in a mixture of—

Diluted alcohol,..... 16 troyounces.

Peppermint water,.....16 troyounces.

And add of—

Spirit of ether (Hoffman's anodyne), 1 troyounce.

This formula is that of the German Pharmacopoeia, 1872.

40. ELIXIR OF BLACKBERRY.

Fluid extract of blackberry,.....2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of blackberry in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

Each fluidrachm of the finished elixir represents seven and one half minims of fluid extract of blackberry. A formula for this elixir, containing blackberry root, cinnamon, and cloves, was suggested in the *Druggists' Circular*, 1880.

41. ELIXIR OF BOLDO.

Fluid extract of boldo, 4 fluidounces
Simple elixir,..... 12 fluidounces
Alcohol,..... 2 fluidounces
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of boldo with carbonate of magnesium sufficient to produce a creamy mixture, then gradually add the simple elixir, filter, and add the alcohol.

Verne recommended an elixir of boldo in the *Pharmaceutical Journal and Transactions*, but, as the virtues of boldo are imperfectly extracted by an aqueous liquid, we do not admire such a preparation. According to this formula each fluidrachm should contain the active principles of seven and one-half minims of fluid extract of boldo. But, as a matter of fact, that amount will not dissolve in that quantity of the menstruum, the excess remaining in the filter paper.

42. ELIXIR OF BRANDY.

Nutmegs,..... 40 grains.
Cardamom,..... 60 grains.
Rhubarb,..... 60 grains.
Lavender flowers,..... 60 grains.
Cinnamon,..... 60 grains.

Ginger,..... 60 grains.
Powdered extract of licorice,..... 360 grains.
Brandy,..... 16 fluidounces.
Water,..... 8 fluidounces.

Mix the drugs and reduce them to a coarse powder, and macerate this in the mixed brandy and water for fourteen days, stirring the mixture thoroughly each day; then filter. It may also be prepared by percolation.

This elixir was once sold as a proprietary remedy, under the name “Dr. Butler’s Elixir of Brandy.” We are informed, however, by a writer in the Druggists’ Circular (1858), that Dr. Butler was a “fictitious character,” coined by a couple of young men who made a sale for “Dr. Butler’s Medicines.”

43. ELIXIR OF BUCHU.

Fluid extract of buchu,.....2 fluidounces.
Simple elixir,..... 16 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of buchu with carbonate of magnesium in sufficient amount to form a creamy mixture, then gradually add the simple elixir, and filter.

According to this formula each fluidrachm should contain the active principles of seven and one-half minims of fluid extract of buchu. But, as a matter of fact, that amount will not dissolve in that quantity of the menstruum, the excess remaining in the filter paper. In our opinion, fluid extract of buchu should be made with alcohol of the specific gravity 0.820, and the addition of water lessens its value as a menstruum for extracting buchu and retaining its desirable principles, in proportion to the amount of water added. Hence it is that the elixir of buchu is inferior to an equivalent amount of the fluid extract of buchu used in making it, providing the fluid extract was reputable.

4 1. COMPOUND ELIXIR OF BUCHU.

Compound fluidextract of buchu, 4 fluidounces.
Simple elixir,..... 16 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the compound fluid extract of buchu with carbonate of magnesium in sufficient amount to form a creamy mixture, then gradually add the simple elixir, and filter.

This elixir is similar to that commended by the National Formulary, and is of the same strength.

45. ELIXIR OF BUCKTHORN. (ELIXIR OF FRANGULA.)

Fluid extract of frangula,.....4 fluidounces.
Alcohol,..... 1 fluidounces.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract in enough magnesium carbonate to form a creamy mixture, then add the simple elixir, and filter. Each fluidrachm represents fifteen grains of buckthorn.

46. ELIXIR OF CAFFEINE.

Caffeine,..... 128 grains.
Dilute hydrobromic acid, U. S. P. .32 grains.
Syrup of coffee,.....4 fluidounces.
Simple elixir, enough to make,16 fluidounces.

Triturate the caffeine in a mortar with the dilute hydrobromic acid and sufficient simple elixir to dissolve it, then add the syrup, and lastly enough simple elixir to make sixteen fluidounces. This formula is similar to the one commended by the National Formulary, and is of the same strength.

47. ELIXIR OF BROMIDE OF CALCIUM.

Bromide of calcium,..... 640 grains.
Simple elixir,..... 15.5 fluidounces.

Dissolve the bromide of calcium in the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains five grains of bromide of calcium. This proportion was recommended by Robert W. Gardner, 1880.

ELIXIR OF IODO-BROMIDE OF CALCIUM.

This is private property. Under the above name a preparation has been introduced and extensively advertised, and through courtesy to the proprietors we refrain from interfering.

48. ELIXIR OF HYPOPHOSPHITE OF CALCIUM.

Hypophosphite of calcium,..... 256 grains.
Citric acid,..... 30 grains.
Simple elixir,.....enough to make 16 fluidounces.

Dissolve the hypophosphite of calcium in the simple elixir, add the citric acid, and filter. Each fluidrachm contains two grains of hypophosphite of calcium.

49. ELIXIR OF LACTOPHOSPHATE OF CALCIUM.

Lactophosphate of calcium,..... 128 grains.
Simple elixir,..... 16 fluidounces.
Lactic acid, syrupy,..... 1 fluidrachm.

Mix the simple elixir with the lactic acid, and dissolve therein the lactophosphate of calcium, and filter. Each fluidrachm of the finished elixir contains one grain of lactophosphate of calcium. This elixir corresponds in strength to that of previous editions of our work, and also to that of the National Formulary. In our opinion, the process commended herein is preferable to the others, and the product is practically identical. The substance sold in commerce by chemical manufacturers under the name lacto-phosphate of calcium, although not a definite salt, is probably as effective therapeutically as the pharmaceutical preparation made by dissolving either phosphate of calcium in lactic acid, or lactate of calcium in phosphoric acid.

50. ELIXIR OF MONO-BROMATED CAMPHOR.

Mono-bromated camphor,..... 128 grains.
Simple elixir,..... 15 fluidounces.
Alcohol,..... 1 fluidounces.

Dissolve the mono-bromated camphor in the alcohol, and stir this solution slowly in the simple elixir.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of mono-bromated camphor. Mr. T. Mundy, of Paris, has recommended an elixir of mono-bromated camphor containing nine grains in fifteen fluidrachms, but the amount of alcohol is very great. However, as alcohol is the best common solvent for this substance, we prefer a simple alcoholic solution to an elixir, as the water present in the elixir favors precipitation.

51. ELIXIR CAMPHOR MONO-BROMATED, COMPOUND.

Butyl chloral,.....3 grains.
Essence of cinnamon,.....1½ drachms.

Dissolve the butyl chloral in the essence of cinnamon, and add—

Tincture of gelsemium,.....10 minims.
Simple (red) elixir,..... 1½ fluidrachms.
Simple syrup,
a sufficient quantity to make.....1 fluidounces.

Then triturate two grains of mono-bromated camphor and dissolve in the above liquid.

According to the *Pharmaceutical Journal and Transactions*, this elixir is often prescribed in Paris.

Each fluidrachm contains about one-third grain of butyl chloral, one minim of tincture of gelsemium, and one-fourth grain of mono-bromated camphor.

52. COMPOUND CATHARTIC ELIXIR.

Simple elixir,..... 14 fluidounces.
Fluid extract of rhubarb,.....2 fluidounces.
Sulphate of magnesium,..... 2 troyounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of rhubarb in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, having previously dissolved in it the magnesium sulphate; stir well, and filter.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of rhubarb, and contains seven and one-half grains of magnesium sulphate.

In the year 1876 an anonymous correspondent furnished the *Druggists' Circular* with a mixture for making the above elixir. It was much more complex and presented no advantages over our formula.

The National Formulary makes this elixir of a mixture of senega, podophyllum, leptandra, jalap, and Rochelle salt. It is an imperfect pharmaceutical preparation.

53. COMPOUND ELIXIR OF CELERY.

Take of fluid extracts of celery, coca, kola, and black haw bark, of each one fluidounces. Mix the fluid extracts, add two fluidounces of alcohol and enough simple elixir to make sixteen fluidounces. After standing a few days, with occasional agitation, filter the mixture. This elixir is of the same strength as that of the compound elixir of celery of the National Formulary. It deposits a sediment and is not a perfect preparation.

54. ELIXIR OF WILD CHERRY.

Fluid extract of wild cherry,.... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounces.
Carbonate of magnesium, . a sufficient quantity.

Triturate the fluid extract of wild cherry in a capacious mortar

with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir will contain the medicinal principles of seven and one-half grains of wild- cherry bark.

55. ELIXIR OF WILD CHERRY WITH CHLORIDE OF IRON AND CITRATE OF AMMONIUM.

(ELIXIR OF WILD CHERRY AND CHLORIDE OF IRON.
FERRATED ELIXIR OF WILD CHERRY.)

Elixir of wild cherry,..... 16 fluidounces.
Tincture of chloride of iron,... $\frac{1}{2}$ fluidounces.
Solution of citrate of ammonium, $\frac{1}{2}$ fluidounces.

Mix the tincture of chloride of iron with the solution of citrate of ammonium, and add this to the elixir of wild cherry.

Each fluidrachm (teaspoonful) of the finished elixir contains seven and one-half minims of fluid extract of wild cherry, and about two minims of tincture of chloride of iron.

This formula is based upon Mr. J. Creuse's experiments with "tasteless chloride of iron," and to him we are indebted for the improved process (citrate of ammonium mixed with chloride of iron) for associating iron with vegetable astringents. Should the foregoing produce an inky liquid, increase the amount of solution of citrate of ammonium. Since fluid extracts vary, the proportion of our formula is sometimes incorrect.

56. ELIXIR OF HYDRATE OF CHLORAL. (ELIXIR OF CHLORAL.)

Chloral hydrate,..... 640 grains.
Simple elixir,..... $15\frac{1}{2}$ fluidounces.

Dissolve the chloral hydrate in the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains five grains of hydrate of chloral, which is one-half the amount present in syrup of chloral of the British Pharmacopœia.

57. ELIXIR OF CIMICIFUGA.

(ELIXIR OF MACROTYS.)

Fluid extract of cimicifuga,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of cimicifuga in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir should contain seven and one-half minims of fluid extract of cimicifuga. But, as a matter of fact, that amount will not dissolve in that quantity of the menstruum, the excess remaining in the filter paper. The remarks we make concerning elixir of grindelia robusta apply with equal pertinence to this.

58. COMPOUND ELIXIR OF CIMICIFUGA.

(COMPOUND ELIXIR OF MACROTYS. COMPOUND ELIXIR OF BLACK COHOSH.)

Fluid extract of cimicifuga,..... 4 fluidounces.
Fluid extract of wild-cherry bark, 2 fluidounces.
Fluid extract of licorice,..... 1 fluidounces.
Fluid extract of senega,..... 1 fluidounces.
Fluid extract of ipecac,..... $\frac{1}{2}$ fluidounces.
Simple elixir,..... 13 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Mix the fluid extracts together and evaporate the mixture to three fluidounces. Triturate this in a capacious mortar, with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

Each fluidrachm of the finished elixir represents (subject to remarks concerning elixir of cimicifuga) fifteen minims of fluid extract of cimicifuga, together with seven and one half minims of fluid extract of wild-cherry bark, about four minims each of fluid extract of licorice and senega, and nearly two minims of fluid extract of ipecac.

59. CLAUDER'S ELIXIR

Carbonate of potassium,..... 1 troyounce.
Chloride of ammonium,..... 1 troyounce.
Elder-flower water,..... 1½ pints.

Dissolve and add—

Aloes,..... 1 troyounce.
Myrrh,..... 1 troyounce.
Saffron,..... 2 drachms.

Macerate for twenty-four hours, and filter.—*Pideret.*

60. ELIXIR OF COCA.

Fluid extract of coca,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... ½ fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of coca in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of coca.

61. ELIXIR OF COCA AND GUARANA.

Fluid extract of coca,..... 2 fluidounces.
Fluid extract of guarana,..... 2 fluidounces.
Purified talcum,..... 240 grains.
Simple elixir,..... 12 fluidounces.

Triturate the mixed fluid extracts with the purified talcum, gradually add the simple elixir, shaking well together, and agitate occasionally for twenty-four hours, then filter

Each fluidrachm represents seven and one-half grains each of coca and guarana.

62. ELIXIR OF COLUMBO.

Fluid extract of columbo,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of columbo in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of columbo.

63. ELIXIR OF COLUMBO, CITRATE OF IRON, AND RHUBARB.

(ELIXIR OF COLUMBO, IRON, AND RHUBARB.)

Citrate of iron,..... $\frac{1}{2}$ troyounce.
Solid extract of columbo,..... $\frac{1}{8}$ troyounce.
Solid extract of rhubarb,..... $\frac{1}{8}$ troyounce.
Distilled water,..... 4 fluidounces.
Brandy,..... 4 fluidounces.
Simple elixir,..... 4 fluidounces.

Dissolve the citrate of iron in the distilled water and triturate the solid extracts with this liquid until they are dissolved. Filter the solution and mix the filtrate with the brandy and simple elixir.

This mixture was given through the *Druggists' Circular*, 1873, by Mr. W. Turpin Swentsell.

64. COMPOUND ELIXIR OF CORYDALIS.

Fluid extract of corydalis,..... 1 fluidounces.
Fluid extract of stillingia,..... 1 fluidounces.
Fluid extract of prickly-ash berries, $\frac{1}{2}$ fluidounces.
Fluid extract of blue flag-root,.. $\frac{1}{2}$ fluidounces.
Alcohol,..... 2 fluidounces.
Iodide of potassium,..... 384 grains.
Simple elixir, carbonate of magnesium,..... of each a sufficient quantity.

Triturate the mixed fluid extracts in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add simple elixir enough to produce sixteen fluidounces, stirring well, and filter. Lastly, mix the filtrate with the alcohol, and dissolve the iodide of potassium in the liquid.

Each fluidrachm of the finished elixir represents the proportion which the menstruum will dissolve of about four minims each of fluid extract of corydalis and of stillingia, about two minims of fluid extract of prickly-ash berries, and two minims of fluid extract of blue flag-root; together with three grains of iodide of potassium.

We have little faith in the power of the above menstruum to dissolve the desirable principles of the drugs, corydalis, perhaps, excepted; but the elixir may be therapeutically worthy, since iodide of potassium alone is valuable.

The above formula is nearly identical with that offered by the joint committee of the National College of Pharmacy and the Medical Society of the District of Columbia.

65. ELIXIR o@ COTO.

Fluid extract of coto,.....2 fluidounces.
Simple elixir,..... 16 fluidounces
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of coto with magnesium carbonate until a creamy mixture results, then gradually add the simple elixir, and filter. Each fluidrachm of this elixir represents such an amount of seven and one-half grains of coto as will dissolve in the liquid.

66. COMPOUND ELIXIR OF CHLOROFORM. (CHLOROFORM PAREGORIC OF DR. HARTSHORNE.)

Chloroform,.....1½ fluidounces.
Tincture of opium,.....1½ fluidounces.
Tincture of camphor,.....1½ fluidounces.
Aromatic spirit of ammonia,..1½ fluidounces.
Best brandy,.....2 fluidounces.

Mix together. Each fluidrachm of the finished elixir contains eleven and one-fourth minims of each of the medicinal ingredients. It

should be dispensed cautiously.

This preparation was originally used under the name "chloroform paregoric of Dr. Hartshorne," and the formula was published in the book of formulæ issued in 1867 by the joint committee of the Medical and Pharmaceutical Associations of the District of Columbia. In former editions of our work this compound was entitled "Elixir of Chloroform."

67. ELIXIR CHLOROFORMIQUE OF BOUCHUT.

(BOUCHUT'S ELIXIR OF CHLOROFORM.)

Chloroform,.....8 minims.
Alcohol,.....64 minims.
Simple elixir,.....225 minims.

Mix in the order given. Each fluidrachm of the finished elixir contains one and three-fifths of a minim of chloroform.

(Proceedings of the American Pharmaceutical Association, 1862.)

68. COMPOUND ELIXIR OF CRAMP BARK.

(COMPOUND ELIXIR OF VIBURNUM OPULUS.)

Fluid extract of cramp bark,.....1½ fluidounces.
Fluid extract of beth root,.....2½ fluidounces.
Fluid extract of aletris,.....1¼ fluidounces.
Compound elixir of taraxacum,11 fluidounces.

Mix them and allow the mixture to stand a few days, and then filter.

69. ELIXIR OF CROTON.

Croton chloral hydrate,..... 128 grains.
Distilled water,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.

Dissolve the croton chloral hydrate in the water, and add the simple elixir (*Druggists' Circular*, 1875). Each fluidrachm (teaspoonful) of the finished elixir contains one grain of croton chloral hydrate.

ELIXIRS OF CALISAYA OR CINCHONA BARK AND ITS ALKALOIDS.

These include the most popular elixirs, and which are prescribed most freely by physicians. The original "cordial elixir of calisaya" contained all of the principles of the bark which were soluble in the menstruum used in making it, and, as a simple elixir of calisaya, is preferred by many physicians at the present day. When combinations of calisaya bark and the various iron preparations were introduced, a demand was created for an elixir of calisaya which could be mixed with certain iron salts without precipitation or inky discoloration, and this was followed by the introduction of "detannated elixir of calisaya," which would answer this purpose. However, in making the detannated elixir the natural combination of the alkaloids is destroyed and the cincho-tannic acid is separated, and we prefer to use the alkaloids of calisaya direct. The use of the alkaloids, by pharmacists, instead of the bark, will certainly give a more definite preparation, as variation in quality is thus overcome, and we do not know that the name "elixir of calisaya" is very inappropriate under these conditions. Hence it is that we direct the "elixir of calisaya from the alkaloids" in this work; but if the operator prefers, the detannated elixir can be substituted.

It must be remembered that the alkaloids of calisaya are almost insoluble in a slightly alkaline or neutral aqueous menstruum, and, as a consequence, the elixir of these alkaloids should have an acid reaction. However, some outside combinations, especially with pyrophosphate of iron and ammonio-citrate of bismuth, will not admit of a strong acid reaction, and the operator should endeavor to have these associations as nearly neutral as it is possible and retain the several ingredients in solution. With a little experience the skillful pharmacist will learn to associate many of these incongruities; but there is no doubt that oft times the filter paper is the real pharmacist, when some of the incompatibles we might name are supposed to be associated in a transparent, permanent condition, and that upon the filter paper may be found the bulk of the medicinal ingredients.

PREPARATIONS OF ALKALOIDS.

In following the directions for making elixirs by this work, it will be observed that we refer to alkaloid cinchonidine, and alkaloid

quinine, as well as alkaloid cinchonine. The last is in general use, but the others must often be prepared extemporaneously. In reviewing the processes which have been heretofore recommended, we find considerable trouble in manipulation. The plan of our Pharmacopœia (1970) is that of dissolving the sulphate of the alkaloid in water, by means of sulphuric acid, and then precipitating with ammonia water, after which the precipitated alkaloid is washed with water. In following this process we find a very bulky, amorphous precipitate, and which requires a large amount of water before it can be thoroughly freed from ammonium sulphate. Again, when we attempt to dry this precipitate, if the weather is moderately warm, it runs together, agglutinates, and finally forms a transparent, horn-like mass which adheres closely to the paper. In order to overcome these troubles, the writer has devised the following process, which yields an alkaloid which answers every purpose required by the class of preparations under consideration:

ALKALOID QUININE OR ALKALOID CINCHONIDINE.

Sulphate of quinine or sulphate of
cinchonidine, 1 ounce.

Distilled water, 32 fluidounces.

Ammonia water, $\frac{1}{2}$ fluidounces.

Mix the ammonia water with the distilled water, and having placed the sulphate of the desired alkaloid in a mortar, gradually triturate it with a sufficient amount of the liquid, so as to form a thin, creamy mixture, then add the remainder of the mixed waters. Permit this to stand half an hour, and transfer to a filter paper; then, after the precipitate has drained, return it to the mortar, and mix it again with a liquid composed of—

Distilled water,..... 32 fluidounces.

Ammonia water,..... $\frac{1}{4}$ fluidounces.

Permit this mixture to stand for half an hour, and then transfer it to a muslin strainer, squeeze it until the liquid is expressed, and then dry it by hanging it in the atmosphere, without, however, removing the strainer.

The foregoing process offers several advantages over the old, not the least being the ready production of an alkaloid in a porous and finely divided form. If the strainer is permitted to remain during the

process of drying, the liquid carries the dissolved sulphate of ammonium to the surface, as it evaporates, and deposits it upon the muslin.

This process is often followed by the writer with regard to other precipitates which contain coloring matters and impurities that ordinary washing seems not to separate. By spreading them in thin layers upon muslin, and pressing a sheet of muslin upon their surface, the impurities are carried by the liquid to the surface.

70. ELIXIR OF CALISAYA (OR CINCHONA. See No. 71).
(CORDIAL ELIXIR OF CALISAYA. ELIXIR OF BARK.)

Calisaya bark,.....	4 troyounces
Fresh orange peel,.....	2 troyounces.
Ceylon cinnamon,.....	1 troyounce.
Coriander seed,.....	.1 troyounce.
Fennel seed,.....	$\frac{1}{4}$ troyounce.
Caraway seed,.....	$\frac{1}{4}$ troyounce.
Cardamom seed,.....	$\frac{1}{4}$ troyounce.
Cochineal,.....	$\frac{1}{4}$ troyounce.
Brandy,.....	40 troyounces.
Alcohol,.....	16 troyounces.
Water,.....	56 troyounces.
Simple syrup,.....	40 troyounces..

Reduce the orange peel to a pulp by concussion in an iron mortar, and mix the pulp with the remainder of the drugs, having previously reduced them to a coarse powder. Mix the brandy, alcohol, and water, and moisten the powder with an amount sufficient of this menstruum to prepare it for percolation. Pack the moistened powder in a suitable percolator, and extract it by percolation with the remainder of the menstruum. Lastly, mix this percolate with the simple syrup.

This formula was furnished the *American Journal of Pharmacy*, January, 1859, by Mr. Alfred B. Taylor, excepting that the manipulation has been slightly modified by us. This process furnishes a very palatable preparation, and at one time it was popular under the name "cordial elixir of calisaya." However, a slight precipitate occurs in it after standing, and, as a rule, pharmacists prefer an elixir made of the alkaloids. In our opinion, this elixir is often the preferable elixir of calisaya, but out of respect to the demands of trade, and combinations to be made, we shall recognize under compounds of calisaya an elixir made with cinchona alkaloids, as follows:

71. ELIXIR OF CINCHONA.

The National Formulary uses the title Elixir of Cinchona instead of Elixir of Calisaya. That preparation is somewhat different from the typical elixirs that have been fashionable under the name elixir of calisaya, and we therefore give to the elixir of cinchona a separate position, although the distinction is not technically correct. The formula of the National Formulary is essentially as follows:

Tincture of cinchona, U.S.P.,... 2½ fluidounces.
Aromatic spirits,..... 2 fluidounces.
Syrup,..... 6 fluidounces.
Purified talcum,..... 120 grains.
Water,.....enough to make 16 fluidounces.

The liquids are to be mixed together, and, after having stood for twenty-four hours, the purified talcum is to be added and shaken therewith. The mixture is then to be filtered. Each fluidounce represents about fourteen grains of yellow cinchona.

72. ELIXIR OF CALISAYA ALKALOIDS.

(ELIXIR OF CALISAYA. ELIXIR OF CINCHONA BARK ELIXIR OF BARK.)

Simple elixir,..... 16 fluidounces.
Quinine (alkaloid),..... 12 grains.
Cinchonine (alkaloid),..... 6 grains.

Mix the alkaloids, and triturate them in a mortar with one fluidounce of simple elixir, and then gradually add acetic acid in amount sufficient to effect their solution; then add the remainder of the simple elixir. Each fluidrachm (teaspoonful) of the finished elixir contains alkaloids sufficient to represent four grains of officinal calisaya bark. The preparation is that adopted by the American Pharmaceutical Association, 1875. The elixir has a distinct, bitter taste, and we have reason to believe that any substance which will overcome the bitterness will do so at the expense of the alkaloids, rendering them insoluble. Various plans have been recommended, from time to time, for detannating calisaya bark, usually by means of hydroxide of iron, first suggested by Mr. Meier, of New York, in 1867. These processes are tedious, and the product presents little, if any, advantage over a simple

solution of the alkaloids. For this reason we consider this formula a practical substitute for "detannated elixir of calisaya," which follows.

73. DETANNATED ELIXIR OF CALISAYA BARK.

(DETANNATED ELIXIR OF CINCHONA BARK. DETANNATED ELIXIR OF BARK.)

Calisaya bark,.....	24 troyounces.
Curaçoa orange peel,.....	16 troyounces.
Coriander,.....	4 troyounces.
Cardamom,.....	1½ troyounces.
Ceylon cinnamon,.....	3 troyounces.
Anise,.....	1 troyounces.
Cocoa (Baker's),.....	8 troyounces.

Reduce to a moderately fine powder; displace with a mixture consisting of one part, by measure, of alcohol and three parts of water, until two and one-half gallons of percolate are obtained.

Meanwhile, prepare hydrated sesquioxide of iron from six pints of solution of tersulphate of iron, according to the Pharmacopœial process, measure it, and add to every four measures one measure of alcohol; then add of this sufficient to the percolate, obtained as above, to deprive it of its cincho-tannic acid. The absence of the latter is readily ascertained by the addition of a drop of tincture of chloride of iron to a filtered portion of the liquid in operation, which should not be colored by such addition. Should coloration result, the intensity or faintness will serve as a guide to the further quantity of hydrated sesquioxide of iron necessary to completely detannate the preparation. As soon as this result is obtained, strain the mixture upon a muslin strainer, and when the liquid ceases to pass, wash the residue upon the strainer, with sufficient of a mixture of one measure of alcohol to three of water to make the strained liquid measure five gallons. Now triturate together oil of orange one-half fluidounces, carbonate of magnesium four troyounces. When thoroughly mixed, incorporate it with the strained liquid obtained as above, agitate well, and filter through paper; express the filter between muslin, filter the expressed liquid, and mix with the previous filtrate, in which dissolve fifteen pounds avoirdupois of sugar. If necessary, filter the elixir thus obtained; but simple straining will usually answer.

The above formula is that of Prof. C. Lewis Diehl, as presented to the Louisville College of Pharmacy, January 16th, 1872.

Each fluidrachm (teaspoonful) of the finished elixir represents about two grains of calisaya bark of the quality employed by the operator.

The first record we can find of detannating the percolate from calisaya bark by means of hydrated sesquioxide of iron, for the purpose of making an elixir, was the communication to the *Druggists' Circular*, 1867, by Mr. Meier, of New York. He used solution of ferric chloride to prepare the hydroxide. Detannated elixir of calisaya was introduced to supply a solution of the alkaloids of calisaya which could be mixed with iron salts without precipitation or inky discoloration. We are sure that pharmacists, generally, will meet with better success, regarding the quality of the product, by using an elixir directly from the alkaloids; hence we favor that form of "elixir of calisaya" in this work. We cannot say that there is actually much difference in the finished preparation, since the natural combination of the alkaloids is broken when the cincho-tannic acid is removed, and all must admit that the calisaya barks of commerce are uncertain in quality. The elixir of the alkaloids is of definite strength.

74. DESLAURIER'S ELIXIR OF CALISAYA AND COFFEE.

Yellow cinchona bark,.....	2½ troyounces.
Brown cinchona bark,.....	. 1 troyounce.
Browned (slightly) coffee,.....	2 troyounces.
Sugar,.....	12½ troyounces
Sherry wine,.....	32 troyounces.
Citric acid,.....	150 grains

Reduce the drugs to a coarse powder, and mix all the above-named ingredients. Allow the mixture to macerate for a few days in a warm location, then bring it to a boil, cool and filter it. Dissolve in the filtrate ten and one-half ounces of sugar, and add two fluidounces of alcohol. The above is taken from *New Remedies*, 1878, and is known as elixir Deslaurier's toni-febrifuge au quinquina et café.

75. ELIXIR OF CALISAYA WITH LACTOPHOSPHATE OF LIME.

(ELIXIR OF CINCHONA WITH LACTOPHOSPHATE OF LIME.
ELIXIR OF LACTOPHOSPHATE OF CALCIUM WITH CALISAYA.)

Elixir of Calisaya (alkaloidal),.....8 fluidounces.

Elixir of lactophosphate of calcium,.....8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one-half grain of lactophosphate of calcium, and represents two grains of calisaya.

**76. ELIXIR OF CALISAYA AND CHLORIDE OF IRON
WITH AMMONIUM CITRATE.**

(ELIXIR OF CALISAYA AND CHLORIDE OF IRON.
ELIXIR OF CINCHONA AND CHLORIDE OF IRON.)

Elixir of calisaya,..... 15 fluidounces.

Solution of citrate of ammonium, $\frac{1}{2}$ fluidounces.

Tincture of chloride of iron,..... $\frac{1}{2}$ fluidounces.

Mix the solution of citrate of ammonium with the tincture of chloride of iron, and add the elixir of calisaya.

Each fluidrachm (teaspoonful) of the finished elixir contains about two minims of tincture of chloride of iron, and represents nearly four grains of calisaya. The addition of the solution of citrate of ammonium prevents discoloration of mixtures of this elixir, and substances containing vegetable tannates. To the fact that this mixture could accomplish the aforementioned result we are indebted to Mr. J. Creuse, who has written several interesting articles on the subject, and we refer the reader to the back numbers of the *Druggists' Circular and Journal of Pharmacy*, if particularly interested in the subject.

77. ELIXIR OF CALISAYA, CITRATE OF IRON, AND BEEF.

(ELIXIR OF CALISAYA, IRON, AND BEEF.
ELIXIR OF CINCHONA, IRON AND BEEF.)

Elixir of beef with citrate of iron,.....8 fluidounces.

Elixir of calisaya (alkaloidal),.....8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of extract of beef, one-half grain of citrate of iron, and represents two grains of officinal calisaya.

The remarks concerning elixir of beef and citrate of iron may be applied to this preparation.

**78. ELIXIR OF CALISAYA AND CHLORIDE OF IRON WITH
AMMONIUM CITRATE AND GENTIAN.
(ELIXIR OF CALISAYA, IRON, AND GENTIAN.)**

Elixir of calisaya,..... 8 fluidounces.
Tincture of chloride of iron,... $\frac{1}{4}$ fluidounces.
Solution of citrate of ammonium,.. $\frac{3}{4}$ fluidounces.
Fluid extract of gentian,..... $\frac{1}{4}$ fluidounces.
Distilled water, carbonate of mag-
nesium,.....of each a sufficient quantity.

Triturate the fluid extract of gentian in a mortar with carbonate of magnesium in amount sufficient to form a thick paste, and then gradually add eight fluidounces of distilled water, filter, and bring the filtrate to the measure of seven fluidounces by addition of distilled water. Mix the solution of citrate of ammonium with the tincture of chloride of iron, and add to the gentian filtrate, and then add the elixir of calisaya.

Each fluidrachm (teaspoonful) of the finished elixir contains about one minim each of tincture of chloride of iron and of fluid extract of gentian, and represents about two grains of calisaya.

The remarks applied to elixir of calisaya and chloride of iron with ammonium citrate, are applicable to this preparation.

The National Formulary prepares this substance from tincture of citro-chloride of iron. The product is similar to that produced by our formula.

**79. ELIXIR OF CALISAYA, CITRATE OF IRON, BEEF, AND
STRYCHNINE.**

(ELIXIR OF CALISAYA, IRON, BEEF, AND STRYCHNIA.
ELIXIR OF CINCHONA, IRON, BEEF, AND STRYCHNIA.)

Elixir of calisaya, citrate of iron,
and beef,.....16 fluidounces.
Strychnine,.....1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in sufficient amount to effect its solution; then add the elixir.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of extract of beef, one-half grain of citrate of iron, one-hundredth grain of strychnine, and represents two grains of calisaya. It is not a permanent preparation, for explanation of which assertion see our remarks on elixir of beef with citrate of iron.

80. ELIXIR OF CALISAYA BARK WITH CITRATE OF PROTOXIDE OF IRON.

(ELIXIR OF CALISAYA AND PROTOXIDE OF IRON. ELIXIR OF CALISAYA BARK AND FERROUS CITRATE. ELIXIR OF CINCHONA AND PROTOXIDE OF IRON.)

Sulphate of iron, crystallized,..... 256 grains.
Bicarbonate of sodium,..... 200 grains.
Citric acid, distilled water, elixir of calisaya bark
(alkaloidal),.....of each a. sufficient quantity.

Dissolve the sulphate of iron and the bicarbonate of sodium separately, each in sixteen fluidounces of cold, freshly distilled water, and mix the solutions. Pour the mixtures into a bottle, which must be filled to the stopper (using more distilled water if necessary), and permit it to rest for twenty-four hours. Decant the clear solution and refill the bottle with freshly distilled water, shaking well, and permit it to stand as before. After twenty-four hours decant the clear solution, pour the residue upon a fine muslin strainer and squeeze the liquid from it. Dissolve the precipitate by trituration in a mortar, with citric acid in sufficient amount, and then add enough elixir of calisaya bark to make sixteen fluidounces, and filter.

Each fluidrachm (teaspoonful) of the finished elixir contains of citrate of protoxide of iron an amount which is equivalent to two grains of crystallized sulphate of iron, and it represents about three grains of calisaya bark.

The name (elixir of protoxide of iron) is a misnomer, if applied to a preparation like this, and all the processes we have seen

give a solution of a salt of protoxide of iron. This fact has been repeatedly noticed in the *Druggists' Circular* and other journals, and such authorities as Mr. Creuse, Prof. Diehl, and Prof. Oldberg have called particular attention to the misnomer. Notwithstanding all of which, we find physicians, and even pharmacists, insist on using the term, and we therefore place it among our synonyms.

81. ELIXIR OF CALISAYA BARK WITH CITRATE OF PROTOXIDE OF IRON AND STRYCHNINE.

(ELIXIR OF CALISAYA, PROTOXIDE OF IRON, AND STRYCHNIA.
ELIXIR OF BARK, PROTOXIDE OF IRON, AND STRYCHNIA.
ELIXIR OF CALISAYA, FERROUS CITRATE, AND STRYCHNIA.
ELIXIR OF CINCHONA AND CITRATE OF PROTOXIDE OF IRON.)

Elixir of calisaya with citrate of
protoxide of iron,.....16 fluidounces.
Strychnine,..... 1k grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar, cautiously adding acetic acid until it is dissolved, then mix with the elixir of calisaya and citrate of protoxide of iron.

Each fluidrachm (teaspoonful) of the finished elixir contains of citrate of protoxide of iron an amount which is equivalent to two grains of sulphate of iron and one-hundredth of a grain of strychnine, and represents about three grains of calisaya bark. This preparation is unstable.

82. ELIXIR OF CALISAYA BARK WITH PYROPHOSPHATE OF IRON.

(ELIXIR OF CINCHONA BARK WITH PYROPHOSPHATE OF IRON.
ELIXIR OF CALISAYA BARK AND IRON.
ELIXIR OF BARK AND IRON.
FERRATED ELIXIR OF CALISAYA.)

Elixir of calisaya (alkaloidal),.. 14 fluidounces.
Distilled water,..... 2 fluidextracts
Pyrophosphate of iron,..... 256 grains.

Dissolve the pyrophosphate of iron in the distilled water, add the elixir of calisaya, and filter if necessary. If not neutral in reaction,

bring it to a neutral condition by addition of either acetic acid or ammonia water.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of pyrophosphate of iron and represents about four grains of officinal: calisaya bark. The proportion is that recommended by the American Pharmaceutical Association, 1875.

In 1862 Mr. James T. Shinn published (*American Journal of Pharmacy*) a process for making the above elixir, employing crude materials upon the principle of Mr. Taylor's elixir of calisaya. In speaking of it Mr. Shinn uses the following language: "Among the pharmaceutical novelties recently brought to the notice of physicians, this preparation of iron, cinchona, and brandy is one of the most agreeable, and possibly may prove very popular with patients." The result proves Mr. Shinn's surmise to have been correct, although the original preparations have been replaced with those more pleasing to the eye.

83. ELIXIR OF CALISAYA BARK WITH PYROPHOSPHATE OF IRON AND CITRATE OF AMMONIUM AND BISMUTH.

(ELIXIR OF CALISAYA, IRON, AND BISMUTH.
ELIXIR OF CINCHONA, IRON, AND BISMUTH.
ELIXIR OF BARK, IRON, AND BISMUTH.
FERRATED ELIXIR OF BARK AND BISMUTH.)

Ammonio-citrate of bismuth, 128 grains.
Distilled water, 2 fluidounces.
Elixir of calisaya bark with iron,
..... a sufficient quantity.

Dissolve the ammonio-citrate of bismuth in the distilled water, cautiously adding ammonia water if necessary; then add elixir of calisaya bark with iron, sufficient to make sixteen fluidounces. Should a precipitate follow, the addition of either ammonia water or acetic acid, as the case may demand, to render the liquid neutral, will redissolve it.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of ammonio-citrate of bismuth, about two grains of pyrophosphate of iron, and represents nearly four grains of officinal calisaya bark.

84. ELIXIR OF CALISAYA BARK WITH PYROPHOSPHATE OF IRON, CITRATE OF AMMONIUM AND BISMUTH, AND STRYCHNINE.

(ELIXIR OF CALISAYA, IRON, STRYCHNIA, AND BISMUTH.
ELIXIR OF CINCHONA, IRON, STRYCHNIA, AND BISMUTH.
ELIXIR OF BARK, IRON, STRYCHNIA, AND BISMUTH.
FERRATED ELIXIR OF BARK, STRYCHNIA, AND BISMUTH.)

Elixir of calisaya bark with pyrophosphate of iron, citrate of ammonium, and bismuth, .16 fluidounces.

Strychnine,..... 1¼ grains.

Acetic acid,..... a sufficient quantity.

Powder the strychnine and dissolve it in a sufficient amount of acetic acid, and mix this with the elixir.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of ammonio-citrate of bismuth, about two grains of pyrophosphate of iron, and one-hundredth of a grain of strychnine, and represents nearly four grains of officinal calisaya bark.

85. ELIXIR OF CALISAYA WITH PYROPHOSPHATE OF IRON AND LACTOPHOSPHATE OF CALCIUM.

(ELIXIR OF CALISAYA, IRON, AND LACTOPHOSPHATE OF LIME.
ELIXIR OF CINCHONA, IRON, AND LACTOPHOSPHATE OF LIME.)

Elixir of calisaya with iron, . . 8 fluidounces.

Elixir of lactophosphate of lime, . 8

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one-half grain each of lactophosphate of lime and pyrophosphate of iron, and represents two grains of officinal calisaya. An elixir similar to the above, which is also about the same as "Wheeler's Elixir," was introduced by Mr. G. F. Butler in 1881.

The National Formulary uses lactate of calcium, phosphoric acid, and elixir of cinchona and iron. The strength of the elixir, however, conforms to that of our publication.

**86. ELIXIR OF CALISAYA BARK WITH PYROPHOSPHATE
OF IRON AND PEPSIN.**

(ELIXIR OF CALISAYA, IRON, AND PEPSIN. ELIXIR OF BARK, IRON, AND PEPSIN. ELIXIR OF CINCHONA, PYROPHOSPHATE OF IRON, AND PEPSIN.)

Elixir of calisaya bark with pyro-
phosphate of iron,..... 8 fluidounces.

Elixir of pepsin,..... 8 fluidounces.

Mix them together and neutralize, or render slightly alkaline, if necessary, by means of ammonia water.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain each of pyrophosphate of iron and saccharated pepsin, and represents about two grains of officinal calisaya bark.

**87. ELIXIR OF CALISAYA BARK WITH PYROPHOSPHATE
OF IRON AND STRYCHNINE.**

(ELIXIR OF CALISAYA BARK, IRON, AND STRYCHNIA.
ELIXIR OF CINCHONA, IRON, AND STRYCHNIA. ELIXIR OF BARK, IRON, AND STRYCHNIA. FERRATED ELIXIR OF BARK WITH STRYCHNIA.)

Elixir of calisaya bark with pyro-
phosphate of iron,..... 16 fluidounces.

Strychnine,..... 1¼ grains.

Acetic acid,..... a sufficient quantity.

Powder the strychnine, dissolve it in a sufficient amount of acetic acid, and add the elixir of calisaya bark with pyrophosphate of iron, and, if necessary, ammonia water to neutralization.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of pyrophosphate of iron, about one-hundredth of a grain of strychnine, and represents four grains of officinal calisaya bark. This preparation is that recommended by the American Pharmaceutical Association, 1875.

In former editions of this book (see page 17) the strength of this elixir was given as one-fiftieth of a grain of strychnia in each fluidrachm. In order to confirm the work of the National Formulary committee we have changed the proportion to one-hundredth of a grain.

88. ELIXIR OF CINCHONA AND HYPOPHOSPHITES.

Hypophosphite of calcium,..... 128 grains.
Hypophosphite of sodium,..... 128 grains.
Citric acid,..... 30 grains.
Water,..... 2 fluidounces.
Elixir of cinchona,
..... enough to make 16 fluidounces.

The citric acid and hypophosphites are to be dissolved in the water, and the solution mixed with enough elixir of cinchona to make sixteen fluidounces, and then filtered. Each fluidrachm contains one grain each of the hypophosphites of calcium and sodium. This formula is identical in strength with that of the National Formulary.

89. DETANNATED ELIXIR OF CINCHONA.

Detannated tincture of cin-
chona,..... $2\frac{1}{2}$ fluidounces.
Aromatic spirits,..... 2 fluidounces.
Syrup,..... 6 fluidounces.
Purified talcum,..... 120 grains.
Water, enough to make..... 16 fluidounces.

Mix the liquids, allow the mixture to stand twenty-four hours or longer, then add the purified talcum. Shake well together, and filter. Each fluidounce represents fourteen grains of yellow cinchona. This formula is similar to that of the National Formulary, and the product is of the same strength.

90. ELIXIR OR CINCHONINE.

Cinchonine (alkaloid),..... 256 grains.
Simple elixir, phosphoric acid (U. S. P.,
1872),.....of each a sufficient quantity.

Triturate the powdered cinchonine in a mortar with three fluidounces of simple elixir, and dissolve it by the gradual addition of a sufficient amount of phosphoric acid; then mix this solution with a

sufficient amount of simple elixir to make the whole measure sixteen fluidounces, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphate of cinchonine an amount which is equivalent to two grains of cinchonine.

91. ELIXIR OF PHOSPHATES OF CINCHONINE AND CINCHONIDINE.

Mix equal amounts, by measure, of elixir of phosphate of cinchonine and elixir of phosphate of cinchonidine.

Each fluidrachm of the finished elixir contains of phosphate of cinchonidine an amount which is equivalent to one-half grain of cinchonidine, and of phosphate of cinchonine an amount which is equivalent to one grain of cinchonine

92. ELIXIR OF PHOSPHATES OF CINCHONINE AND STRYCHNINE

Strychnine,..... 1¼ grains.
Elixir of phosphate of cinchonine, 16 fluidounces.
Phosphoric acid (U. S. P., 1872),
..... a sufficient quantity.

Triturate the powdered strychnine in a mortar with sufficient phosphoric acid, gradually added, to effect its solution; then add the elixir of phosphate of cinchonine.
and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphates of cinchonine and strychnine an amount which is equivalent to two grains of cinchonine and one-hundredth of a grain of strychnine.

93. ELIXIR OF PHOSPHATE OF CINCHONIDINE. (ELIXIR OF PHOSPHATE OF CINCHONIDIA. ELIXIR OF CINCHONIDIA.)

Cinchonidine (alkaloid),..... 128 grains.
Simple elixir, phosphoric acid (U. S. P.,
1872),of each a sufficient quantity.

Powder the cinchonidine, and triturate it in a mortar with two fluidounces of simple elixir. When a smooth, creamy mixture results, continue the trituration, and gradually add of phosphoric acid an amount sufficient to dissolve the cinchonidine; then mix this solution with a sufficient amount of simple elixir to make the whole measure sixteen fluidounces, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphate of cinchonidine an amount which is equivalent to one grain of cinchonidine.

94. ELIXIR OF PHOSPHATES OF CINCHONIDINE, CINCHONINE, AND STRYCHNINE.

(ELIXIR OF CINCHONIDIA, CINCHONIA, AND STRYCHNIA.)

Strychnine,..... 1¼ grains.
Elixir of phosphates of cinchonidine
and cinchonine,..... 16 fluidounces.
Phosphoric acid (U. S. P., 1872),
..... a sufficient quantity.

Triturate the powdered strychnine in a mortar with sufficient phosphoric acid to effect its solution, then add the elixir of phosphates of cinchonidine and cinchonine, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphates of cinchonidine, cinchonine, and strychnine an amount which is equivalent to one-half grain of cinchonidine, one grain of cinchonine, and one-hundredth of a grain of strychnine.

95. ELIXIR OF PHOSPHATES OF CINCHONIDINE AND STRYCHNINE.

(ELIXIR OF CINCHONIDIA AND STRYCHNIA.)

Strychnine,..... 1¼ grains.
Elixir of phosphate of cinchonidine, 16 fluidounces.
Phosphoric acid (U. S. P., 1872),
..... a sufficient quantity.

Triturate the powdered strychnine in a mortar with sufficient phosphoric acid to effect its solution; then add the elixir of

cinchonidine, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphates of cinchonidine and strychnine an amount which is equivalent to one grain of cinchonidine and one-hundredth of a grain of strychnine.

96. ELIXIR OF ACETATE OF CHINOIDINE.
(ELIXIR OF CHINOIDINE.)

Chinoidine,..... 256 grains.
Distilled water,..... 4 fluidounces.
Acetic acid, simple elixir, of each a sufficient quantity.

Powder the chinoidine and dissolve it in the distilled water by the addition of a sufficient amount of acetic acid, then add of simple elixir until sixteen fluidounces are produced, and filter.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of chinoidine.

97. COMPOUND ELIXIR OF CHINOIDINE.

Elixir of chinoidine,..... 8 fluidounces.
Elixir of dandelion,..... 8 fluidounces.

Mix them together. This agrees, practically, with the formula adopted by the joint committee of the National College of Pharmacy and the Medical Society of the District of Columbia.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of chinoidine and represents about four minims of fluid extract of dandelion.

98. ELIXIR OF BISULPHATE OF QUININE.
(ELIXIR OF SULPHATE OF QUINIA.)

Sulphate of quinine,..... 128 grains.
Simple elixir,..... 16 fluidounces.
Dilute sulphuric acid,..... a sufficient quantity.

Mix the sulphate of quinine with four fluidounces of simple elixir, and add enough dilute sulphuric acid to effect its solution. Then add the remainder of the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of sulphate of quinine.

The addition of the excess of sulphuric acid actually produces bisulphate of quinine; hence the term elixir of bisulphate of quinine is admissible, although sulphate of quinine is employed.

99. ELIXIR OF HYDROBROMATE OF QUININE. (ELIXIR OF BROMIDE OF QUINIA.)

Hydrobromate of quinine,..... 128 grains.

Simple elixir, hydrobromic acid, of each a sufficient quantity.

Mix the hydrobromate of quinine with the simple elixir, and cautiously add of hydrobromic acid an amount sufficient to effect its solution. Filter, if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of hydrobromate of quinine.

The term often used for this substance—"bromide of quinine"—is incorrect, since alkaloids combine bodily with acids.

100. ELIXIR OF PHOSPHATE OF QUININE. (ELIXIR OF QUININE. ELIXIR OF PHOSPHATE OF QUINIA)

Quinine (alkaloid),..... 128 grains.

Simple elixir, phosphoric acid (U. S. P.,
1872),.....of each a sufficient quantity.

Powder the quinine, and triturate it in a mortar with two fluid-ounces of simple elixir. When a smooth, creamy mixture results, continue the trituration, and gradually add of phosphoric acid an amount sufficient to dissolve the quinine. Then mix this solution with a sufficient amount of simple elixir to make the whole measure sixteen fluidounces.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphate of quinine an amount which is equivalent to one grain of quinine.

101. COMPOUND ELIXIR OF QUININE.

Sulphate of quinine,..... 16 grains.
Sulphate of cinchonidine,..... 8 grains
Sulphate of cinchonine,..... 8 grains
Aromatic elixir,16 fluidounces.

Dissolve the alkaloidal salts in the aromatic elixir by agitating them together, and then filter. Each fluidounce contains one grain of sulphate of quinine and one-half grain each of the sulphates of cinchonidine and cinchonine. The above formula conforms in strength with that of the National Formulary.

102. ELIXIR OF PHOSPHATE OF QUININE AND CINCHONIDINE.

Elixir of phosphate of quinine and elixir of phosphate of cinchonidine,..... equal amounts by measure.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphate of quinine and of phosphate of cinchonidine an amount which is equivalent to one-half grain each of quinine and of cinchonidine.

103. ELIXIR OF PHOSPHATE OF QUININE AND CINCHONINE. (ELIXIR OF QUINIA AND CINCHONIA.)

Elixir of phosphate of quinine and
elixir of phosphate of cinchonine,
.....of each equal amounts by measure.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphate of quinine an amount which is equivalent to one-half grain of quinine, and of phosphate of cinchonine an amount which is equivalent to one grain of cinchonine.

104. ELIXIR OF PHOSPHATES OF QUININE, CINCHONIDINE,
AND CINCHONINE.

Elixir of phosphate of quinine, elixir of phosphate
of cinchonidine, and elixir of phosphate of cinchonine,
.....of each equal amounts by measure.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains
of phosphate of quinine an amount which is equivalent to one-third of
a grain of quinine, and of phosphate of cinchonidine an amount which
is equivalent to one-third of a grain of cinchonidine, and of phosphate
of cinchonine an amount which is equal to two-thirds of a grain of
cinchonine.

105. ELIXIR OF PHOSPHATE OF QUININE WITH CITRATE
OF PROTOXIDE OF IRON.

(ELIXIR OF PROTOXIDE OF IRON WITH QUINIA.
ELIXIR OF QUININE AND FERROUS PHOSPHATE.)

Elixir of protoxide of iron,.....8 fluidounces.
Elixir of phosphate of quinine,...8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains
one-half grain of quinine, and as much citrate of protoxide of iron as
corresponds with one grain of sulphate of iron. This elixir is not very
stable.

106. ELIXIR OF PHOSPHATE OF QUININE WITH CITRATE
OF PROTOXIDE OF IRON AND STRYCHNINE.

(ELIXIR OF QUINIA AND PROTOXIDE OF IRON AND STRYCHNIA.
ELIXIR OF QUININE, FERROUS CITRATE, AND STRYCHNINE.)

Elixir of phosphate of quinine
with citrate of protoxide of iron,....16 fluidounces.
Strychnine,..... 1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar, cautiously adding acetic acid in amount sufficient to effect its solution, and mix this with the elixir of phosphate of quinine and citrate of protoxide of iron.

Each fluidrachm (teaspoonful) of the finished elixir contains one-half grain of quinine, as much citrate of protoxide of iron as corresponds with one grain of sulphate of iron, and one-hundredth of a grain of strychnine.

The term " protoxide of iron " is a misnomer. See our remark concerning elixir of calisaya bark with protoxide of iron. This preparation is unstable.

107. ELIXIR OF PHOSPHATE OF QUININE AND STRYCHNINE. (ELIXIR OF QUINIA AND STRYCHNIA.)

Quinine (alkaloid),..... 128 grains.
Strychnine,..... 1¼ grains.
Simple elixir, phosphoric acid (U. S..P.,
1872),.....of each a sufficient quantity.

Triturate the powdered strychnine in a mortar with two fluidounces of simple elixir, and dissolve by addition of a sufficient amount of phosphoric acid. Now add the quinine (previously powdered), and then, continuing the trituration, gradually add of phosphoric acid an amount sufficient to dissolve the quinine. Then mix this solution with a sufficient amount of simple elixir to make the whole measure sixteen fluidounces, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains of phosphate of quinine and phosphate of strychnine an amount which is equivalent to one grain of quinine and one-hundredth of a grain of strychnine.

108. ELIXIR OF VALERIANATE OF QUININE.

Valerianate of quinine,..... 128 grains
Simple elixir,..... 16 fluidounces.
Valerianic acid,..... a sufficient quantity.

Powder the valerianate of quinine in a mortar and gradually add the simple elixir. Then cautiously drop into the mixture valerianic

acid sufficient to render the liquid transparent, stirring continually, and filter if necessary.

This formula conforms to that by Prof. C. Lewis Diehl (1872), read before the Louisville College of Pharmacy.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of valerianate of quinine.

109. ELIXIR OF VALERIANATE OF QUININE WITH STRYCHNINE.

(ELIXIR OF VALERIANATE OF QUINIA AND STRYCHNIA)

Elixir of valerianate of quinine,.....14 fluidounces.

Distilled water,2 fluidounces.

Strychnine,.....1¼ grains.

Valerianic acid,..... a sufficient quantity.

Powder the strychnine in a mortar and add the water, and then enough valerianic acid to effect the solution of the strychnine. Lastly, add the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) will contain about one grain of valerianate of quinine and one-hundredth of a grain of strychnine.

In former editions of our publication the proportion was one-fiftieth of a grain of strychnine to each fluidrachm. In this edition we conform to the strength established by the National Formulary.

110. ELIXIR OF COCA

Fluid extract of coca,.....2 fluidounces.

Simple elixir,..... 14 fluidounces.

Purified talcum,..... 120 grains.

Triturate the fluid extract of coca with the purified talcum, and gradually add the elixir, shaking well together and agitating occasionally for twenty-four hours, then filter.

Each fluidrachm represents seven and one-half grains of coca.

111. ELIXIR OF CURAÇOA.

Syrup of Curaçoa,..... 120 minims.
Orris root, powdered,..... 30 grains.
Deodorized alcohol,..... 4 fluidounces.
Citric acid,..... 50 grains.
Syrup,..... 8 fluidounces.
Purified talcum,..... 120 Grains.
Water,.....enough to make 16 fluidounces.

Mix the syrup of Curaçoa with the alcohol, add the orris and purified talcum and three fluidounces of water. After twelve hours, agitating occasionally, pour the mixture on a wetted filter, returning the first portions of the filtrate until it runs clear, and follow the filtrate with enough water to make eight fluidounces in all. In this dissolve the citric acid, and finally add the syrup. This elixir is practically identical with that of the National Formulary, the proportions of ingredients being the same.

112. ELIXIR OF DANDELION.

(ELIXIR OF TARAXACUM.)

Fluid extract of dandelion,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium,.....a sufficient quantity.

Triturate the fluid extract of dandelion in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of dandelion.

113. COMPOUND ELIXIR OF DANDELION.

(COMPOUND ELIXIR OF TARAXACUM.)

Fluid extract of dandelion,.....1 fluidounce.
Fluid extract of wild-cherry bark,..... $\frac{3}{4}$ fluidounce.
Fluid extract of gentian,..... $\frac{1}{8}$ fluidounce.
Fluid extract of bitter orange peel,..... $\frac{1}{4}$ fluidounce.

Fluid extract of cinnamon,..... $\frac{1}{8}$ fluidounce.
 Fluid extract of licorice,..... $\frac{1}{8}$ fluidounce.
 Powdered anise,.....20 grains.
 Powdered caraway,.....20 grains.
 Powdered coriander,.....20 grains.
 Simple elixir,.....14 fluidounces.
 Carbonate of magnesium,.....a sufficient quantity.

Triturate the mixed fluid extracts and powdered drugs in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and cover the mixture and permit it to macerate an hour, then filter it. This elixir was devised by Prof. P. C. Candidus, of Mobile, and the formula was presented at the meeting of the American Pharmaceutical Association, 1869. Prof. Candidus stated that this elixir completely masks the bitter taste of sulphate of quinine, and he recommended it as a vehicle for administering that substance. Since one of the ingredients is licorice (see elixir of glycyrrhizin), we may suppose that glycyrrhizin aids in overcoming the bitterness, and our remarks concerning quinine and glycyrrhizin should be applicable to this elixir. The formula we present does not materially vary from that offered by Prof. Candidus, excepting in the substitution of fluid extracts for crude drugs.

114. ELIXIR OF DANDELION WITH QUININE. (ELIXIR OF TARAXACUM AND QUINIA.)

Elixir of dandelion,8 fluidounces.
 Elixir of phosphate of quinine,8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains three and one-fourth minims of fluid extract of taraxacum and one-half grain of quinine.

In the year 1873 Mr. James W. Long furnished the *American Journal of Pharmacy* with a process for making the foregoing preparation.

115. DAFFY'S ELIXIR.

(DILLY'S DAFFY; ELIXIR OF HEALTH.—New Dispensatory, 1770)

Senna,.....	4 ounces
Guaiac wood,.....	2 ounces
Elecampane root,.....	2 ounces
Anise seed,.....	2 ounces
Caraway seed,.....	2 ounces
Coriander seed,.....	2 ounces
Licorice root,.....	2 ounces
Raisins,.....	8 ounces
Diluted alcohol,.....	6 pints

Reduce the drugs to a coarse powder, and mix them with the diluted alcohol. Then seed the raisins, chop them fine, add to the mixture, and macerate fourteen days, stirring the mixture thoroughly each day; then filter (Supplement to London Pharmacopœia, 1821). A number of compounds have been offered as “Daffy’s Elixir,” and from among them we have selected the preceding.

116. ELIXIR OF DAMIANA.

Fluid extract of damiana,.....	2½ fluidounces.
Simple elixir,.....	16 fluidounces.
Alcohol,.....	½ fluidounces.
Carbonate of magnesium,.....	a sufficient quantity.

Triturate the fluid extract of damiana in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents nine and one-half minims of fluid extract of damiana.

117. ELIXIR DEWBERRY COMPOUND.
(ELIXIR RUBI TRIVIALIS COMPOSITUM.)

Dewberry root,.....	4 troyounces.
Nutgalls,.....	4 drachms.
Kino,.....	4 drachms.
Cinnamon,.....	2 drachms.
Cloves,.....	1 drachm.
Capsicum,.....	10 grains.
Tincture opium,.....	1 fluidounce.
Essence peppermint,.....	1½ fluidrachms.
Brandy,.....	32 fluidounces.
Sugar,.....	14 troyounces.

Reduce the drugs to a coarse powder, and macerate in the brandy for fourteen days, stirring the mixture thoroughly each day, then filter, and dissolve the sugar in the filtrate.

(New Remedies, 1880.)

118. ELIXIR OF EUCALYPTUS.

Fluid extract of eucalyptus,.....	2 fluidounces.
Simple elixir,.....	14 fluidounces.
Alcohol,.....	½ fluidounce.
Carbonate of magnesium,.....	a sufficient quantity.

Triturate the fluid extract of eucalyptus with carbonate of magnesium in sufficient amount to form a creamy mixture, then gradually add the simple elixir, and filter. Lastly, mix the alcohol with the filtrate.

Each fluidrachm of the finished preparation will contain such proportion of seven and one-half minims of fluid extract of eucalyptus as will dissolve in that amount of the menstruum. In our opinion, the proper menstruum for extracting the medicinal principles of eucalyptus is alcohol of specific gravity 0.820. The addition of water detracts from its value as a dissolving medium, in proportion to the amount of water present. Therefore elixir of eucalyptus does not represent the fluid extract of eucalyptus employed in making it.

The proportions of eucalyptus upon which the foregoing elixir was based will be found in the *Druggists' Circular*, 1877.

119. COMPOUND ELIXIR OF EUCALYPTUS.

Fluid extract of eucalyptus,.....2 fluidounces.
Fluid extract of licorice root,... $\frac{1}{2}$ fluidounce.
Fluid extract of wild cherry,.... $\frac{1}{2}$ fluidounce.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Mix the fluid extracts, and triturate them in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, then filter.

Each fluidrachm of the finished elixir represents such an amount of seven and one-half minims of fluid extract of eucalyptus as will dissolve in one fluidrachm of the finished menstruum, and about two minims each of the fluid extracts of licorice root and wild cherry.

This preparation is intended as a pleasant mode of administering eucalyptus; but the proportion of eucalyptus represented is uncertain, owing to the fact that alcohol of specific gravity 0.820 is the proper solvent for the medicinal principles of the leaves. The formula we present is based upon ingredients suggested in the *Druggists' Circular*, 1877.

120. ELIXIR DE GIARUS.

Myrrh,..... 90 grains.
Aloes,..... 90 grains.
Cloves,..... 180 grains.
Nutmegs,..... 180 grains.
Saffron,..... 480 grains.
Cinnamon,..... 360 grains.
Alcohol,..... 12 pints.

Reduce the drugs to a coarse powder, mix this with the alcohol, and distill nine pints. Reserve this.

Maidenhair,..... 4 troyounces.
Licorice root,..... $\frac{1}{2}$ troyounce.
Figs,..... 3 troyounces.

Infuse these in eight pints of boiling water, strain with expression, and dissolve in the liquid twelve avoirdupois pounds of sugar.

Equal parts, by weight, of this syrup and of the distilled spirit produce "elixir de garus," according to the Supplement to the London Pharmacopœia, 1821.

This cumbersome and unscientific mixture, a relic of ancient polypharmacy, is happily nearly obsolete.

121. ELIXIR OF GENTIAN.

Fluid extract of gentian,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of gentian in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of gentian.

122. COMPOUND ELIXIR OF GENTIAN.

Compound fluid extract of gentian,.....2 fluidounces.
Simple elixir,.....16 fluidounces
Carbonate of magnesium,.....a sufficient quantity.

Triturate the compound fluid extract of gentian with carbonate of magnesium in sufficient amount to form a creamy mixture, then gradually add the simple elixir, and filter.

Each fluidrachm of this elixir represents the virtues of seven and one-half minims of compound fluid extract of gentian.

The National Formulary prepares this substance from the solid extract of gentian. The product is similar to that of our formula.

123. ELIXIR OF WILD GINGER.

Fluid extract of wild ginger,.... 1 fluidounce.
Fluid extract of pleurisy root,..½ fluidounce.
Fluid extract of juniper berries,½ fluidounce.
Fluid extract of anise (or powdered
 anise, 120 grains),.....¼ fluidounce.
Fluid extract of caraway (or pow-
 dered caraway, 120 grains),. ¼ fluidounce.
Simple elixir..... 14 fluidounces.
Alcohol, ½ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the mixed fluid extracts in a capacious mortar, with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents about three and one-half minims of fluid extract of wild ginger, and one and three-fourths each of fluid extract of pleurisy root and juniper berries. This compound was suggested in 1877, by Mr. T. F. Thorworth, in the *Druggists' Circular*.

124. ELIXIR OF GLYCYRRHIZIN.

Ammoniacal glycyrrhizin,..... 128 grains.
Simple elixir,..... 16 fluidounces.

Dissolve the glycyrrhizin in the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of ammoniacal glycyrrhizin. This elixir is used to disguise the bitterness of quinine; but it must be remembered that quinine will not dissolve in it, and that quinine is precipitated by ammoniacal glycyrrhizin from solutions which are not strongly acid. Hence the reason for the tastelessness of quinine under these conditions is largely due to its insoluble state. Such mixtures should be shaken before taking each dose, and under no condition should the mixture be filtered, as the quinine will then remain on the filter paper. The above formula is that of Prof. Joseph P. Remington.

125. ELIXIR OF GLYCYRRHIZIN (AROMATIC)

Coriander seed,.....	108 grains.
Caraway seed,.....	108 grains.
Cinnamon,.....	93 grains
Star anise,.....	62 grains
Tonka bean,.....	62 grains
Canella,.....	31 grains
Nutmeg,.....	31 grains
Cloves,.....	31 grains
Ammoniacal glycyrrhizin,.....	620 grains
Oil of orange,.....	31 minims
Alcohol,.....	16 fluidounces
Distilled water,.....	16 fluidounces
Simple syrup,.....	48 fluidounces

Dissolve the oil of orange in the alcohol and add the distilled water, and, having properly moistened the mixed and powdered drugs with a portion of this menstruum, pack them in a suitable percolator and exhaust with the remainder of it. Dissolve the ammoniacal glycyrrhizin in a small amount of boiling water, and add the syrup, mix this with the percolate previously obtained, and then add of distilled water an amount sufficient to make the whole measure eighty fluidounces. Filter if necessary.

This elixir was also devised by Prof. Joseph P. Remington, and is used as a vehicle for the administration of quinine. The remarks we have made concerning "elixir of ammoniacal glycyrrhizin" may be applied with propriety to this preparation.

126. ELIXIR OF GRINDELIA ROBUSTA.

(ELIXIR OF GRINDELIA.)

Fluid extract of grindelia robusta,	1 fluidounce.
Simple elixir,.....	15 fluidounces.
Alcohol,.....	½ fluidounce.
Carbonate of magnesium,.....	a sufficient quantity.

Triturate the fluid extract of grindelia in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents such an amount of seven and one-half minims of fluid extract of *grindelia robusta* as will dissolve in the menstruum. *Grindelia robusta* contains a resin which is precipitated by water; hence we do not consider an elixir of this plant to be desirable.

The National Formulary adopted the foregoing strength, and we confirm that proportion. In former editions of our publication we have used twice that amount of *grindelia*.

127. ELIXIR OF GUARANA.

Fluid extract of guarana,..... 3 fluidounces.
Simple elixir,..... 13 fluidounces
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of guarana in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm (teaspoonful) of the finished elixir represents seven and one-half minims of fluid extract of guarana, and is essentially the same as that recommended by the American Pharmaceutical Association, 1875. In the same year Mr. George W. Kennedy, through the *American Journal of Pharmacy*, gave a formula for this elixir, each fluidrachm of which represented fifteen grains of guarana.

The National Formulary authorizes the above proportion of guarana. In former editions of this work two fluidounces of the fluid extract were employed. Each fluidrachm represents about eleven grains of guarana.

128. ELIXIR OF GUAIAECUM.

Gum guaiacum (pulverized),. 2 troyounces.
Balsam of Peru,..... 2 fluidrachms.
Oil of sassafras,..... 1 fluidrachm.
*Volatile oily spirit,..... 1 pint.

“Digest the gum guaiacum and balsam of Peru in the volatile oily spirit for six days, in a closely stopped vial which is now and then shaken; afterwards strain the tincture and add it to the essential oil of sassafras.”

(Edinburgh Pharmacopœia, 1770.)

*Volatile oily spirit was made as follows: Take of—

Volatile sal-ammoniac,..... 8 ounces.

Essential oil of rosemary,..... 1½ ounces.

Oil of amber,..... 1 ounce.

Essence of lemon peel,..... ½ ounce

French brandy,..... 1½ gallons

Draw off by distillation, in the heat of a water bath, near one gallon

(Edinburgh Pharmacopœia, 1770.)

129. ELIXIR ACIDUM HALLERI.

(HALLER'S ACID ELIXIR.)

Sulphuric acid,..... 1 troyounce.

Alcohol,..... 3 troyounces.

Add the sulphuric acid to the alcohol, drop by drop, stirring constantly. Preserve the finished elixir in glass-stoppered bottles. This is the process of the German Pharmacopœia, 1872, and is essentially the same as elixir acidum Dippelii, which contains one part of sulphuric acid to two parts of alcohol.

130. HELMONT'S ELIXIR.

¹Any fixed alkaline salt,..... 8 troyounces.

Socotrine aloes,..... 1 troyounce.

Saffron,..... 1 troyounce.

Myrrh,..... 1 troyounce.

Sal-ammoniac,..... 6 drachms

²Mountain wine,..... 2 pints.

Macerate without heat for a week or longer, then filter through paper.

(London Pharmacopœia, 1770.)

¹ FIXED .ALKALINE SALT.—This was impure potassium carbonate. To give the

definition of the New Dispensatory, 1770: "The ashes of most vegetables, steeped or boiled, in water, give out to it a saline substance, separable in a solid form by evaporating the water. This kind of salt never preexists in the vegetables, but is always generated during the burning. It is called fixt alkaline salt."

2. Mountain wine of that day was Vinum album, Lond. Pharm., or Vinum album Hispanicum, Edinb. Pharm.

131. ELIXIR OF HELONIAS.

Compound fluid extract of helonias,
..... 2 fluid ounces.
Simple elixir,..... 14 fluid ounce.
Alcohol,..... $\frac{1}{2}$ fluid ounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the compound fluid extract of helonias with carbonate of magnesium in sufficient amount to form a creamy mixture, then gradually add the simple elixir, and filter. Mix the alcohol with the filtrate.

Each fluidrachm of the finished preparation will contain such proportion of seven and one-half minims of compound fluid extract of helonias as will dissolve in one fluidrachm of the menstruum.

132. HOFFMANN'S STOMACH ELIXIR. (ELIXIR VISCERALE HOFFMANNI.)

Orange peel,..... 6 parts.
Cassia bark,..... 2 parts.
Carbonate of potassium,..... 1 part.
Sherry wine,..... 50 parts

Macerate for eight days, express, and strain. To the colature add of—

Extract of gentian,..... 1 part.
Extract of wormwood,..... 1 part.
Extract of buck-bean,..... 1 part.
Extract of cascarilla,..... 1 part.

After repose, filter.

It forms a clear liquid of a brown color, having a peculiar, aromatic odor and a bitter taste. It should be preserved in a well-closed vessel.

(German Pharmacopœia, 1872.)

133. ELIXIR OF HOPS.

Fluid extract of hops,..... 2 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of hops in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents such an amount of seven and one-half minims of fluid extract of hops as will dissolve in the menstruum. The remarks concerning compound elixir of hops may be applied to this preparation.

134. ELIXIR OF HOPS AND CHIRETTA.

Fluid extract of hops,..... 1 fluidounce.
Fluid extract chiretta,..... 1 fluidounce.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce
Carbonate of magnesium,..... a sufficient quantity.

Mix the fluid extracts, and triturate in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents such an amount of three and one-half minims each of fluid extract of hops and of chiretta as will dissolve in the menstruum used in its preparation. Our remarks regarding compound elixir of hops may be applied with equal pertinence to this.

135. COMPOUND ELIXIR OF HOPS.

Fluid extract of hops,..... 2 fluidounces.
Fluid extract of orange peel,.... $\frac{1}{2}$ fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce
Carbonate of magnesium,..... a sufficient quantity.

Mix the fluidextracts, and triturate them in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents such an amount of seven and one-half minims of fluid extract of hops as will dissolve in the menstruum.

The ingredients for the above mixture were named by the *Druggists' Circular*, 1876. We do not consider an aqueous menstruum to be well adapted to the purpose of exhausting the medicinal principles of hops, hence we think that this elixir is not a desirable preparation.

136. HUFELAND'S ELIXIR.

Extract of blessed thistle,..... $\frac{1}{4}$ troyounce.
Extract of bittersweet,..... $\frac{1}{4}$ troyounce.
Fennel water,.....8 fluidounces.
Cherry-laurel water,.....1 fluidounce.

Mix the extracts in a mortar, and dissolve them by trituration with the mixed fennel and cherry-laurel waters, and then filter.

137. ELIXIR OF HYPOPHOSPHITES.

Hypophosphite of calcium,..... 384 grains.
Hypophosphite of sodium,..... 128 grains.
Hypophosphite of potassium, 128 grains.
Citric acid,..... 30 grains.
Water,..... 4 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Compound spirit of cardamom, $\frac{1}{2}$ fluidounce.
Aromatic elixir, enough to make 16 fluidounces.

The hypophosphites and the citric acid are to be dissolved in the water; then the alcohol, compound spirit of cardamom, and enough aromatic elixir to make sixteen fluidounces are to be added. Filter if necessary. Each fluidrachm contains three grains of hypophosphite of calcium and one grain each of the hypophosphites of sodium and potassium. This formula is similar to that adopted by the National Formulary.

138. ELIXIR OF HYPOPHOSPHITES WITH IRON.

Hypophosphite of calcium,..... 188 grains
Hypophosphite of sodium,..... 128 grains
Hypophosphite of potassium, 64 grains
Sulphate of iron, in crystals,... 96 grains
Citric acid,..... 30 grains
Water,..... 4 fluidounces.
Syrup,..... 4 fluidounces.
Aromatic elixir, enough to make 16 fluidounces.

Dissolve the hypophosphites in three fluidounces of water and add the syrup. Dissolve the sulphate of iron in the remainder of the water, then mix the solutions. To this add six fluidounces of aromatic elixir and allow the mixture to stand in a cool place for twelve hours, then filter it. Finally, dissolve the citric acid in the filtrate and pass enough aromatic elixir through the filter to make sixteen fluidounces. Each fluidrachm contains about one-half grain of ferrous hypophosphite, about one grain each of the hypophosphites of calcium and sodium, and one-half grain of hypophosphite of potassium. This formula is similar to that of the National Formulary and identical in strength.

139. ELIXIR OF AMMONIO-CITRATE OF IRON. (ELIXIR OF CITRATE OF IRON.)

Ammonio-citrate of iron (soluble citrate),..... 256 grains.
Simple elixir,..... a sufficient quantity.

Dissolve the ammonio-citrate of iron in twelve fluidounces of

simple elixir, and bring this to the measure of sixteen fluidounces by the addition of a sufficient quantity of simple elixir.

Each fluidrachm (teaspoonful) of the finished elixir represents two grains of ammonio-citrate of iron, the same as that adopted by the American Pharmaceutical Association, 1873.

140. ELIXIR OF IPECAC.

Powdered ipecac,.....	½	troyounce
Balsam of Tolu,.....	½	troyounce
Benzoic acid,.....	2	drachms
Opium,.....	2	drachms
Saffron,.....	2	drachms
Camphor,.....	2	scruples
Oil of anise,.....	1	fluidrachm
Alcohol,.....	2	pints

Macerate the drugs in the alcohol for fourteen days, stirring the mixture thoroughly each day, then filter, and dissolve the camphor and oil of anise in the filtrate.

141. ELIXIR OF BROMIDE OF IRON.

Bromide of iron,.....	256	grains.
Simple elixir,.....	16	fluidounces.

Dissolve the bromide of iron in the simple elixir by triturating them together in a mortar, and then filter. Should the bromide of iron fail to completely dissolve (as is often the case), the product will be accordingly deficient in strength.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of bromide of iron.

142. ELIXIR OF CITRATE OF IRON WITH QUININE AND STRYCHNINE.

Citrate of iron and quinine,....	256	grains.	
Citrate of iron and strychnine,.....			128 grains.
Simple elixir,.....	14	fluidounces.	
Distilled water,.....	2	fluidounces.	

Dissolve the citrates in the distilled water, using a moderate heat if required; then add the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of citrate of iron and quinine and one grain of citrate of iron and strychnine. The above proportions were announced in *New Remedies*, 1878.

143. ELIXIR OF CITRATE OF PROTOXIDE OF IRON.
(ELIXIR OF PROTOXIDE OF IRON. ELIXIR OF FERROUS CITRATE.)

Crystallized sulphate of iron,..... 256 grains.
Bicarbonate of sodium,..... 200 grains.
Citric acid, distilled water,
.....of each a sufficient quantity.

Dissolve the bicarbonate of sodium and the sulphate of iron separately, each in sixteen fluidounces of cold, freshly distilled water, and mix the solutions; pour the mixture into a bottle, which must be filled to the stopper, using more distilled water if necessary, and permit it to rest for twenty four hours. Decant the clear solution and refill the bottle with freshly distilled water, shaking well, and permit it to stand as before. After twenty-four hours decant the solution, pour the residue upon a fine muslin strainer and squeeze the liquid from it. Dissolve the precipitate by trituration in a mortar with citric acid in sufficient amount, and then add enough simple elixir to make sixteen fluidounces, and filter.

Each fluidrachm (teaspoonful) of the finished elixir contains of citrate of protoxide of iron an amount which is equivalent to two grains of crystallized sulphate of iron. The name "elixir of protoxide of iron" is a misnomer. It is the elixir of a *salt* of protoxide of iron.

Among the first of the modern elixirs introduced to the medical profession was one under the name "elixir of bark and protoxide of iron." This preparation is private property, and we are not acquainted with the formula and process employed in making it. Since its introduction this elixir has enjoyed a popularity which commands for it a constant sale among physicians, and we caution physicians against confusing it with the elixirs we give formulæ for, and which are not elixirs of protoxide of iron, although in commerce they have acquired that title.

144. ELIXIR OF CITRATE AND LACTATE OF IRON.

(ELIXIR OF CITRO-LACTATE OF IRON.)

Lactate of iron,.....	96 grains.
Citrate of iron,.....	96 grains.
Water,.....	7 fluidounces.
Alcohol,.....	5 fluidounces.
Simple syrup,.....	9 fluidounces.
Essence of lemon,.....	96 minims
Essence of cloves,.....	1 minim

Mix the distilled water and syrup, and dissolve in it the lactate of iron, then add and dissolve the citrate of iron; cool, and mix with this solution the simple syrup and the alcohol, having previously mixed the alcohol and essences together. Lastly, color the product with caramel until it is about the color of brandy, and then filter it. Lactate of iron is often only partially soluble in water, but the syrup aids its solution. If it refuses to entirely dissolve, there will be a deficiency of this substance.

The foregoing elixir acquired, we are told, considerable reputation in France, where it was devised by “Robineaud of Bordeaux,” and who finally published the formula. (See Proceedings of the American Pharmaceutical Association, 1871, p. 321.)

145. ELIXIR OF CHLORIDE OF IRON WITH AMMONIUM CITRATE AND GENTIAN.

(ELIXIR OF GENTIAN AND IRON. FERRATED ELIXIR OF GENTIAN.)

Fluid extract of gentian,.....	½ fluidounce
Solution of citrate of ammonium,.....	1 fluidounce
Tincture of chloride of iron,.....	½ fluidounce
Simple elixir, carbonate of magnesium, distilled water,.....	of each a sufficient quantity.

Triturate the fluid extract of gentian in a mortar with carbonate of magnesium in amount sufficient to form a thick paste, and then gradually add four fluidounces of distilled water and filter. Mix the tincture of chloride of iron with the solution of citrate of ammonium and add to the preceding filtrate, and then add of simple elixir a sufficient amount to make the whole measure sixteen

fluidounces.

Each fluidrachm (teaspoonful) of the finished elixir contains about two minims each of tincture of chloride of iron and fluid extract of gentian. The citrate of ammonium is introduced to prevent blackening of the elixir, as explained under elixir of calisaya and chloride of iron with citrate of ammonium. ’

Elixir of gentian and chloride of iron was mentioned first in the *Druggists’ Circular*, 1871, and afterward (1873) Prof. Joseph P. Remington presented a process through the *American Journal of Pharmacy*. The Newark Pharmaceutical Association (1871) recommended an elixir of gentian and pyrophosphate of iron, and at a still earlier date Mr. William B. Thompson had presented a process for this elixir through the *Druggists’ Circular*.

146. ELIXIR OF CHLORIDE OF IRON WITH HYDROCHLORATE OF QUININE AND ARSENIOS ACID.
(ELIXIR OF IRON, QUINIA, AND ARSENIC.)

Hydrochlorate of quinine,..... 64 grains.
Solution of arsenious acid (U. S. P.,
1883),.....128 minims.
Simple elixir,..... 15 fluidounces.
Tincture of chloride of iron,... 1 fluidounce.
Hydrochloric acid,..... a sufficient quantity.

Triturate the hydrochlorate of quinine in a mortar with four fluidounces of simple elixir, and add of hydrochloric acid an amount sufficient to effect its solution; then add the remainder of the simple elixir and the other ingredients. Filter if necessary. If hydrochlorate of quinine cannot be obtained, use quinine alkaloid instead, and hydrochloric acid enough to dissolve it.

Each fluidrachm (teaspoonful) of the finished elixir contains about three and one-half minims of tincture of chloride of iron, one-half grain of hydrochlorate of quinine, and one minim of officinal solution of arsenic.

Our formula introduces the hydrochlorate of quinine, chloride of iron, and solution of arsenious acid in hydrochloric acid. Too great caution cannot be employed to prevent the precipitation of arsenic, and by using hydrochloric acid this tendency to separation is avoided.

147. ELIXIR OF PROTOCHLORIDE OF IRON.

(ELIXIR OF FERROUS CHLORIDE.)

Crystallized sulphate of iron,..... 256 grains.
Bicarbonate of sodium,..... 200 grains.
Hydrochloric acid, simple elixir, dis-
tilled water,.....of each a sufficient quantity.

Dissolve the sulphate of iron and bicarbonate of sodium separately, each in sixteen fluidounces of distilled water, and mix the solutions; pour the mixture into a bottle, which must be filled to the stopper, using more distilled water if necessary, and permit it to rest twenty-four hours; decant the clear solution and refill the bottle with freshly distilled water, shaking well, and permit it to stand as before. After twenty-four hours decant the solution; pour the residue upon a fine muslin strainer and squeeze the liquid from it. Dissolve the precipitate by trituration in a mortar with hydrochloric acid in sufficient amount, and then add enough simple elixir to make sixteen fluidounces, and filter it.

Each fluidrachm (teaspoonful) of the finished elixir contains of chloride of protoxide of iron (ferrous chloride) an amount which is equivalent to two grains of crystallized sulphate of iron.

This elixir may also be made by the action of hydrochloric acid on metallic iron, using the same amount of acid, two hundred grains of iron, two fluidounces of water, and a sufficient quantity of simple elixir. Digest the iron, water, and acid together until the action ceases; filter, and mix the filtrate with simple elixir in amount sufficient to form sixteen fluidounces. This preparation is unstable.

148. ELIXIR OF HYPOPHOSPHITE OF IRON.

Hypophosphite of calcium,..... 128 grains.
Citrate of potassium,..... 96 grains
Solution of chloride of iron (ferric chlo-
ride), simple elixir, distilled water,
.....of each a sufficient quantity.

Dissolve the hypophosphite of calcium in four fluidounces of distilled water, and carefully add solution of chloride of iron until in very slight excess. Collect the precipitate and wash it until nearly free

from chloride of calcium.

Dissolve the magma produced by the foregoing operation in eight fluidounces of simple elixir, by the aid of the citrate of potassium, and then add enough simple elixir to bring the whole to the measure of sixteen fluidounces.

Each fluidrachm (teaspoonful) of the finished elixir contains three-fourths of a grain of ferric hypophosphite. This improved method for making solution of hypophosphite of iron was introduced by Prof. C. Lewis Diehl in a paper read before the Kentucky Pharmaceutical Association, 1882. The original was not in our possession, and we received the abstract presented in the Proceedings of the American Pharmaceutical Association just in time to insert this one formula.

149. ELIXIR OF IODIDE OF IRON WITH IODIDE OF QUININE.
(ELIXIR OF IODIDE OF IRON AND QUINIA.)

Iodide of iron,..... 16 grains.
Iodide of quinine,..... 16 grains.
Simple elixir,..... 16 fluidounces.

Triturate the iodides in a mortar with the simple elixir adding a little hydriodic acid if necessary, and, when they are dissolved, filter if desirable.

Each fluidrachm (teaspoonful) of the finished elixir contains one-eighth grain each of iodide of iron and of iodide of quinine. This formula was announced in the *Druggists' Circular*, 1867.

150. ELIXIR OF LACTATE OF IRON.

Lactate of iron,..... 128 grains.
Lactic acid, simple elixir,
.....of each a sufficient quantity.

Triturate the lactate of iron in a mortar with fourteen fluidounces of simple elixir, and add of lactic acid a quantity sufficient to render the liquid distinctly acid; then add enough simple elixir to bring the whole to the measure of sixteen fluidounces, and filter.

Each fluidrachm (teaspoonful) of the finished elixir contains

one grain of lactate of iron.

The National Formulary recommends that one hundred and twenty-eight grains of lactate of iron, in crusts, and three hundred and eighty-four grains of citrate of potassium be dissolved in enough aromatic elixir to make sixteen fluidounces. Each fluidrachm contains one grain of lactate of iron. This formula is preferable to the foregoing.

151. ELIXIR OF LACTATE OF IRON WITH PEPSIN.

Elixir of lactate of iron, 8 fluidounces.

Elixir of pepsin, 8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains each of lactate of iron and saccharated pepsin.

152. ELIXIR OF PHOSPHATE OF IRON.

Phosphate of iron, soluble (U. S. P.

1883), 256 grains.

Simple elixir, 12 fluidounces.

Distilled water, 4 fluidounces.

Dissolve the phosphate of iron in the distilled water and add the simple elixir.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of phosphate of iron.

In former editions of this work each fluidrachm represented one grain of phosphate of iron. The National Formulary has established two grains as the preferable amount, and in this edition we have accepted that quantity.

153. ELIXIR OF PHOSPHATE OF IRON WITH PHOSPHATE OF QUININE. (ELIXIR OF PHOSPHATE OF IRON AND QUINIA.)

Elixir of phosphate of iron, 8 fluidounces.

Elixir of phosphate of quinine, 8 fluidounces

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one-half grain each of phosphate of iron and phosphate of quinine.

154. ELIXIR OF PHOSPHATE OF IRON WITH PHOSPHATE OF QUININE AND STRYCHNINE.

(ELIXIR OF PHOSPHATE OF IRON, QUINIA, AND STRYCHNIA.)

Elixir of phosphate of iron and quinine,.....16 fluidounces.

Strychnine,.....1¼ grains.

Acetic acid,.....a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and then add the elixir. Filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains one-half grain each of phosphates of iron and quinine, and one-hundredth of a grain of strychnine.

In 1878 Mr. J. Creuse contributed an article to the *Druggists' Circular* regarding a preparation sold under the name of the foregoing elixir, which proved to be an elixir of pyrophosphate of iron. It is also true that other preparations containing pyrophosphate of iron are sometimes dispensed where phosphate is specified, and physicians should be careful and use the abbreviation phos. only when the phosphate is desired.

ELIXIRS WITH PYROPHOSPHATE OF IRON.

Pyrophosphate of iron furnishes a line of combinations which are extensively used. It is not unpleasant to the taste, and is quite permanent, especially if in neutral or slightly alkaline solution. However, an excess of mineral acids or certain mineral salts decomposes it, and the excess even of acetic acid causes its solution to gelatinize after a time. This difficulty can be overcome by adding to the gelatinized elixir enough ammonia water to restore the alkaline reaction.

Pyrophosphate of iron is incompatible with solutions of alkaloidal salts, unless the resultant liquid is neutral or can dissolve the alkaloid and have an alkaline reaction. If this fact is remembered the pharmacist may save some expense and inconvenience. If, for example, the elixir of pyrophosphate of iron and quinine has gelatinized from escape of ammonia, the cautious addition of ammonia water will restore it to the original condition. If, upon the other hand, the elixir has been made of alkaline reaction and the alkaloid has separated, the cautious addition of acetic acid will restore the transparency.

Solutions of pyrophosphate of iron cannot be exposed to sunlight without decomposition, and the same, to an extent, is true even of daylight, without the direct rays of the sun. Those who have reason to associate pyrophosphate of iron, pepsin, and salts of the alkaloids will find that considerable skill is necessary to make presentable and reputable preparations, and often some of these combinations are very trying to the patience of the operator. The reader is referred to remarks under the head of pepsin and elixirs of calisaya bark and the alkaloids.

155. ELIXIR OF PYROPHOSPHATE OF IRON.

Pyrophosphate of iron,..... 256 grains.
Distilled water,..... 2 fluidounces.
Simple elixir,.....a sufficient quantity.

Dissolve the pyrophosphate of iron in the distilled water by the aid of a heat not exceeding 180° F., and add to the solution enough

simple elixir to bring the whole to the measure of sixteen fluidounces, and filter if necessary. If it has an acid reaction, neutralize, or even render it slightly alkaline, by means of ammonia water.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of pyrophosphate of iron. This process is essentially that adopted by the American Pharmaceutical Association (1875). The formula for elixir of pyrophosphate of iron, adopted by the joint committee of the Medical and Pharmaceutical Associations of the District of Columbia (1867), contained three hundred and twenty grains of pyrophosphate of iron in twelve fluidounces of the finished elixir.

156. ELIXIR OF PYROPHOSPHATE OF IRON WITH BISMUTH AND PEPSIN.
(ELIXIR OF AMMONIO-CITRATE OF BISMUTH WITH PEPSIN AND IRON.
ELIXIR OF PEPSIN, BISMUTH, AND IRON.)

Elixir of pyrophosphate of iron,.8 fluidounces.
Elixir of citrate of ammonium and
bismuth with pepsin,..... 8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of pyrophosphate of iron and only one half grain each of pepsin and of ammonio-citrate of bismuth. The solution has an alkaline reaction, and the pepsin, under these conditions, is of uncertain quality.

157. ELIXIR OF PYROPHOSPHATE OF IRON WITH CINCHONIDINE.
(ELIXIR OF IRON AND CINCHONIDIA.)

Elixir of cinchonidine,.....8 fluidounces.
Elixir of pyrophosphate of iron,.8 fluidounces.

Mix them together, and then gradually add of ammonia water or acetic acid an amount sufficient to render the liquid of neutral reaction and transparent, then filter it if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of pyrophosphate of iron and one-half grain of cinchonidine. The remarks concerning elixir of pyrophosphate of iron with strychnine are adapted to this preparation.

**158. ELIXIR OF PYROPHOSPHATE OF IRON WITH
CINCHONIDINE AND STRYCHNINE**

(ELIXIR OF IRON, CINCHONIDIA, AND STRYCHNIA.)

Strychnine,..... 1¼ grains.
Elixir of pyrophosphate of iron
with cinchonidine,.....16 fluidounces.
Acetic acid,..... a sufficient quantity.

Powder the strychnine and gradually add acetic acid until it is dissolved, then mix with this solution the elixir of pyrophosphate of iron with cinchonidine. Each fluidrachm (teaspoonful) of the finished elixir contains one grain of pyrophosphate of iron, acetate of cinchonidine equivalent to one-half grain of cinchonidine, and one-hundredth of a grain of acetate of strychnine.

The National Formulary prepares this elixir with phosphate of iron, citrate of potassium, sulphate of cinchonidine, and sulphate of strychnine. The finished product resembles that of our formula, the amount of iron, however, being twice as great.

**159. ELIXIR OF PYROPHOSPHATE OF IRON WITH QUININE,
CINCHONIDINE, AND STRYCHNINE.**

(ELIXIR OF IRON, QUINIA, CINCHONIDIA, AND STRYCHNIA.)

Elixir of pyrophosphate of iron with
quinine,..... 8 fluidounces
Elixir of pyrophosphate of iron with
cinchonidine,..... 8 fluidounces
Strychnine,..... 1¼ grains
Acetic acid,..... a sufficient quantity.

Mix the elixirs, and add the strychnine previously dissolved by trituration with a sufficient amount of acetic acid. Each fluidrachm (teaspoonful) of the finished elixir contains one-fourth grain of cinchonidine and one-half grain of quinine as the acetates of these alkaloids, one grain of pyrophosphate of iron, and one-hundredth of a grain of strychnine.

**160. ELIXIR OF PYROPHOSPHATE OF IRON WITH
CINCHONINE .**

(ELIXIR OF PYROPHOSPHATE OF IRON AND CINCHONIA)

Elixir of pyrophosphate of iron,.8 fluidounces.

Elixir of cinchonine,..... 8 fluidounces.

Mix them together, and then gradually add of ammonia water or acetic acid an amount sufficient to render the liquid of neutral reaction and transparent.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain each of pyrophosphate of iron and cinchonine. Our remarks concerning elixir of pyrophosphate of iron and strychnine may be applied with equal pertinence to this preparation.

161. ELIXIR OF PYROPHOSPHATE OF IRON AND QUININE.

(ELIXIR OF IRON AND QUINIA.)

Quinine (alkaloid),..... 128 grains.

Pyrophosphate of iron,..... 256 grains

Simple elixir, distilled water, diluted

acetic acid,.....of each a sufficient quantity.

Triturate the quinine in a mortar, gradually adding the acetic acid until in sufficient amount to effect its solution. Dissolve the pyrophosphate of iron in two fluidounces of warm water, and add enough simple elixir to make ten fluidounces. To this add the solution of acetate of quinine, and then simple elixir until in amount sufficient to make the whole measure sixteen fluidounces.

Each fluidrachm (teaspoonful) of this preparation contains two grains of pyrophosphate of iron and the salt formed from one grain of quinine. The Newark Pharmaceutical Association (1871) adopted a formula which resembled the above, but which contained only one hundred and sixty grains of pyrophosphate of iron to the pint. As two hundred and fifty-six grains is the accepted amount of the American Pharmaceutical Association, we employ that proportion.

**162. ELIXIR OF PYROPHOSPHATE OF IRON WITH QUININE
AND CINCHONIDINE.**

(ELIXIR OF IRON, QUINIA, AND CINCHONIDIA.)

Elixir of pyrophosphate of iron with
quinine, 8 fluidounces.

Elixir of pyrophosphate of iron with
cinchonidine, 8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of pyrophosphate of iron and the equivalent of one-half grain of quinine and one-fourth grain of cinchonidine as the acetates of these alkaloids.

**163. ELIXIR OF PYROPHOSPHATE OF IRON WITH QUININE
AND CINCHONINE.**

(ELIXIR OF IRON, QUINIA, AND CINCHONIA.)

Elixir of pyrophosphate of iron with
quinine,..... 8 fluidounces.

Elixir of pyrophosphate of iron with
cinchonine,..... 8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of this elixir contains two grains of pyrophosphate of iron and the equivalent of one-half grain of quinine and one-fourth grain of cinchonine as the acetates of these alkaloids.

**164. ELIXIR OF PYROPHOSPHATE OF IRON WITH QUININE,
CINCHONINE, AND STRYCHNINE.**

(ELIXIR OF IRON, QUINIA, CINCHONIA, AND STRYCHNIA.)

Elixir of pyrophosphate of iron
with quinine and cinchonine,...16 fluidounces.

Strychnine,..... 1¼ grains.

Acetic acid,.....a sufficient quantity.

Triturate the strychnine in a mortar with enough acetic acid to effect its solution, then mix this with the elixir.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of pyrophosphate of iron, and the equivalent of one-half grain of quinine and one-fourth grain of cinchonine as the acetates of these alkaloids, and one-hundredth of a grain of acetate of strychnine.

165. ELIXIR OF PYROPHOSPHATE OF IRON WITH QUININE AND STRYCHNINE.

(ELIXIR OF IRON, QUINIA, AND STRYCHNIA.)

Strychnine,..... 1¼ grains.
Elixir of pyrophosphate of iron
with quinine,.....16 fluidounces..
Acetic acid,.....a sufficient quantity.

Powder the strychnine and triturate it with sufficient acetic acid to effect its solution. Mix this with the elixir of pyrophosphate of iron with quinine.

Each fluidrachm (teaspoonful) of the finished elixir contains one-hundredth of a grain of strychnine, one grain of quinine, and two grains of pyrophosphate of iron. It agrees in proportions with the formula adopted by the American Pharmaceutical Association, 1875.

The National Formulary uses phosphate of iron, citrate of potassium, hydrochlorate of quinine, and sulphate of strychnine. The finished product, however, is similar to that made by our process, the difference being that each fluidrachm contains two grains of phosphate of iron instead of one grain of pyrophosphate.

The aforementioned work also prepares an elixir under the name elixir of iron, quinine, and strychnine, in which two fluidounces of tincture of citro-chloride of iron, one hundred and twenty-eight grains of sulphate of quinine, one and one-quarter grains of sulphate of strychnine, one-half fluidounce of alcohol, and enough aromatic elixir to make sixteen fluidounces are employed. The alkaloidal salts are dissolved in twelve fluidounces of aromatic elixir, then the tincture and the alcohol are added, and finally enough aromatic elixir to make sixteen fluidounces. Each fluidrachm represents about one grain of ferric chloride, one grain of sulphate of quinine, and one-hundredth of a grain of sulphate of strychnine.

166. ELIXIR OF PYROPHOSPHATE OF IRON WITH VALERIANATE OF QUININE AND ACETATE OF STRYCHNINE.

(ELIXIR OF VALERIANATE OF QUINIA WITH IRON AND STRYCHNIA.)

Valerianate of quinine,..... 128 grains.
Pyrophosphate of iron,..... 128 grains.
Strychnine,..... 1¼ grains.
Simple elixir,..... 16 fluidounces
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, then add the valerianate of quinine and four fluidounces of simple elixir, and triturate until the valerianate is dissolved. Should the valerianate of quinine fail to dissolve after a moderate time, add a little acetic acid. Lastly, dissolve the pyrophosphate in the remainder of the simple elixir and mix the solutions.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain each of the valerianate of quinine and pyrophosphate of iron, and one-fiftieth grain of strychnine.

This formula corresponds, regarding proportions, with one offered by the *Druggists' Circular*, 1871, excepting that ours contains half the amount of pyrophosphate of iron.

167. ELIXIR OF PYROPHOSPHATE OF IRON WITH PEPSIN

(ELIXIR OF IRON AND PEPSIN. FERRATED ELIXIR OF PEPSIN.)

Elixir of pyrophosphate of iron,...8 fluidounces.
Elixir of pepsin,.....8 fluidounces.

Mix them together, and, if not neutral or of slightly alkaline reaction, cautiously add ammonia water until it will change blue litmus paper to red.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain each of pyrophosphate of iron and such a modification of pepsin as can exist under the conditions necessary to form the elixir.

**168. ELIXIR OF PYROPHOSPHATE OF IRON WITH PEPSIN,
BISMUTH, AND STRYCHNINE.**

(ELIXIR OF IRON, PEPSIN, BISMUTH, AND STRYCHNIA.
ELIXIR OF PEPSIN, BISMUTH, STRYCHNIA, AND IRON.)

Elixir of pyrophosphate of iron,...8 fluidounces.
Elixir of ammonio-citrate of bismuth and pepsin,.....8 fluidounces.
Strychnine,14 grains.
Acetic acid,.....a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid sufficient to dissolve it, and then add the elixirs, having previously mixed them together.

Each fluidrachm (teaspoonful) of the finished elixir contains (subject to remarks which follow) one grain of pyrophosphate of iron, one-half grain each of ammonio-citrate of bismuth and of pepsin, and one-hundredth of a grain of strychnine.

This mixture, like many others we have been led to consider in this work, reminds us of the polypharmacy of olden times, excepting that the constituents are new. In considering it we must accept that the pepsin has no value as a therapeutical agent, unless its action is simply suspended by the alkaline nature of the elixir.

**169. ELIXIR OF PYROPHOSPHATE OF IRON WITH PEPSIN
AND STRYCHNINE.**

(ELIXIR OF IRON, PEPSIN, AND STRYCHNIA.
ELIXIR OF PEPSIN, IRON, AND STRYCHNIA.)

Elixir of pyrophosphate of iron
with pepsin,..... 16 fluidounces.
Strychnine,..... 1¼ grains.
Acetic acid,.....a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in sufficient amount to effect its solution, and then add the elixir of pyrophosphate of iron with pepsin.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain each of pyrophosphate of iron and of pepsin, and about one-hundredth of a grain of strychnine as the acetate of that alkaloid.

170. ELIXIR OF PYROPHOSPHATE OF IRON AND
STRYCHNINE.

(ELIXIR OF IRON AND STRYCHNIA.)

Strychnine,..... 1¼ grains.
Elixir of pyrophosphate of iron,...16 fluidounces.
Acetic acid,..... a sufficient quantity.

Powder the strychnine and gradually add acetic acid and triturate until a clear solution results. Mix this with the elixir of pyrophosphate of iron, and, if not of neutral reaction, add acetic acid or ammonia water to neutralization

Each fluidrachm (teaspoonful) of the finished elixir contains one-hundredth of a grain of strychnine in the form of acetate of strychnine, which is the proportion adopted by the American Pharmaceutical Association, 1875.

Our experience is decidedly in favor of acetic acid for making the salts of all alkaloids which are to be associated with pyrophosphate or citrate of iron. These preparations of iron are incompatible with most acids, and require to be neutral or alkaline if held in solution, while, upon the contrary, most alkaloids demand an excess of an acid. Acetic acid may be added until the solution of the iron salt is even slightly acid, as shown by its action on blue litmus paper, and such a solution will generally remain clear, although it may gelatinize. Every aqueous or slightly alcoholic liquid containing strychnine in solution should have, if possible, an acid reaction, else the alkaloid may gradually separate, and danger of poisoning follow the administration of this sediment. Hence our directions to add enough acetic acid to overcome all alkaline reaction.

171 ELIXIR OF JUNIPER BERRIES.

Fluid extract of juniper berries,...2 fluidounces.
Simple elixir,..... 14 fluidounces.
Holland gin,.....2 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of juniper berries in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and

filter. Lastly, mix the filtrate with the Holland gin.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of juniper berries. A formula for elixir of juniper berries was suggested in the *Druggists' Circular*, 1878, which contained the ingredients upon which we have based our process.

172. ELIXIR OF JABORANDI.

Fluid extract of jaborandi,.....1 fluidounce.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium, a sufficient quantity.

Triturate the fluid extract of jaborandi in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir will contain the medicinal principles of three and three-fourth minims of fluid extract of jaborandi.

In former editions of our publication two fluidounces of fluid extract of jaborandi were used in making sixteen fluidounces of the elixir. The National Formulary recognizes one fluidounce, and we change our proportions to conform therewith.

173. KLEIN'S STOMACHIC ELIXIR. (ELIXIR VISCERALE KLEINII.)

Extract of carduus benedictus,...1 troyounce.
Extract of erythræa centaurium,1 troyounce.
Extract of gentian,..... 1 troyounce.
Tincture of bitter orange peel,...20 fluidounces.
Malaga wine,..... 32 fluidounces.

Place the extracts in a mortar and bring them to a creamy consistence by trituration, with successive additions of small amounts of wine; then stir in the remainder of the wine and add the tincture of orange peel, and filter.

(From the Non-Official Formulary of the Dutch Society for the Advancement of Pharmacy.)

ELIXIR LACTOPEPTIN.

Lactopeptin is private property. Under this name a preparation has been introduced and extensively advertised, and through courtesy to the rightful owners, who also make an "Elixir of Lactopeptin," we refrain from interfering.

174. ELIXIR OF LACTUCARIUM.

Lactucarium,..... 256 grains.
Simple elixir,..... 16 fluidounces.

Triturate the lactucarium with the simple elixir, allow the mixture to remain in a covered vessel for twenty-four hours, shaking occasionally, then filter it.

Each fluidrachm (teaspoonful) of the finished elixir contains the properties of two grains of lactucarium.

175. LAXATIVE ELIXIR.

Fluid extract of rhubarb,..... $\frac{1}{2}$ fluidounce.
Fluid extract of senna,..... $\frac{1}{2}$ fluidounce.
Fluid extract of taraxacum,..... $\frac{1}{2}$ fluidounce.
Fluid extract of buckthorn bark, $\frac{1}{4}$ fluidounce.
Fluid extract of ginger,..... $\frac{1}{4}$ fluidounce.
Rochelle salt,..... .1 troyounce.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium,..... `a sufficient quantity.

Triturate the fluid extracts (having previously mixed them together) in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture; then gradually add the simple elixir, stirring well, and filter. Lastly, dissolve in the filtrate the Rochelle salt.

This elixir is about like that of Mr. R. W. Gardner, as published in the Proceedings of the American Pharmaceutical Association, 1880, excepting that we have omitted phosphate and bicarbonate of sodium.

176. LEROY'S PURGATIVE ELIXIR.

Scammony,..... 120 grains.
Turpeth root,..... 60 grains.
Jalap,..... 480 grains.
Diluted alcohol,..... 16 fluidounces.

Macerate the drugs (coarsely powdered) in the alcohol for twelve hours and in a warm location, and filter. Mix the filtrate with a syrup made as follows:

Senna, bruised,..... 480 grains.
Boiling water,..... 4 fluidounces.
Sugar,..... 3½ troyounces.

Infuse the senna in the boiling water, strain, and dissolve the sugar in the liquid. This formula was published in the *Druggists' Circular*, 1875.

The above elixir must not be confounded with "Leroy's vomito purgative elixir."

177. LEROY'S VOMITO-PURGATIVE ELIXIR.

Fluid extract of senna,..... 1½ fluidounces.
Tartar emetic,..... 20 grains.
White wine,..... 16 fluidounces.

Triturate the fluid extract of senna in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the wine, stirring well, and filter. Lastly, dissolve the tartar emetic in the filtrate. The original formula used senna leaves instead of the fluid extract of senna.

178. LETTSOM'S ELIXIR.

Opium,..... 6 drachms.
Castile soap,..... 6 drachms.
Nutmeg,..... 1 drachm.
Camphor,..... 4 drachms.
Saffron,..... 40 grains
Spirit of ammonia,..... 9 fluidounces.

Mix and reduce the drugs to a coarse powder, and macerate this in the spirit of ammonia for ten days, stirring the mixture thoroughly each day, then filter.—*Augustin.*

179. BITTER ELIXIR OF LIFE.*

Aloes,.....	1 troyounce.
Cinnamon,.....	10 troyounces.
Calamus,.....	2½ troyounces.
Angelica root,.....	5 troyounces.
Saffron,.....	6 troyounces.
Caramel,.....	10 troyounces.
Glycerin,.....	215 troyounces.
Alcohol,.....	180 fluidounces.
Water,.....	350 fluidounces.

Mix and reduce the drugs to a coarse powder, and macerate this in the mixed alcohol and water for fourteen days, stirring the mixture thoroughly each day, then filter, and to the filtrate add the glycerin and caramel.

(HAGER—New Remedies, 1878.)

*The German Pharmacopœia, 1872, substituted compound tincture of aloes for this elixir.

180. ELIXIR OF LACTOPHOSPHATE OF LIME.

(ELIXIR OF LACTOPHOSPHATE OF CALCIUM.)

Precipitated phosphate of calcium,.....	128 grains.
Simple elixir, lactic acid, hydrochloric acid, ammonia water, distilled water,.....	of each a sufficient quantity.

Mix the precipitated phosphate of calcium with sixteen fluidounces of cold distilled water, and add enough hydrochloric acid to dissolve it. Filter this solution and mix with its bulk of cold water, and then add ammonia water until in slight excess. Transfer the mixture to a fine muslin strainer, and when the liquid has drained return the magma to the vessel, mix it with the amount of water before employed, and again transfer it to the strainer. As soon as the magma is again drained, transfer it to a mortar and dissolve it by the addition

of a sufficient amount of lactic acid. Filter this, and add enough simple elixir to produce sixteen fluidounces.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of lactophosphate of calcium.

181. ELIXIR OF LICORICE.

Fluid extract of licorice,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of licorice in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of licorice. This preparation is used mainly to disguise the taste of quinine. Elixir of glycyrrhizin is an admirable substitute. The remarks concerning that elixir apply with equal pertinence to elixir of licorice.

The National Formulary authorizes the use of purified extract of licorice in making this elixir. The result is similar to that of our formula.

182. ELIXIR OF LICORICE (AROMATIC).

Fluid extract of licorice,..... 2 fluidounces.
Fluid extract of sweet orange, $\frac{1}{2}$ fluidounce.
Fluid extract of coriander,..... $\frac{1}{4}$ fluidounce.
Fluid extract of angelica seed, $\frac{1}{4}$ fluidounce.
Fluid extract of cinnamon,..... $\frac{1}{4}$ fluidounce.
Fluid extract of cloves,..... $\frac{1}{8}$ fluidounce.
Simple elixir,..... 13 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extracts—having previously mixed them together—in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the

alcohol.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of licorice, together with aromatics. This elixir is used to disguise the taste of quinine, which it accomplishes mainly by rendering it insoluble; hence we refer the reader to our remarks concerning elixir of glycyrrhizin, which may with equal pertinence be applied to this preparation.

Aromatic elixir of licorice was introduced through the *Druggists' Circular* in 1879, although similar preparations had been employed previously, and the elixir of licorice of Mr. G. G. C. Sims (see *Druggists' Circular*, 1874) was nearly identical with the above.

The National Formulary recommends fluid extract of licorice and oils of the aromatic drugs in making this elixir. The result is similar to that of our formula.

183. ELIXIR E SUCCO LIQUIRITÆ. (PECTORALE ELIXIR.)

Purified licorice,.....2 parts, by weight.

Fennel water,.....6 parts, by weight.

Make a solution, and add of—

*Anisated spirit of ammonia, 2 parts, by weight.

*ANISATED SPIRIT OF AMMONIA.—Dissolve one part of oil of anise in twenty four parts of alcohol, and add five parts of ammonia water.

All the proportions are by weight.

It forms a cloudy, brown liquid, which must be shaken up before dispensing. It should be preserved in well-closed vessels.

(German Pharmacopœia, 1870.)

This preparation is also called elixir pectorale Regis Danitæ, or pectoral elixir of the King of Denmark.

184. ELIXIR OF BROMIDE OF LITHIUM.

Bromide of lithium,..... 640 grains.

Citric acid,..... 30 grains

Simple elixir,.....enough to make 16 fluidounces.

Dissolve the bromide of lithium and the citric acid in the simple elixir, and filter.

Each fluidrachm contains five grains of bromide of lithium.

185. ELIXIR OF CITRATE OF LITHIUM

Citrate of lithium,..... 640 grains.
Simple elixir,..... 16 fluidounces

Dissolve the citrate of lithium in the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains five grains of citrate of lithium. This proportion was adopted by the joint committee of the National College of Pharmacy and the Medical Society of the District of Columbia.

In former editions of our formula we used two hundred and fifty-six grains of citrate of lithium, but the National Formulary established the proportions of six hundred and forty grains, which we adopt.

186. ELIXIR OF SALICYLATE OF LITHIUM

Salicylate of lithium,..... 640 grains.
Simple elixir,..... enough to make 16 fluidounces.

Dissolve the salicylate of lithium in the simple elixir, and filter. Each fluidrachm contains five grains of salicylate of lithium.

187. ELIXIR OF LUPULIN.

Fluid extract of lupulin,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of lupulin in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well; permit the mixture to macerate in a closed vessel for twelve hours, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents such an amount of seven and one-half minims of fluid extract of lupulin as will dissolve in the menstruum.

Elixir of lupulin was introduced by Prof. C. Lewis Diehl in 1872.

188. ELIXIR OF MALT.

Fluid extract of malt,.....8 fluidounces.
Simple elixir,.....8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of this elixir represents thirty minims of fluid extract of malt.

If a teaspoonful of elixir of malt is mixed with a tablespoonful of starch paste made by boiling one part of starch with sixteen parts of water, the mixture will immediately become fluid at a temperature of 150° Fahr. In from ten to fifteen minutes the mixture will fail to produce a blue color when dropped into dilute solution of iodine (volumetric solution of iodine, U. S. P.).

189. ELIXIR OF MALT AND IRON.

Elixir of malt,.....8 fluidounces
Elixir of phosphate of iron,..... 8 fluidounces

Mix them together and filter if necessary.

Each fluidrachm (teaspoonful) contains fifteen minims of fluid extract of malt and one half grain of phosphate of iron.

New Remedies for August, 1883, contains a formula for this preparation which is essentially the same as that we give. We modify it somewhat, in order that it shall conform to the other preparations of our work of a like nature.

The National Formulary makes this preparation of extract of malt and phosphate of iron, the proportions being one grain of phosphate of iron and fifteen minims of extract of malt to each fluidrachm.

190. ELIXIR OF MALT AND PEPSIN.

Elixir of malt,.....8 fluidounces.
Elixir of pepsin,.....8 fluidounces.

Mix them together. Each fluidrachm (teaspoonful) of the finished elixir contains one grain of saccharated pepsin and fifteen minims of fluid extract of malt.

191. ELIXIR OF MALTO-PEPSIN.

Malto-pepsin is private property. Under this name a preparation has been introduced and extensively advertised, and through courtesy to the rightful owners, who also make an "Elixir of Malto-Pepsin," we refrain from interfering.

192. ELIXIR OF MATICO.

Fluid extract of matico,.....2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of matico in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents such part of seven and one-half minims of fluid extract of matico as will dissolve in the menstruum employed in its preparation. We consider alcohol of specific gravity 0.820 to be the proper menstruum for exhausting the medicinal principles from matico, and the addition of water decreases its solvent power in proportion to the amount of water added. In consequence of this fact we object to an elixir of matico.

193. COMPOUND ELIXIR OF MATICO.

Fluid extract of matico,.....3 fluidounces.
Fluid extract of buchu,.....1 fluidounce.
Fluid extract of cubebs,..... 1 fluidounce.
Simple elixir,..... 16 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Mix the fluid extracts, and evaporate the mixture, at a temperature of about 150° F., to one-half its bulk. Triturate this with a sufficient amount of carbonate of magnesium to form a creamy mixture, then gradually stir in the simple elixir, and filter. The fluid extracts for the foregoing preparation should be made with alcohol of

specific gravity 0. 820. The proportions and ingredients of this elixir, and upon which we have based our formula, were given in the *Druggists' Circular*, 1880.

Each fluidrachm of the finished elixir will contain such an amount of the properties of about eleven minims of fluid extract of matico and three and one-half minims each of buchu and cubebs as will dissolve in the menstruum. Since, in our opinion, strong alcohol only will perfectly extract the medicinal principles of these drugs, the actual value of this elixir is very much less than that of an equivalent amount of the original fluid extracts, and its use by the physician must be unsatisfactory.

194. ELIXIR OF MAY-APPLE

(ELIXIR OF PODOPHYLLUM. ELIXIR OF MANDRAKE.)

Fluid extract of May-apple,..... 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... ½ fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of May-apple in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents such an amount of seven and one-half minims of fluid extract of May-apple as the menstruum can dissolve. Since resin of podophyllum is almost insoluble in water, we do not admire the above preparation.

195. COMPOUND ELIXIR OF MAY-APPLE

(COMPOUND ELIXIR OF PODOPHYLLUM. COMPOUND ELIXIR OF MANDRAKE.)

Fluid extract of May-apple,..... 1½ fluidounces.
Fluid extract of senna,..... 1 fluidounce.
Oil of anise,..... 10 minims.
Simple elixir,..... 14 fluidounces.
Alcohol,..... ½ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Mix the fluid extracts and triturate this in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture—having previously triturated the oil of anise with the magnesium carbonate—then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents (subject to conditions noted under elixir of May-apple) about five minims of fluid extract of May-apple and three minims of fluid extract of senna. A formula for this preparation was proposed by the *Druggists' Circular*, 1872, containing in substance the foregoing ingredients. The remarks we make regarding elixir of May-apple apply to this compound also, although we have the advantage of the senna in this instance, which yields its medicinal principles to the menstruum composing the elixir.

196. COMPOUND ELIXIR OF MYRRH. (ELIXIR MYRRHÆ COMPOSITUM.)

Extract of savin,..... 1 troyounce.
Tincture of castor,..... 1 pint.
Tincture of myrrh,..... $\frac{1}{2}$ pint.

Digest them together and strain. "This preparation is improved from one described in some former dispensatories under the name of *Elixir Uterinum*."

(New Dispensatory, London, 1770.)

197. ELIXIR OF NUX VOMICA.

Tincture of nux vomica,..... 256 minims.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Acetic acid,..... 60 minims.
Powdered wood charcoal,..... a sufficient quantity.

Triturate the tincture of nux vomica in a capacious mortar with powdered wood charcoal in amount sufficient to form a pasty mixture, then gradually add the simple elixir—which has previously been mixed with the acetic acid—stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents two minims of tincture of nux vomica.

The foregoing is a modification of a formula suggested by Mr. E. J. Davidson in the *American Journal of Pharmacy*, 1878. We use acetic acid to hold the alkaloids in solution should the charcoal be alkaline, and use charcoal since the menstruum is incompatible with both magnesium carbonate and magnesium phosphate.

198. McMUNN'S ELIXIR OF OPIUM.

This preparation has for several years enjoyed quite a reputation, and is still a favorite with many physicians. The original "McMunn's elixir," a proprietary preparation, was a denarcotized solution of opium. In connection with the history of this elixir, we find that Mr. Augustine Duhamel contributed to the *American Journal of Pharmacy*, 1846, as follows:

"A preparation much in vogue at the present time, and known as McMunn's elixir of opium, is supposed to be a solution of meconate of morphine, obtained from a cold infusion of opium, to which wine has been added in sufficient quantity to insure its preservation."

In 1851 Mr. Eugene Dupuy, of New York, in a communication to the same journal, proposed as a substitute for McMunn's elixir an aqueous solution of opium preserved with alcohol. Afterward (1864) the *Medical and Surgical Recorder*, of Philadelphia, published what we have every reason to suppose is the authentic formula. This was found among the effects of the late Dr. J. R. Chilton, who stated that he obtained it from Dr. John B. McMunn, the originator of the elixir. The process may be summarized as follows:

Exhaust gum opium with successive macerations in sulphuric ether. After the final decantation of the ether, boil the opium in water until all odor of sulphuric ether has disappeared, and then strain the solution, permit it to settle, decant the clear liquid, and add rather more than its bulk of alcohol.

It will be observed that the foregoing process produces simply a solution of opium from which the narcotine and opium odor have been removed by means of previous maceration with sulphuric ether, and the officinal (18883) deodorized tincture of opium may be considered a substitute.

199. ELIXIR OF ORANGE.

*Oil of orange, fresh and pure,.....	30 minims.
Simple syrup,.....	8 fluidounces.
Alcohol,.....	4 fluidounces.
Distilled water,.....	4 fluidounces.
Carbonate of magnesium,.....	½ troyounce.

*Pure oil of orange must be used in this preparation. Much of the commercial oil produces an elixir which has the odor and taste of turpentine, and sometimes only of turpentine. We will suggest that pure oil of orange can only be obtained by paying the price at which it can be sold, but it does not follow that all of the high-priced oil is pure.

Triturate the oil of orange in a capacious mortar with the carbonate of magnesium, then gradually add the simple syrup, stirring well, having previously mixed it with the water and one-half the alcohol, and filter it. Lastly, mix the filtrate with the remainder of the alcohol. This has an excellent flavor, and can be used instead of simple elixir, if preferred. Our simple elixir contains more oil than the foregoing, but it is more troublesome to make.

200. ELIXIR OF PANCREAS.

Take six pancreases and chop them into pieces, and macerate three days in a mixture of—

Water,.....	12 pints.
Glycerin,.....	2½ pints.
Hydrochloric acid,.....	4 fluidounces.

Then strain and add two and one-half fluidrachms of oil of orange, glycerin in amount sufficient to produce twenty pints, and then filter.

This formula was announced in 1873, through the *American Journal of Pharmacy*, by Dr. R. V. Mattison, who states that one fluidrachm of the elixir will emulsify one-half of a fluidounce of cod-liver oil.

201. ELIXIR OF PAREIRA BRAVA.

Fluid extract of pareira brava,.2 fluidounces.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of pareira brava in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of pareira brava.

202. ELIXIR OF PAREIRA BRAVA AND BUCHU.

Elixir of buchu,.....8 fluidounces.
Elixir of pareira brava,..... 8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains such an amount of four minims each of fluid extract of buchu and fluid extract of pareira brava as will dissolve in the menstruum.

203. ELIXIR PAREGORICUM. (CAMPHORATED TINCTURE OF OPIUM.)

The formula of the London Pharmacopœia, 1770, was taken from Le Mort, excepting honey, licorice, and potassium carbonate. It is stated in the New Dispensatory, published in London, 1770, that this preparation was originally known as “Elixir Asthmaticum.”

204. PECTORAL ELIXIR OF THE EDINBURGH Pharmacopœia, 1770.

Balsam Tolu,..... 2 troyounces.
Balsam Peru,..... 1 troyounce.
Benzoic acid,..... ½ troyounce.
Saffron,..... ½ troyounce.
Alcohol,..... 32 fluidounces.

Digest in a sand bath for three days, then filter. (It should be made by maceration instead of heat.—L.) The pectoral elixir of modern times is “elixir e succo liquiritæ,” to which the reader is referred.

ELIXIRS CONTAINING PEPSIN.

It has been shown by Prof. Emil Scheffer that pepsin is incompatible with alcohol. By an elaborate series of experiments Prof. Scheffer demonstrated that even the amount of alcohol which exists in sherry wine prevents the wine from dissolving pepsin from the mucous membrane of the pig's stomach (*Journal of Pharmacy*, 1870). In connection with this portion of our subject, we quote from Prof. Scheffer's writings as follows: "After these experiments I do not hesitate to say that the so-called wine of pepsin does not contain any pepsin at all, and that all the medical virtue of it has to be attributed to the wine itself."

In continuance, 1872, the same author shows that solution of ammonio-citrate of bismuth is incompatible with pepsin, and hence he concludes that the benefit derived from the use of elixir of pepsin and bismuth was due to the alcohol or the bismuth salt. Notwithstanding these facts, it is well known that elixirs containing pepsin and bismuth associated are among the most popular. Let us now consider another phase of the subject. If hydrochloric acid is added to solution of ammonio-citrate of bismuth, as is well known, a precipitate immediately results. Here we have an additional incompatible, for hydrochloric acid is usually employed in making solutions of pepsin, and we might be led to argue therefrom that both the pepsin and the bismuth are probably absent from elixir of pepsin and bismuth, and hence that the value of this elixir depends upon the alcohol only. We have been somewhat successful in overcoming the incongruities we have just named by substituting acetic acid for hydrochloric acid in the preparation of the pepsin liquid, thus permitting it to be mixed with the bismuth solution without precipitation of bismuth, and also the apparent solution of pepsin in the presence of ammonio-citrate of bismuth.

(It is by no means certain that such a solution of pepsin is injured, regarding its digestive power, by the substitution of acetic acid for hydrochloric acid. True it is that to dissolve albumen artificially hydrochloric acid is necessary, but the juices in the stomach may render it unnecessary. See elixir of pepsin.)

We use the term "apparent solution of pepsin," for although the pepsin undoubtedly disappears, it does not necessarily follow that it dissolves and remains active pepsin. Perhaps it is so modified as to be devoid of digestive value and still remain dissolved. Upon the other

hand, even if this is the case, it is barely possible that such a pepsin is only paralyzed, and that its vitality will return when it is taken into the stomach. Were it not true that these combinations are demanded by physicians, we might even ignore them altogether.

205. ELIXIR OF PEPSIN.

Pepsin, pure,..... 128 grains.
Simple elixir,..... 16 fluidounces.
Acetic acid,..... 2 fluidrachms.

Mix them together and shake occasionally during a period of not less than twenty-four hours. Do not filter unless absolutely necessary. The acid usually employed to effect the solution of pepsin (hydrochloric acid) is substituted in this case by acetic acid. We do this in order to obtain a simple elixir of pepsin more compatible with certain iron salts and with ammonio-citrate of bismuth. Hydrochloric acid may be necessary in connection with pepsin to effect the artificial solution of coagulated albumen, but we are by no means convinced that it is a necessity when the pepsin is in the stomach. Indeed, the probabilities are that the gastric juice supplies the acid principle, even in very dyspeptic persons, and reports from those who use dry pepsin corroborate the inference.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of saccharated pepsin.

The formula first brought to our notice for elixir of pepsin appeared in the *Druggists' Circular*, 1869. Fresh rennet was employed, with salt, wine, and aromatics. The formula we present contains the proportion of pepsin recommended by the American Pharmaceutical Association, 1873.

206. ELIXIR OF PEPSIN WITH CITRATE OF AMMONIUM AND BISMUTH, AND PHOSPHATE OF QUININE. (ELIXIR OF PEPSIN, BISMUTH, AND QUINIA.)

Elixir of pepsin and ammonio
citrate of bismuth,.....8 fluidounces.
Elixir of phosphate of quinine,..8 fluidounces.

Mix them together, and neutralize very carefully by means of acetic acid or ammonia water.

Each fluidrachm (teaspoonful) of the finished elixir contains one-half grain each of saccharated pepsin, ammonio-citrate of bismuth, and phosphate of quinine. This elixir should be discarded, as it is uncertain, unstable, and made of incompatibles.

207. ELIXIR OF PEPSIN AND PHOSPHATE OF CINCHONIDINE.
(ELIXIR OF PEPSIN AND CINCHONIDIA.)

Elixir of pepsin,..... 8 fluidounces.
Elixir of phosphate of
cinchonidine,..... 8 fluidounces.

Mix them together. If not of acid reaction, add a sufficient amount of acetic acid.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of saccharated pepsin and one-half grain of phosphate of cinchonidine.

208. ELIXIR OF PEPSIN WITH PHOSPHATE OF CINCHONIDINE
AND STRYCHNINE.
(ELIXIR OF PEPSIN, CINCHONIDIA, AND STRYCHNIA.)

Elixir of pepsin and phosphate of
cinchonidine,..... 16 fluidounces.
Strychnine,..... 1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in sufficient amount to effect its solution, and then add the elixir. If not of acid reaction, add a sufficient amount of acetic acid.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of saccharated pepsin, one-half grain of phosphate of quinine, and one-hundredth of a grain of strychnine.

209. ELIXIR OF PEPSIN AND PHOSPHATE OF CINCHONINE.
(ELIXIR OF PEPSIN AND CINCHONIA)

Elixir of pepsin,..... 8 fluidounces.
Elixir of phosphate of
cinchonine,..... 8 fluidounces.

Mix them together. If not of acid reaction, add acetic acid in sufficient amount.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of saccharated pepsin and one-half grain of phosphate of cinchonine.

210. ELIXIR OF PEPSIN WITH PHOSPHATE OF CINCHONINE
AND STRYCHNINE.
(ELIXIR OF PEPSIN, CINCHONIA, AND STRYCHNIA.)

Elixir of pepsin and phosphate of
cinchonine,..... 8 fluidounces.
Strychnine,..... 1½ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and then add the elixir.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of saccharated pepsin, one-half grain of phosphate of cinchonine, and about one-hundredth of a grain of strychnine.

211. ELIXIR OF PEPSIN AND IRON.

The National Formulary prepares this elixir by adding five hundred and twelve minims of citro-chloride of iron to enough elixir of pepsin to make sixteen fluidounces. Each fluidrachm represents about one-half grain of chloride of iron and one grain of pepsin.

212. ELIXIR OF PHOSPHORUS

The National Formulary makes this elixir by mixing three and three-quarter fluidounces of spirit of phosphorus, sixteen minims of oil of star anise, nine fluidounces of alcohol, and aromatic elixir enough to make sixteen fluidounces. The oil of star anise is added to the spirit of phosphorus, then the alcohol, and the mixture is shaken until it forms a clear liquid, after which the aromatic elixir is added in small portions. Agitate after each addition until a clear mixture results. This elixir should be kept in a cool, dry place, in amber vials, and should not be made in large quantities. Each fluidrachm contains one-fiftieth of a grain of phosphorus.

213. ELIXIR OF PEPSIN AND WAFER ASH.

(ELIXIR OF PTELEA AND PEPSIN.)

Fluid extract of ptelea,..... 2 fluidounces.
Elixir of pepsin,..... 16 fluidounces.
Powdered wood charcoal,..... a sufficient quantity.

Triturate the fluid extract of ptelea with powdered wood charcoal in amount sufficient to form a thick, pasty mixture, then gradually add the elixir of pepsin, and filter.

Each fluidrachm of this preparation represents such an amount of seven and one-half grains of the medicinal principles of ptelea as will dissolve in the elixir of pepsin, and two grains of saccharated pepsin. However, as the proper menstruum for extracting these principles from ptelea trifoliata is alcohol of specific gravity 0.820, the elixir is not a representative of the fluid extract of ptelea used in making it. We direct powdered wood charcoal instead of the magnesium carbonate or magnesium phosphate, as the first would neutralize the acid of the elixir of pepsin, while the last would dissolve to a considerable extent.

214. ELIXIR OF PEPSIN AND PHOSPHATE OF QUININE.

(ELIXIR OF PEPSIN AND QUINIA.)

Elixir of pepsin,..... 8 fluidounces.
Elixir of phosphate of quinine,..8 fluidounces.

Mix them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of saccharated pepsin and one-half grain of quinine.

215. ELIXIR OF PEPSIN, PHOSPHATE OF QUININE, AND STRYCHNINE.
(ELIXIR OF PEPSIN, QUINIA, AND STRYCHNIA.)

Elixir of pepsin,..... 8 fluidounces.
Elixir of phosphate of quinine,.8 fluidounces.
Strychnine,..... 1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, then add the elixirs, having previously mixed them together.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of saccharated pepsin, one-half grain of quinine, and one-hundredth of a grain of strychnine.

216. ELIXIR OF PEPSIN, PHOSPHATE OF QUININE, STRYCHNINE,
AND CITRATE OF AMMONIUM AND BISMUTH.
(ELIXIR OF PEPSIN, QUINIA, STRYCHNIA, AND BISMUTH.)

Elixir of phosphate of quinine,.8 fluidounces.
Elixir of pepsin and ammonio-citrate
of bismuth,.....8 fluidounces.
Strychnine,..... 1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine in a mortar with acetic acid in amount sufficient to effect its solution, and then add the elixirs, having previously mixed them together. If the elixir has an acid or an alkaline reaction, cautiously add enough ammonia water or acetic acid, as the case may demand, to render it neutral.

Each fluidrachm (teaspoonful) of the finished elixir contains one-half grain each of saccharated pepsin, quinine, and ammonio-citrate of bismuth, and about one-hundredth of a grain of strychnine. This is an association of incongruities and should be discarded.

217. ELIXIR OF PEPTONE.

Peptone,.....	¼ troyounce.
Sugar,.....	2½ troyounces.
Alcohol,.....	1 fluidounce.
Port wine,.....	4 fluidounces.
Water,.....	2 fluidounces.

Dissolve the peptone in the water, then add the wine and sugar, and after the sugar has dissolved add the alcohol.

(A. PETTIT)

218. ELIXIR OF PHOSPHORUS.

Phosphorus,.....	1¼ grains.
Ether,.....	3 fluidrachms.
Alcohol,.....	1¼ fluidounces.
Essence of peppermint,.....	1 fluidrachm.
Glycerin,.....	2 fluidounces.
Simple elixir,.....	12 fluidounces.

Weigh the phosphorus carefully in a glass-stoppered vial, and then add the ether; agitate until the phosphorus dissolves, then add the alcohol and the essence of peppermint; now slowly add the glycerin, stirring well, and lastly the simple elixir.

Each fluidrachm (teaspoonful) of the finished elixir contains the one-hundredth of a grain of phosphorus. Elixir of phosphorus is liable to become milky, owing to the fact that phosphorus is insoluble in water. This formula is essentially that of Mr. J. G. Luhn, as published in the *American Journal of Pharmacy*, 1874.

219. COMPOUND ELIXIR OF PHOSPHORUS.

(ELIXIR PHOSPHORUS AND NUX VOMICA.)

Elixir of phosphorus,.....	16 fluidounces.
Tincture of nux vomica,.....	.384 minims.

Gradually add the tincture of nux vomica to the elixir of phosphorus, stirring well during the process.

The elixir is also that of Mr. J. G. Luhn. Each fluid drachm contains one-hundredth of a grain of phosphorus and two minims of tincture of nux vomica.

220. ELIXIR OF PHOSPHORUS WITH QUININE AND STRYCHNINE.

Elixir of phosphorus,.....8 fluidounces.
Elixir of phosphate of quinine,,8 fluidounces.
Strychnine,..... 1¼ grains.
Acetic acid,..... a sufficient quantity.

Triturate the strychnine with acetic acid in sufficient amount to effect its solution, and then add the elixirs.

Each fluidrachm (teaspoonful) of the finished elixir contains one-half grain of quinine, one-hundredth of a grain of strychnine, and the two-hundredth part of a grain of phosphorus. This formula in substance was presented at the meeting of the Pennsylvania Pharmaceutical Association, 1881.

221. ELIXIR OF ACETATE OF POTASSIUM.

Acetate of potassium,..... 640 grains.
Simple elixir,..... 15½ fluidounces.

Dissolve the acetate of potassium in the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains five grains of acetate of potassium.

In former editions of our work each fluidrachm contained four grains of acetate of potassium. We change the proportion in this edition of our work to conform to the strength established by the National Formulary.

222. ELIXIR OF ARSENITE OF POTASSIUM.

Solution of arsenite of potassium
(Fowler's solution),.....256 minims.
Simple elixir,..... a sufficient quantity.

Mix the solution of arsenite of potassium with enough simple elixir to produce sixteen fluidounces.

Each fluidrachm (teaspoonful) of the finished elixir contains two minims of solution of arsenite of potassium. Dose, one fluidrachm (teaspoonful), which may be cautiously increased to twice that amount.

223. ELIXIR OF ACETATE OF POTASSIUM AND BUCHU.

Acetate of potassium,..... 640 grains.

Elixir of buchu,.....a sufficient amount.

Dissolve the acetate of potassium in enough elixir of buchu to produce sixteen fluidounces.

Each fluidrachm represents five grains of acetate of potassium.

224. ELIXIR OF BUCHU, JUNIPER, AND ACETATE OF POTASSIUM.

This preparation is made by parties who have advertised and created a demand for it in certain sections of our country, and to whom the formula rightfully belongs. Through courtesy to these gentlemen we do not give a process for making it.

225. ELIXIR OF BROMIDE OF POTASSIUM

Bromide of potassium,..... 1280 grains.

Simple elixir,.....a sufficient quantity.

Dissolve the bromide of potassium in twelve fluid ounces of simple elixir, and add to this solution enough simple elixir to bring the whole to the measure of sixteen fluidounces

Each teaspoonful of the finished elixir represents ten grains of potassium bromide, and is the same in strength as that adopted by the American Pharmaceutical Association, 1875.

226. ELIXIR OF IODIDE OF POTASSIUM

Iodide of potassium,..... 256 grains.
Simple elixir,..... a sufficient quantity.

Dissolve the iodide of potassium in enough simple elixir to produce sixteen fluidounces, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of iodide of potassium.

227. ELIXIR PROPRIETATIS.

(PARACELSUS' ELIXIR)

Myrrh,..... 3 troyounces.
Aloes,..... 3 troyounces.
Saffron,..... 3 troyounces.
Alcohol,..... 2 pints.

Reduce the drugs to a coarse powder, and macerate in the alcohol fourteen days, stirring the mixture thoroughly each day, then filter.

(Supplement to London Pharmacopœia, 1821.)

228. ELIXIR PROPRIETATIS CUM ACIDO.

To elixir proprietatis add of aromatic sulphuric acid an amount sufficient to render it fairly acid. The Supplement to the London Pharmacopœia, 1821, directs what in these days would be considered an unreasonable amount of acid. (See also our formula on page 8, which is Boerhaave's original formula for making "Elixir Proprietatis with Distilled Vinegar.")

229. RADCLIFF'S PURGING ELIXIR.

Jalap,.....	7½ troyounces.
Cape aloes,.....	5 troyounces.
Gentian,.....	2 troyounces.
Canella alba,.....	1½ troyounces.
Orange peel, bitter,.....	. 1 troyounce.
Grains of paradise,.....	3 drachms.
Scammony,.....	1½ ounces.
Senna,.....	1½ ounces.
Diluted alcohol,.....	16 pints

Reduce the drugs to a coarse powder, mix them with the diluted alcohol, and macerate fourteen days, stirring the mixture thoroughly each day, then filter.

(Supplement to London Pharmacopœia, 1821.)

230. COMPOUND ELIXIR OF RASPBERRY.

Fluid extract of rhatany,.....	1 fluidounce.
Fluid extract of cinnamon,.....	¼ fluidounce.
Fluid extract of cloves,.....	¼ fluidounce.
Fluid extract of allspice,.....	¼ fluidounce.
Fluid extract of nutmeg,.....	¼ fluidounce.
Raspberry juice,.....	8 fluidounces.
Carbonate of magnesium,	a sufficient quantity.

Mix the fluid extracts and triturate the mixture in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir—previously mixed with the raspberry juice—stirring well, and filter. Lastly, mix the filtrate with the alcohol.

The proportions of this elixir, essentially those we have given in our formula, were announced in the *Druggists' Circular*, 1872.

231. RED ELIXIR. (RED SIMPLE ELIXIR.)

Simple elixir, or elixir of orange, any convenient quantity.

Color it with solution of carmine until of a distinct red color. This elixir is incompatible with acids and certain metallic salts, which precipitate the coloring matter. Red elixir is used as a flavor.

232. COMPOUND ELIXIR OF RHAMNUS FRANGULA.

Fluid extract of rhamnus

- frangula,..... 2 fluidounces.
- Fluid extract of rhubarb,.....2 fluidounces.
- Simple elixir,..... 14 fluidounces.
- Alcohol,..... $\frac{1}{2}$ fluidounce.
- Carbonate of magnesium,..... a sufficient quantity.

Mix the fluid extracts, and evaporate them, at a temperature not exceeding 150° F., until reduced to two fluid ounces. Triturate this in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents seven and one-half minims each of fluid extracts of rhubarb and rhamnus frangula.

233. ELIXIR OF RHAMNUS PURSHIANA.

(ELIXIR OF CASCARA SAGRADA)

Fluid extract of rhamnus

- purshiana,..... 4 fluidounces.
- Simple elixir,..... 14 fluidounces.
- Alcohol,..... $\frac{1}{2}$ fluidounce.
- Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of rhamnus purshiana in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir represents fifteen minims of fluid extract of rhamnus purshiana.

In former editions of our publication each fluidrachm of the elixir represented seven and one-half grains of rhamnus purshiana. We have changed the proportion to accord with the strength established by the National Formulary.

234. COMPOUND ELIXIR OF RHAMNUS PURSHIANA.

Fluid extract of rhamnus purshiana,.....2 fluidounces.
Tincture of cardamom,..... 30 fluidounces.
Ammoniacal glycyrrhizin,..... 30 grains.
Simple elixir,..... 16 fluidounces.
Alcohol,..... ½ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the mixed fluid extracts in a capacious mortar with ammoniacal glycyrrhizin and carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol, and dissolve in this the citrate of strychnine, and add the tincture of cardamom.

Each fluidrachm of the finished elixir represents about seven and one-half minims of fluid extract of rhamnus purshiana.

235. ELIXIR ROBORANS WHYTII.

Yellow cinchona bark,..... 3 troyounces.
Gentian,..... 1 troyounce.
Bitter orange peel,..... 1 troyounce.
Alcohol,..... 16 fluidounces
Cinnamon water,..... 8 fluidounces.

Reduce the drugs to a coarse powder and prepare a tincture by percolation, using a mixture of the alcohol and cinnamon water. This preparation is a modern tincture, although it was once classed with elixirs. The German Pharmacopœia (1872) recognizes, under the above name, the compound tincture of cinchona.

236. ELIXIR OF RHUBARB.

Fluid extract of rhubarb,.....2 fluidounces.
Simple elixir,..... 14 fluidounces.
Carbonate of magnesium, a sufficient quantity.

Triturate the fluid extract of rhubarb in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

Each fluidrachm of the finished elixir represents seven and one-half minims of fluid extract of rhubarb.

237. COMPOUND ELIXIR OF RHUBARB.

Rhubarb,..... 20 troyounces.
Cloves,..... 8 troyounces.
Saffron,..... 8 troyounces.
Nutmeg,..... 20 troyounces.
Ether,..... 10 fluidounces.
Sherry wine,..... 200 fluidounces.
Diluted alcohol,..... 20 fluidounces.

Mix the drugs and reduce them to a coarse powder, and macerate this in the mixed alcohol and wine for fourteen days, stirring the mixture thoroughly each day; then filter, and add the ether.

This elixir is recommended as a vehicle for disguising the taste of castor oil, and was introduced by Mr. Bidone Carlo, who states that one part of this elixir will remove the taste and odor from three parts of castor oil. It was named "elixir of rhubarb," but to avoid confusion with the regular and simple elixir of rhubarb we have added the word compound.

(See New Remedies, 1880.)

238. ELIXIR OF RHUBARB AND COLUMBO.

Elixir of rhubarb,.....5 fluidounces.
Elixir of columbo,..... 5 fluidounces.
Simple elixir,6 fluidounces.

Mix them together.

Each fluidrachm of the finished elixir represents about two minims each of fluid extract of rhubarb and fluid extract of columbo.

239. ELIXIR OF RHUBARB AND MAGNESIA.
(ELIXIR OF RHUBARB AND MAGNESIUM SULPHATE.)

Fluid extract of rhubarb,.....4 fluidounces.
Sulphate of magnesium,..... . 1024 grains.
Simple elixir,..... 32 fluidounces.
Carbonate of magnesium, . a sufficient quantity.

Triturate the fluid extract of rhubarb with carbonate of magnesium until of a creamy consistence, then gradually add the simple elixir, in which the sulphate of magnesium has been previously dissolved; permit the mixture to remain for a few hours in a closed vessel, then filter.

Each fluidrachm contains seven and one half minims of fluid extract of rhubarb and eight grains of sulphate of magnesium.

Under the name elixir of rhubarb and magnesia this elixir was noticed in *New Remedies*, 1877. Among the formulæ introduced by Mr. G. W. Gardner to the American Pharmaceutical Association at its meeting in Saratoga was an "elixir of rhubarb and magnesium acetate."

240. ELIXIR OF SALICIN.

Salicin,..... 256 grains.
Simple elixir,..... 12 fluidounces.
Distilled water,..... 4 fluidounces.

Boil the water and dissolve in it the salicin, and mix this solution with the simple elixir. Filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of salicin.

241. SACRED.ELIXIR.

(ELIXIR SACRUM. TINCTURE RHEI ET ALOES.—Ed. Pharm., 1770.)

Rhubarb,.....5 drachms.
Aloes,.....3 drachms.
Cardamom,.....2 drachms.
Brandy,.....16 fluidounces.

Mix the drugs and reduce them to a coarse powder, and macerate this in the brandy for fourteen days, stirring the mixture thoroughly each day, then filter.

(Edinburgh Pharmacopoeia, 1770.)

242. ELIXIR OF SALICYLIC ACID.

Salicylic acid,.....128 grains.
Powdered borax,.....128 grains.
Simple elixir,.....16 fluidounces.

Triturate the salicylic acid and powdered borax together, add the simple elixir, and when the powders are dissolved filter the liquid. Each fluidrachm (teaspoonful) of the finished elixir contains one grain of salicylic acid.

In March, 1881, Dr. Wolff presented a formula for making this elixir to the Philadelphia College of Pharmacy, using salicylic acid, alcohol, and simple elixir. In our hands it failed, the salicylic acid crystallizing as soon as the simple elixir was added to the alcoholic solution. We have met with little success when we have endeavored to make an elixir of this acid without using some substance, such as borax, to act as a solvent. Of course, bicarbonate of sodium is not admissible, or other alkaline carbonate, or an alkali, for such will form salts of salicylic acid.

243. ELIXIR OF SCAMMONY.

Scammony,.....2 drachms.
Diluted alcohol,.....8 fluidounces.

Heat and set fire to the spirit, and add—

Sugar,..... 4 troyounces.

When it has dissolved, extinguish the flame and add—

Syrup of violets,.....2 fluidounces.

(GUIBOURT.)

244. ELIXIR SALUTIS.

(ELIXIR OF HEALTH. (COMPOUND TINCTURE OF SENNA,)

Senna,..... 2 troyounces.

Jalap,..... 1 troyounce.

Coriander,..... $\frac{1}{2}$ troyounce.

Diluted alcohol,..... $3\frac{1}{2}$ pints.

Reduce the drugs to a coarse powder, and macerate this in the diluted alcohol for fourteen days, stirring the mixture thoroughly each day, then filter. (Edinburgh New Dispensatory, 1818.)

245. ELIXIR OF SENNA.

Fluid extract of senna,..... 2 fluidounces

Simple elixir,..... 14 fluidounces

Alcohol,..... $\frac{1}{2}$ fluidounce.

Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of senna in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir contains the medicinal principles of seven and one-half minims of fluid extract of senna.

246. COMPOUND ELIXIR OF SENNA.

Fluid extract of senna,..... 4 fluidounces.

Fluid extract of taraxacum,..... 1 fluidounce.

Compound tincture of cardamom, $\frac{1}{2}$ fluidounce.

Simple elixir,..... 10 fluidounces.

Carbonate of magnesium,..... a sufficient quantity.

Mix the fluid extracts and tincture, and triturate with carbonate of magnesium until of a creamy consistence, then gradually add the simple elixir, and filter.

Each fluidrachm contains seven and one-half minims of fluid extract of senna and about four minims of fluid extract of taraxacum.

(See American Practitioner, 1875.)

247. SIMPLE: ELIXIR.

(WHITE ELIXIR.)

Oil of sweet orange,.....	1 fluidrachm.
Oil of lemon,.....	½ fluidrachm.
Distilled water,.....	41 fluidounces.
Alcohol,.....	13 fluidounces.
Sugar,.....	32 troyounces.
Carbonate of magnesium,.....	one two-ounce block.

Dissolve the sugar, without heat, in the distilled water, and then mix with this solution nine fluidounces of alcohol. Dissolve the oils in three fluidounces of alcohol, and slowly add the liquid, stirring constantly, to the solution of sugar. Then crush the block of carbonate of magnesium between the hands, permitting the powder to gradually scatter itself over the surface of the liquid and settle to the bottom of the vessel. After standing half an hour, stir it well and transfer the mixture to a well-closed vessel, and permit it to remain for six or eight hours, stirring it occasionally, and then filter it through a double filter paper, returning the first portion and until it passes clear, and then filter it. Lastly, add the remaining fluidounce of alcohol.

In reviewing the above formula it may seem to the reader that we are unreasonably precise regarding certain details. If necessary, the operator may hurry the operation, but it will be found advantageous in the long run to follow our directions. The suggestion to crush the magnesium carbonate between the hands, instead of grating it through a sieve or powdering it in a mortar, is made because we find that process advantageous. Permitting it to fall over the surface of the liquid facilitates the absorption of undissolved oils which may be present, especially if the oils of orange and lemon are sophisticated.

Simple elixir, as made according to the above formula, is very nicely flavored and acceptable. If the operator desires, he can substitute the simple elixir of the Pharmacopoeia or our elixir of orange.

248. ELIXIR OF ARSENITE OF SODIUM.

(ELIXIR OF ARSENIC.)

Solution of arsenite of sodium,.....256 minims.

Simple elixir,.....a sufficient quantity.

Mix the solution of arsenite of sodium with enough simple elixir to produce sixteen fluidounces.

Each fluidrachm (teaspoonful) of the finished elixir contains two minims of solution of arsenite of sodium.

The dose is one fluidrachm (teaspoonful), which may be very cautiously increased if desirable. Use with care.

249. ELIXIR OF BROMIDE OF SODIUM.

Bromide of sodium,..... 1280 grains.

Simple elixir,..... 16 fluidounces.

Dissolve the bromide of sodium in the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains ten grains of bromide of sodium.

In former editions of our publication the strength was two grains of bromide of sodium to the fluidrachm. We conform in this edition to the strength established by the National Formulary.

250. ELIXIR OF HYPOPHOSPHITE OF SODIUM.

Hypophosphite of sodium,..... 256 grains.

Acetic acid,..... 20 grains

Simple elixir,.....enough to make 16 fluidounces.

Dissolve the hypophosphites of sodium and the citric acid in the simple elixir by agitation. Each fluidrachm contains two grains of hypophosphite of sodium.

251. ELIXIR OF IODIDE OF SODIUM.

Iodide of sodium,..... 256 grains.
Simple elixir,..... 16 fluidounces.

Dissolve the iodide of sodium in the simple elixir, and filter if necessary.

Each fluidrachm (teaspoonful) of the finished elixir contains two grains of iodide of sodium.

252. ELIXIR OF SALICYLATE OF SODIUM.

Salicylate of sodium,..... 640 grains.
Simple elixir,..... enough to make 16 fluidounces.

Dissolve the salicylate of sodium in the simple elixir by agitation, and filter if necessary. Each fluidrachm contains five grains of salicylate of sodium.

253 . SQUIRE'S ELIXIR.

Opium,.....4 troyounces.
Camphor,..... .1 troyounce.
Cochineal,..... .1 troyounce.
Oil fennel seed,..... 2 fluidrachms.
Tincture serpentaria,..... 16 fluidounces.
Spirit anise,..... 16 pints.
Water,..... 2 pints

Reduce the drugs to a coarse powder. Having previously dissolved the oil of fennel seed in the spirit of anise and mixed this with the water, add the powdered drugs and the tincture of serpentaria. Macerate fourteen days, stirring the mixture thoroughly each day, then filter.

(Supplement to the London Pharmacopœia, 1821.)

The original formula in the above work contains six ounces of " aurum musivum " (sulphuret of tin), which we omit.

254. ST. HUBERT'S HUNTERS' ELIXIR.
(ELIXIR DE ST. HUBERT POUR LES CHASSEURS.)

Carbolic acid,..... 1 troyounce.
Alcohol,..... 25 troyounces.

Mix them together.

Each fluidrachm contains about two and one-fourth minims of carbolic acid.

(CASSELLMAN, from New Remedies, 1878.)

255. ELIXIR OF STILLINGIA.

Fluid extract of stillingia,..... 2 fluidounces.
Simple elixir,..... 14 fluidounce.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of stillingia in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter.

256. COMPOUND ELIXIR OF STILLINGIA.

Compound fluid extract of stil
lingia,..... 4 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the compound fluid extract of stillingia with carbonate of magnesium in sufficient amount to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm (teaspoonful) of the finished elixir contains fifteen minims of compound fluid extract of stillingia.

257. STOMACHIC ELIXIR.

(ELIXIR STOMACHIC)

Gentian,..... 2 troyounces.
Curaçao orange peel,..... 1 troyounce.
Virginia snakeroot,..... ½ troyounce.
Cochineal,..... 30 grains.
Brandy,..... 2 pints.

Mix the drugs and reduce them to a coarse powder, and macerate this in the brandy for fourteen days, stirring the mixture thoroughly each day, then filter.

258. STOUGHTON'S ELIXIR

Gentian,..... 2½ troyounces.
Serpentaria,..... 1 troyounce.
Bitter orange peel,..... 1½ troyounces.
Calamus,..... ¼ troyounces.
Diluted alcohol,..... 6 pints.

Reduce the drugs to a coarse powder, and macerate this in the diluted alcohol for fourteen days, stirring the mixture thoroughly each day, then filter.

(Supplement to the London Pharmacopœia.)

269. ELIXIR OF VALERIANATE OF STRYCHNINE.

Strychnine,..... 1½ grains.
Simple elixir,..... 16 fluidounces.
Valerianic acid,..... a sufficient quantity.

Powder the strychnine in a mortar and add two fluid ounces of simple elixir, and then enough valerianic acid to effect the solution of the strychnine. Lastly, add the remainder of the simple elixir.

The formula is essentially that presented by Prof. C. Lewis Diehl to the Louisville College of Pharmacy, excepting that we have made the proportion of strychnine conform to that established by the National Formulary.

Each fluidrachm (teaspoonful) of the finished elixir contains one hundredth of a grain of strychnine.

260. COMPOUND ELIXIR OF SUMBUL.
(COMPOUND ELIXIR OF MUSK-ROOT.)

Fluid extract of sumbul,..... 1 fluidounce.
Elixir of valerianate of ammonium, 9 fluidounces.
Simple elixir,..... 4 fluidounces.
Alcohol,..... 2 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of sumbul in a Wedgewood or porcelain mortar with enough magnesium carbonate to bring it to a creamy consistence, then gradually add the elixir of valerianate of ammonium and simple elixir, and filter; mix the alcohol with the filtrate.

(New Remedies, 1880.)

If this elixir is prepared as directed in the works where the writer has observed it, by simply mixing the liquid ingredients, an unsightly mixture results, providing the fluidextract of sumbul was made with alcohol and was not an aqueous infusion. Hence the directions we have given are for the purpose of producing a presentable liquid.

Each fluidrachm represents about four minims of fluid extract of sumbul and thirty-six minims of elixir of valerianate of ammonium.

261. ELIXIR OF TAR

Pine tar,..... 5 troyounces.
Sugar,..... 15 troyounces.
Diluted alcohol,..... 100 fluidounces.

Triturate the tar and sugar together, then with the alcohol, and filter.

This was suggested by Magnes Lahens in the *Italian Chemical Gazette*. In reality, it is solution of tar in diluted alcohol, and does not conform to the modern American elixir.

262. ELIXIR OF TAR COMPOUND.

Wine of tar,.....16 fluidounces.
Syrup of wild cherry,..... 4 fluidounces.
Syrup of Tolu,..... 4 fluidounces.
Methylic alcohol,..... 1 fluidounce.
Sulphate of morphine,..... 4 grains.

Dissolve the sulphate of morphine in the wine of tar, and then add the other ingredients.

(Non-official formulæ in local use, compiled and published by the joint committee of the Medical and Pharmaceutical Associations of the District of Columbia.)

263. ELIXIR OF THUJA OCCIDENTALIS.

(ELIXIR OF ARBOR VITÆ.)

Fluid extract of thuja occidentalis, 2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... 2 fluidounces.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of thuja with carbonate of magnesium until of a creamy consistence, then gradually add the simple elixir, filter, and add the alcohol. A formula for elixir of thuja occidentalis was proposed by Mr. W. H. Laws in *New Remedies*, 1877. This is one of the class of substances which, in our opinion, cannot be satisfactorily exhausted by means of an aqueous menstruum. The characteristic principles of thuja are oily and resinous, and these are largely precipitated by any aqueous liquid.

Each fluidrachm of this elixir represents, less the substances precipitated by the simple elixir, seven and one-half minims of fluid extract of thuja occidentalis.

264. ELIXIR OF VALERIAN.

Fluid extract of valerian,.....2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of valerian in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir will contain of seven and one-half minims of fluid extract of valerian such an amount as the menstruum is capable of dissolving.

265. MYNFICHT'S ELIXIR OF VITRIOL.

This ancient elixir has been modified, and deservedly, time and again, until, excepting the sulphuric acid, it scarcely resembles its former self. It was made by the London and Edinburgh Pharmacopœias, preceding 1770, as follows:

Cinnamon,	.....3 drachms.
Ginger,	.....3 drachms.
Cloves,	.....3 drachms.
Calamus,	.....1 troyounce.
Galanga,	.....1½ troyounce.
Sage,	.....½ troyounce.
Peppermint,	.....½ troyounce.
Cubeb,	.....2 drachms.
Nutmeg,	.....2 drachms.
Aloes,	.....1 drachm
Citron peel,	.....1 drachm

Reduce these ingredients to a powder, to which add of—

Sugar candy,	.....3 troyounces.
Alcohol,	.....1½ pints.
Oil of vitriol,	.....1 pint.

Digest them together for twenty days, and filter the tincture for use.

The Edinburgh Pharmacopœia, 1770, improves upon this process, modifying it until the product resembles our former aromatic sulphuric acid (elixir vitriol), U. S. P., the proportion of sulphuric acid being reduced very considerably. Those who make “elixir of vitriol” at

the present time will find in our Pharmacopœia of 1882 a process which, in our opinion, is very much superior to any heretofore suggested, and this old formula is simply a curiosity.

266. SWEET ELIXIR OF VITRIOL.
(ELIXIR VITRIOLI DULCE.)

*Aromatic tincture,..... 1 pint.

**Dulcified spirit of vitriol,..... 8 troyounces

Mix them together.

(New Dispensatory, London, and London Pharmacopœia, 1770.)

* AROMATIC TINCTURE.—

Cinnamon,..... 6 drachms.

Cardamom seeds,..... 3 drachms.

Long pepper,..... 2 drachms.

Ginger,..... 2 drachms.

Diluted alcohol,..... 2 pints.

Digest without heat, and then strain.—London Pharmacopœia, 1770.

**DULCIFIED SPIRIT OF VITRIOL.—This was made by distilling a mixture of sulphuric acid and alcohol. Its substitute now is Hoffmann's Anodyne, which even at that day the elixir was designed to imitate. We quote: "It is not essentially different from the celebrated anodyne liquor of Hoffmann."—*New Dispensatory*, 1770.

267. VIGANI'S VOLATILE ELIXIR OF VITRIOL.

Dulcified spirit of vitriol,..... 32 troyounces.

Oil of peppermint,..... ½ troyounce.

Oil of lemon,..... 2 fluidrachms.

Oil of nutmeg,..... 1 fluidrachm.

Gradually drop the oils into the spirit and mix the whole well together.

This preparation is a simplification of Vigani's complex and quaint formula, and was accepted as a substitute by the Edinburgh Pharmacopœia. Of it the *New Dispensatory*, London, 1770, remarks: "A medicine of this kind was formerly in great esteem under the title of *Vigani's Volatile Elixir of Vitriol*, the composition of which was first communicated to the public in the *Pharmacopœia Reformata*."

268. ELIXIR OF WAHOO.

Fluid extract of wahoo,.....2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of wahoo with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

Each fluidrachm of the finished elixir will contain the medicinal principles of such an amount of seven and one half minims of fluid extract of wahoo as can be retained in solution by the menstruum.

269. ELIXIR OF YERBA SANTA.

Fluid extract of yerba santa,.....2 fluidounces.
Simple elixir,..... 14 fluidounces.
Alcohol,..... $\frac{1}{2}$ fluidounce.
Carbonate of magnesium,..... a sufficient quantity.

Triturate the fluid extract of yerba santa in a capacious mortar with carbonate of magnesium in amount sufficient to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. Lastly, mix the filtrate with the alcohol.

This elixir has been recommended as a vehicle for administering quinine, and is said to disguise its bitterness. A process was devised by Mr. Jas. S. McCleary whereby aromatics were added, and which we give in substance under compound elixir of yerba santa. Yerba santa contains a peculiar sweet astringent principle which may precipitate the quinine, thus rendering it insoluble. Care should be taken that the mixture be not filtered after the addition of the quinine.

270. COMPOUND ELIXIR OF YERBA SANTA.

Fluid extract of yerba santa,.....2 fluidounces.
Fluid extract of sweet orange peel, ½ fluidounce.
Fluid extract of cinnamon,.....½ fluidounce.
Fluid extract of cloves,.....¼ fluidounce.
Simple elixir,..... 14 fluidounces.
Red saunders,..... 10 grains.
Carbonate of magnesium, . a sufficient quantity.

Mix the fluid extracts, add the red saunders, and triturate in a capacious mortar with sufficient carbonate of magnesium to form a creamy mixture, then gradually add the simple elixir, stirring well, and filter. This preparation is used for disguising the taste of quinine. (See our remarks under elixir of yerba santa.)

271. ELIXIR OF VALERIANATE OF ZINC.

Valerianate of zinc,..... 128 grains.
Distilled water,..... 6 fluidounces.
Simple elixir,..... 10 fluidounces.

Triturate the valerianate of zinc with the water, and then add the simple elixir. When solution of the salt results filter the liquid. Should the valerianate of zinc refuse to dissolve, cautiously drop in a little hydrochloric acid, care being taken that only enough to effect its solution is added.

Each fluidrachm (teaspoonful) of the finished elixir contains one grain of valerianate of zinc.

In former editions of our publication the strength was one-half grain of valerianate of zinc in each fluidrachm. We change in this edition to one grain in order to conform to the strength established by the National Formulary.

PART SECOND.

**FLAVORING EXTRACTS, ESSENCES,
FLAVORED SYRUPS,
COLORING LIQUIDS,
AND OTHER
SODA-WATER APPLIANCES.**

INTRODUCTION.

Apprenticed in 1863 to W. J. M. Gordon & Brother, pharmacists, of Cincinnati, a goodly share of my time for a considerable period was devoted to the care of the soda fountain. As part of my duties, when I had advanced sufficiently, it devolved upon me to make the syrups and "charge the fountain"; and those who know Mr. Gordon recognize the fact that strict attention to business was a necessity with an apprentice in his charge. Neither expense nor pains were to be spared in details connected with the manufacture of his syrups, and neither excuse nor apology would prevent a reprimand when the boy was unlucky enough to need one. Necessity demanded, therefore, that as "soda boy" I should attend strictly to business; and, as I recall those days, I earnestly and heartily thank Mr. Gordon for his good judgment in demanding of me what I considered at that time unnecessary exactitude in such little matters as attention to details of the soda fountain. This discipline extended and continued, step by step, until I reached and stood behind the prescription counter; and now in formulating this little monograph, as the formulæ recorded herein come successively to my mind, I seem to live over again those early days of "soda-water" apprenticeship.

Since that time I have continuously contributed to others formulæ learned in those days and thereafter, both for making flavoring extracts and soda syrups, and have sought the experiences of others, but, so far as I can remember, this is the first appearance in print of any of the formulæ. I can say to the reader, therefore, that many of the formulæ of this work are such as were used successfully years ago and are now prized in numbers of stores; some of them came into my possession during my apprenticeship, others I have formulated in after-years, and many have been given me by recent acquaintances and friends of the profession—for I have not been actively engaged as a dispenser for some years. Necessarily, however, there is a general similarity in formulæ of this description.

I may add that, when it became evident that this work was to be written, only a few days were at my command, and I had no opportunity to consult current literature on the subject. The remarks I make and the formulæ embraced herein are dictated to a stenographer, being such as are part of my laboratory processes or come to memory spontaneously; and yet, since a collection of such formulæ necessarily covers an experience of considerable time, their several values may be greater than though I should at tempt to collate from the printed work of others.

J. U. LLOYD.CINCINNATI, November 30th, 1891.

SODA-WATER APPLIANCES.

At a moderately distant day only, in the past, a good complement of soda syrups could be found in a dozen decanter-like bottles arranged beneath the counter. Now such a method of supplying syrups to a public would be viewed as a curiosity. Then a silver-plated urn as a fountain solicited not a little admiration; now a fortune is often invested in rare marbles, beautifully ornamented that for tastiness, richness of design, and elaborate finish can rarely be surpassed by costly furniture in the mansions of those who have little to do but lavish their wealth on fine furniture. It may be safely asserted, we think, that in no direction connected with pharmacy has there been a greater degree of progress than in the elaboration of the soda-water fountain, as shown by its evolution from the simple nozzle and stopcock of former years to the magnificent designs of the present. It seemed as though manufacturers each year had certainly reached perfection, and yet each season witnessed the appearance of new designs and conveniences formerly unknown.

Some of us have ever considered such investments to be unnecessary; some of us still believe such adjuncts to be in excusable innovations on the apothecary shop; and yet the fact confronts us that those who strive to please the eye and the taste of the public by such modern conveniences as are embraced in rich fountains and pleasant surroundings, thrive better, as a rule, than others who adhere to cold, bare walls and the scant fixture accompaniments of former years.

The manufacture of soda fountains has evolved itself into a great industry. Manufacturers are amply able to suit the taste of any purchaser, and suggestions from our selves or other outsiders concerning styles and designs are superfluous. The manufacturers can help the purchaser to select to the best advantage, and they have a ripe experience in this direction that enables them to say just what style and design promises to be most appropriate in each locality.

Of course business judgment is necessary to determine the possibilities of returns from such investments, and there are localities in which expenditures of this description cannot prove remunerative; and yet, in our opinion, it is conclusively shown that under favorable conditions a richly designed fountain and savory surroundings bring business to the store and largely add to the prosperity of its owner. The medicine trade only, including the prescription business, even in our large cities, is now seldom sufficient to enable an apothecary to pay the rent of central or prominent locations, and if the druggist proposes to succeed he must, however distasteful it may be, grasp the present and let go of the past.

FLAVORING EXTRACTS AND ESSENCES.

FLAVORING EXTRACTS.

The pharmacist is expected to make these preparations both for his own use and to meet a trade demand, and the artful blending of ethers and flavors in the form of pleasant soda-water syrups often induces a good business and is directly remunerative. Many pharmacists find the "soda water" trade to be an aid also to business professionally, introducing patrons and furthering an acquaintance that results in both pleasant social and monetary returns. In these days of close competition and shrewd business management, it behooves the apothecary to exert himself in every legitimate way to retain his business, and in many instances the addition of these side issues is a matter of self-existence, not of choice.

While all must admit that the undue prominence of a counter for dispensing "beverages" is not an ideal of the apothecary of the old school, and is distasteful to many who do not at present feel the business necessity of such a feature, we must also admit that the modern idea of a drug store is very different from that of the past. The making of pills, powders, plasters, and many other pharmaceutical preparations and compounds has passed largely into the hands of manufacturers. The former profits on proprietary preparations and perfumes have disappeared in the rivalries of dry-goods houses, grocers, and "cutters," who make leaders of such "hand-me-downs" and sell them at cost. These and other conditions that now confront the apothecary make it necessary that he should often deviate from former methods, if he expects to thrive in the face of modern competition. Attention, therefore, to such subjects as the making of flavors, both for sale and for shop use, has come to be a part of the duties of most pharmacists. It is believed that the following pages will give information enough concerning the making of flavors and syrups to enable an inexperienced person to satisfactorily conduct a soda stand.

FRUIT ESSENCES.

We have included among our flavoring extracts such substances as are usually called for, as flavors, at the soda counter. Some of them are also sometimes known as essences, and as examples thereof we may name raspberry, strawberry, and pineapple. We do not feel that these artificial flavors merit a separate classification, although perhaps the term essence may be more appropriately applied to such as are compounded of ethers and volatile oils than the term extract. Various mixtures of ethers are made by experts, and denominated by such fanciful titles as essence or extract of pear, plum, quince, currant, etc., and are to be used as flavors in making syrups. We believe, however, that since the introduction of the popular commercial fruit juices these artificial flavors are being displaced in favor of the latter. In our opinion the resemblance of many of them to fruits of the names under which they appear is highly imaginary, but as they are used generally when the fruit is out of season, and by a class of persons neither disposed nor qualified to be critical, there seems to be no complaint.

We will add that these essences may be purchased in the general drug market from dealers in essential oils, and those who propose to carry a full line of rare syrups can obtain these rare fruit flavors with less trouble than they can the ethers that are used in compounding them, and at as low a price as they can buy the ethers and mix them together.

S-1. FLAVORING EXTRACT OF ALLSPICE.

Oil of allspice,..... 2 fluidrachms.

Freshly powdered allspice,..... 2 ounces.

*Alcohol,..... a sufficient amount.

Rub the oil with the powdered allspice and pack the mixture in a percolator prepared for percolation. Cover with alcohol (using about twenty fluidounces), and when the percolate appears close the exit of the percolator and macerate for a period of twenty-four hours; then percolate slowly until one pint of percolate is obtained. The strength may be increased or diminished to suit the taste of the

operator, the quality desired governing in this direction.

*Much commercial alcohol is contaminated with fusel oil and other volatile impurities to such an extent as to impair the flavor of syrups and flavoring extracts. Whenever, with some exceptions, alcohol is directed to be used in this work, the operator will find it best to employ deodorized alcohol.

In some cases—as, for example, the harsh, penetrating flavors of almond, peach, sarsaparilla, etc.—this precaution is unnecessary, commercial alcohol of good quality answering every purpose.

S-2. FLAVORING EXTRACT OF ALMONDS (PEACH).

This extract is made of oil of bitter almonds, but it should be remembered that it is a poison.

Oil of bitter almonds,.....1 fluidrachm.
Diluted alcohol,..... 15 fluidounces.

Dissolve the oil of almonds in one ounce of alcohol and add thereto the diluted alcohol. Shake well together.

This formula may be strengthened or weakened in accordance with the will of the pharmacist. There is no established proportion, that which we suggest being, in our opinion, suitable for most purposes. Extract of almond and extract of peach are identical.

S-3. FLAVORING EXTRACT OF BANANA.

This is usually made extemporaneously of mixtures of other flavoring extracts, a satisfactory formula being as follows:

Flavoring extract of pineapple, $\frac{1}{2}$ fluidounce.
Flavoring extract of vanilla,.... $\frac{1}{2}$ fluidounce.
Flavoring extract of strawberry, un
colored,..... 15 fluidounces.

Mix them together, and if necessary filter through a little carbonate of magnesium, and then color to suit the taste with a mixture of cochineal color and tincture of curcuma.

S-4. FLAVORING EXTRACT OF BLACK PEPPER.

Recently powdered black pepper,..2 ounces.

Alcohol, water,.....of each a sufficient amount.

Pack the powder in a percolator prepared for percolation. Cover with alcohol (using about twenty fluidounces), and when the percolate appears close the exit of the percolator and macerate for a period of twenty-four hours. Then percolate slowly until one pint of percolate is obtained. The strength may be increased or diminished to suit the taste of the operator, the quality desired governing in this direction. The diluted alcohol may also be replaced with alcohol to advantage, if the question of economy is not a factor.

S-5. FLAVORING EXTRACT OF CAPSICUM.

Fluid extract of capsicum,.....1 fluidounce.

Alcohol,.....15 fluidounces

Mix them together and color with curcuma modified with cochineal, to suit the taste.

S-6 FLAVORING EXTRACT OF CELERY.

Celery seed,.....2 ounces.

Alcohol,.....a sufficient amount.

Powder the celery seed in an iron mortar, and pack the mixture in a percolator prepared for percolation. Cover with alcohol (using about twenty fluidounces), and when the percolate appears close the exit of the percolator and macerate for a period of twenty-four hours. Then percolate slowly until one pint of percolate is obtained. The strength may be increased or diminished to suit the taste of the operator, the quality desired governing in this direction

This is one of the questionable recent additions, and has been introduced since the fashion of taking “nervines” and tonics came into vogue among patrons of the soda counter.

In our experience alcohol only should be employed in extracting celery seed, the use of diluted alcohol producing a

preparation that loses its brilliancy and casts a precipitate.

S-7. FLAVORING EXTRACT OF CHOCOLATE.

Powdered chocolate,.....4 ounces.
Syrup, water,.....of each a sufficient amount.

Rub the chocolate in a mortar with syrup gradually added, until reduced to a cream, then add syrup enough to bring to the measure of eight fluidounces, after which add one pint of water.

Pour the mixture into a pan and bring it to a brisk boil, and then allow to cool.

This extract is of uncertain quality, owing to the variation in commercial chocolates. It is never transparent and is likely to deposit considerable sediment. It will ferment in hot weather, and must either be made in small amounts or put into small bottles that are well filled and kept in a cool place.

Some persons flavor extract of chocolate with vanilla, but in our experience it is not always acceptable.

S-8. FLAVORING EXTRACT OF CLOVES.

Oil of cloves,.....2 fluidrachms.
Freshly powdered cloves,.....2 ounces.
Alcohol,.....a sufficient amount.

Rub the oil with the powdered cloves and pack the mixture in a percolator prepared for percolation. Cover with alcohol (using about twenty fluidounces), and when the percolate appears close the exit of the percolator and macerate for a period of twenty four hours. Then percolate slowly until one pint of percolate is obtained. The strength may be increased or diminished to suit the taste of the operator, the quality desired governing in this direction.

S-9. FLAVORING EXTRACT OF CINNAMON

Oil of cinnamon (Ceylon preferred),...2 fluidrachms.
Alcohol, diluted alcohol,.....of each a sufficient quantity.

Dissolve the oil in eight ounces of alcohol, add enough diluted alcohol to produce a permanent cloudiness, and then bring to the measure of a pint with alcohol. Color with tincture of curcuma modified by a little cochineal color and caramel. The strength may be increased or diminished to suit the taste of the operator, the quality desired governing in this direction. The diluted alcohol may also be replaced with alcohol to advantage, if the question of economy is not a factor.

S-10. FLAVORIN EXTRACT OF COFFEE.

Freshly roasted Java coffee,.....8 ounces.
Alcohol and water mixed, in the proportion of alcohol 12, water 4,.....a sufficient amount.

Powder the coffee coarsely, moisten with the mixed alcohol and water, and pack in a previously prepared, suitable percolator. Cover the powder with the menstruum (about twenty ounces), and when the percolate appears close the exit and allow the coffee to macerate twenty-four hours, then continue the percolation until one pint is obtained.

The remarks we have made concerning the quality of chocolate will apply also to coffee. The process we commend produces an extract that represents the coffee very accurately, and in our opinion the addition of syrup and glycerin is undesirable.

S-11. FLAVORING EXTRACT OF GINGER.

Jamaica ginger, freshly powdered, 2 ounces.
Alcohol,.....a sufficient amount.

Pack the powder in a percolator prepared for percolation. Cover with alcohol (using about twenty fluidounces), and when the percolate appears close the exit of the percolator and macerate for a period of twenty-four hours. Then percolate slowly until one pint of percolate is obtained. The strength may be increased or diminished to suit the taste of the operator, the quality desired governing in this direction. The diluted alcohol may also be replaced with alcohol.

S-12. FLAVORING EXTRACT OF GINGER (SOLUBLE).

Fluid extract of ginger (U. S. P.),.....4 fluidounces.
Magnesium carbonate, water, alcohol,
.....of each a sufficient amount.

Evaporate the fluid extract to one fluidounce, add enough magnesium carbonate to form a creamy mixture, then water to bring to the measure of eight fluidounces, rubbing well together, and filter. To the filtrate add enough alcohol to make a total of sixteen fluidounces. Color, if desirable, with caramel.

Some persons wish a hot peppery taste, and this is made by using a few drops of tincture of capsicum. The operator can determine the necessity for this addition and modify the extract to suit the whim of his patrons.

FLAVORING EXTRACTS OF LEMON.

The quality of these extracts is governed by the freshness and quality of the oil of lemon employed in making them, for, as a rule, the extract of lemon used in flavoring is made from the oil. If the oil be old, it is likely to acquire a turpentine-like odor; and even though of moderate age, it often loses its fresh lemon sweetness and becomes harsh. Oil of lemon, like vanilla beans, may be obtained in commerce of different qualities and at different prices. Those proposing to make flavoring extracts of lemon from the oil should pay special attention to its quality. There is little economy in purchasing cheap oil of lemon. At the present time it is possible to obtain this oil (hand-pressed is the best) of unquestionable purity. The pharmacist may, as a rule, depend upon the statement made by the jobbing druggist concerning the quality of the oil, and, if he is willing to pay the price demanded for a first-class oil, he can readily obtain it. We will add that it is not always possible (without great experience) to prejudge the value of oil of lemon by the odor. Upon the contrary, it is possible for an oil of lemon that has a very pleasant odor to produce an extract that shows evidence of turpentine, especially after having been mixed with syrup.

S-13. FLAVORING EXTRACT OF LEMON, GOOD (FROM THE OIL).

Oil of lemon,..... 1 fluidounce
Alcohol,..... 15 fluidounces.

Mix them together, and after a few days filter if a precipitate forms. Then color to suit the taste with a little tincture of curcuma.

S-14. FLAVORING; EXTRACT OF LEMON, CHEAP (FROM THE OIL) .

Oil of lemon,..... ½ fluidounce.
Alcohol, diluted alcohol,
.....of each a sufficient quantity.

Mix the oil of lemon with eight fluidounces of alcohol, then add diluted alcohol until a cloudiness appears, after which add of alcohol a sufficient quantity to make sixteen fluidounces. Then color to suit the taste by the addition of a sufficient amount of tincture of curcuma.

S-15. FLAVORING EXTRACT OFF LEMON, CHEAP (FROM THE OIL).

Oil of lemon,..... ½ fluidounce.
Diluted alcohol,..... 12 fluidounces.
Alcohol,..... a sufficient quantity.

Rub the oil of lemon in a mortar with carbonate of magnesium in quantity sufficient to form a cream, then add the diluted alcohol and filter. To the filtrate add enough alcohol to bring to the measure of sixteen fluidounces, and color to suit the taste with a sufficient amount of tincture of curcuma.

S-16. FLAVORING EXTRACT OF LEMON.

Grate off the outer rind of four lemons. Put this into a wide-mouth bottle and pour upon it a pint of alcohol, and add thereto one-half fluidounce of fresh oil of lemon. Macerate, with occasional shaking, for four days, and filter. color the filtrate to suit the taste with a sufficient amount of tincture of curcuma.

S-17. FLAVORING EXTRACT OF LEMON (STRENGTHENED).

To a pint of any of the foregoing flavoring extracts of lemon add one fluidrachm of oil of lemongrass. This is a pleasant addition in some instances, as there are persons who find the mixture of lemon and lemongrass to form a gratifying flavor. However, in our opinion, the extract made with a prime quality of oil of lemon is not excelled.

S-18. FLAVORING EXTRACT OF NECTAR.

This is one of the fanciful titles that have been given to a soda water syrup that is quite popular. The following formula produces a mixture that gives general satisfaction.

Flavoring extract of vanilla,....3 fluidounces.
Flavoring extract of lemon,.....6 fluidounces.
Flavoring extract of orange,.... 4 fluidounces.
Flavoring extract of strawberry,3 fluidounces.

Mix these together, and, if necessary, filter through a little carbonate of magnesium.

S-19. FLAVORING EXTRACT OF NECTARINE.

Flavoring extract of lemon,....4 fluidounces.
Flavoring extract of bitter almonds, 2 fluidounces.
Flavoring extract of orange,.... 4 fluidounces.
Flavoring extract of rose,..... 2 fluidounces.
Flavoring extract of vanilla,....4 fluidounces.
Cochineal color,..... a sufficient amount.

Mix the extracts and color to suit the taste with cochineal color. The proportions of the ingredients of this extract may be varied, if the operator desires, for the combination is purely fanciful.

S-20. FLAVORING EXTRACT OF NUTMEG.

Oil of nutmeg,..... 2 fluidrachms.
Nutmegs freshly powdered,.....2 ounces.
Alcohol,..... a sufficient quantity.

Rub the oil with the powdered nutmeg and pack the mixture in a percolator prepared for percolation. Cover with alcohol (using about twenty fluidounces), and when the percolate appears close the exit of the percolator and macerate for a period of twenty-four hours. Then percolate slowly until one pint of percolate is obtained. The strength may be increased or diminished to suit the taste of the operator, the quality desired governing in this direction.

FLAVORING EXTRACTS OF ORANGE.

All that we have said concerning oil of lemon may be repeated with reference to oil of orange. Indeed, oil of orange is the more delicate of the two, and it is more difficult to obtain a prime quality of oil of sweet orange than a prime quality of lemon oil. However, the drug market. at the present time furnishes, for those who are willing to pay the price, a delicious oil of orange that in our experience can be used in the making of an extract of orange that will compare favorably with, or even be superior to, an extract made from the fresh rind of the fruit. It is altogether a question of quality, which may be determined by the price that the purchaser is willing to pay for the oil, as well as by the judgment of the jobber who furnishes him with it. In our experience there is no difficulty at the present time in obtaining an oil of orange of unquestionable quality, and we have reason to believe that this is possible in all parts of the country. Oil of orange, like oil of lemon, should be fresh, and purchasers should supply themselves with only enough to last a moderate period; overstocks are dangerous by reason of the molecular changes that occur, resulting in the formation of turpentine-like odors.

S-21. FLAVORING EXTRACT OF ORANGE (GOOD).

Add one fluidounce of sweet oil of orange to fifteen fluid ounces of alcohol, and color the mixture to suit the taste with tincture of curcuma modified with a little cochineal color. The manipulator should bear in mind, in the making of flavoring extract of orange, that the demand is for an extract of a dark-yellow color, whereas in making an extract of lemon the demand is for an extract of a much lighter color. The various shades can easily be made with different proportions of curcuma tincture and cochineal.

S-22. FLAVORING EXTRACT OF ORANGE (CHEAP).

Oil of orange,..... $\frac{1}{2}$ fluidounce.

Alcohol, diluted alcohol,.....of each a sufficient quantity.

Mix the oil of orange with eight fluidounces of diluted alcohol, shaking until a permanent milkiness results in the mixture. To this add sufficient alcohol to bring the whole to a measure of sixteen fluidounces. Color with tincture of curcuma modified with cochineal color, to suit, and filter, after which allow the mixture to stand four days.

S-23. FLAVORING EXTRACT OF ORANGE (CHEAP).

Oil of orange,..... 1 fluidounce.

The grated rind of four oranges.

Diluted alcohol,..... a sufficient quantity.

Put the grated outer rind of the oranges into a wide mouth bottle and pour upon it twelve ounces of diluted alcohol. Then, having added the oil of orange to the remaining four ounces of diluted alcohol, mix this solution therewith. After four days filter the mixture. Color the filtrate to suit with tincture of curcuma modified with cochineal

S-24. FLAVORING EXTRACT OF ORANGE (CHEAP).

Cover the peelings of oranges with alcohol, and after eight or ten days filter the liquid. This furnishes an extract of orange that, while it is made from the fruit, is in our opinion much inferior to the extract of orange that is made from a good quality of oil of orange. The odor is not as grateful to the taste, and it will not give the satisfaction to patrons that the extract of true oil of orange does.

FLAVORING EXTRACTS OF PINEAPPLE.

Extract of pineapple is a favorite with some persons, although most people select one of the preceding flavors. It may be said that the majority prefer lemon, vanilla, and orange, but next, perhaps, to these comes pineapple. Extract of pineapple is not made from the fruit, neither is it made from the oil nor a product of the fruit. It is an association of ether flavors which reminds one of the odor of pineapples. The base of the pineapple extract is butyric ether, to which are added other substances to modify its harshness.

S-25. FLAVORING EXTRACT OF PINEAPPLE (STRONG).

Butyric ether2 fluidounces.,
Diluted alcohol, 14 fluidounces.

Mix them together and flavor to suit the taste with a little tincture of curcuma, and modify with enough cochineal color to overcome the bright yellow of the curcuma.

S-26. FLAVORING EXTRACT OF PINEAPPLE (MODIFIED).

Butyric ether,..... 1 fluidounce.
Acetic,..... 1 fluidounce.
Chloroform,.....1 fluidrachm.
Diluted alcohol,..... a sufficient quantity.

Mix the ingredients and color with sufficient tincture of

curcuma, and modify by the addition of enough cochineal color to remove the bright yellow of the curcuma.

S-27. FLAVORING EXTRACT OF PINEAPPLE (CHEAP).

Cheaper extract of pineapple may be made by diluting either of the preceding extracts with diluted alcohol.

S-28. FLAVORING EXTRACT OF RASPBERRY.

That which we have written concerning artificial flavoring extract of strawberry may be applied to the flavoring extract of raspberry. While some formulæ that we have seen are complex and demand the use of rare ethers, we have not observed that the products more nearly resemble the flavor of fresh raspberries than an extract made of cheaper ingredients. We have not as yet found any mixture that will more than remind us of the rich fragrance of the ripe, red raspberry. Indeed, in the raspberry season the artificial imitations of this fruit are far from being satisfactory, although they may be used when the fruit is out of season. The formula for extract of strawberry is usually adopted, we believe, as that of extract of raspberry, the difference being that the color is intensified in the raspberry. However, we have found the following process to give satisfaction in a commercial way, and we therefore introduce it as a formula for flavoring extract of raspberry:

Fluid extract of orris root,.....2 fluidounces.
Acetic ether,..... ½ fluidounce.
Oil of cognac,..... 10 drops.
Butyric ether,..... 5 drops.
Diluted alcohol,..... 16 fluidounces.

Mix the ingredients, color to a dark red with tincture of cochineal, and after a few days filter if necessary.

FLAVORING EXTRACTS OF ROSE.

This preparation should manifestly not be designed as the flavor of a beverage. Although rose is a pleasant perfume, as a flavoring for food or of a drink it seems to be out of place. However, there is a demand for syrup of rose and also for flavoring extract of rose for making syrups. The quality of this extract will be governed by the fineness and amount of the oil of rose employed in making it, and the purer the oil the better the flavor. The nearer this preparation can be made to resemble the finest quality of rose the more nearly it fulfills the object of its name. The following formula may be used in its preparation .

In this connection we will call attention to our remarks concerning the oils of lemon and orange, and add thereto that commercial oil of rose may be obtained of various qualities and at as many prices. Those who use a fine quality of oil will naturally find their extract of rose superior to an extract made of the same quantity of inferior oils; and in this matter it may be said that the fixing of quantities in the formulæ that follow is to a considerable extent guesswork, owing to the differences in the oils of rose of commerce.

S-29. FLAVORING EXTRACT OF ROSE (BEST).

Oil of rose,..... 20 drops.
Alcohol,..... 4 fluidounces.
Water,..... 12 fluidounces.
Diluted alcohol,..... 16 fluidounces.

Dissolve the oil of rose in the diluted alcohol and color with cochineal color to suit the taste.

S-30. FLAVORING EXTRACT OF ROSE (CHEAP).

Oil of rose,..... 5 drops.
Oil of rose geranium,..... 10 drops.
Diluted alcohol,..... 16 fluidounces.

Dissolve the oils in the diluted alcohol and color with cochineal color to suit the taste.

S-31. FLAVORING EXTRACT OF SARSAPARILLA.

Oil of wintergreen,..... $\frac{1}{2}$ ounce.
Oil of sassafras,..... $\frac{1}{2}$ ounce.
Alcohol,..... 5 fluidounces.
Water,..... 10 fluidounces.
Caramel,..... a sufficient quantity.

Triturate the mixed oils with magnesium carbonate enough to form a thick cream, then with the mixed alcohol and water, and filter. To the filtrate add enough caramel to color dark brown.

This extract is designed to represent the drug neither in flavor nor in quality, but, upon the contrary, is made up of flavors that have been adopted and affixed to the syrup or beverage sold under the name sarsaparilla, and is foreign altogether to the drug. It is used as a flavor for mineral water beverages and soda syrups, and is a mixture of wintergreen and sassafras, and its connection with sarsaparilla drug is imaginary.

S-32. FLAVORING EXTRACT OF STRAWBERRY.

Fluid extract of orris root,..... $\frac{1}{2}$ fluidounce.
Acetic ether,..... 1 fluidrachm.
Oil of cognac,..... 5 drops.
Alcohol,..... 4 fluidounces.
Diluted alcohol,..... 4 fluidounces.
Water,..... 20 fluidounces.
Cochineal color,..... a sufficient quantity.

Mix the ingredients well together. Color to a bright strawberry red with the cochineal color, and after a few days filter if necessary. Extracts of strawberry, as is well known, are made from mixtures of ethers, and while the flavor is pleasant and often reminds one of strawberry fruit, still we cannot say that the artificial flavors with which we are acquainted compare with the odor of the fresh fruit. They will answer for making syrups when the fruit is out of season or when a true juice of the fruit cannot be obtained, but we must say that we do not commend these artificial extracts as being representatives of the fruit itself. The formulæ that we present are such as will produce good trade extracts.

FLAVORING EXTRACTS OF VANILLA.

Vanilla extracts vary in quality in accordance with the fineness of the vanilla bean that is used in making them. If the operator desires a superior extract of vanilla, the bean employed as a base must be good. We refer now to vanilla that is designed to be unexcelled and that is made from *vanilla*. Much of the cheap extract of the market is made from Tonka bean, coumarin, or other similar aromatic flavors. It is often, perhaps, necessary for druggists to make similar cheap extracts in order to compete with such commercial preparations as are used in some confectioneries, and, in addition to an extract of the best quality, he may desire to make an inferior brand for cheap trade. We therefore give several formulæ, from which selection may be readily made.

For a soda water flavor we commend the following:

S-33. FLAVORING VANILLA EXTRACT (FINE).

Vanilla, fine,..... $\frac{1}{2}$ ounce.
Sugar, about $\frac{1}{2}$ ounce.
Alcohol, water,.....of each a sufficient quantity.

Cut the vanilla beans transversely into thin slices, place in an iron mortar, and by concussion, gradually adding sugar to absorb the juice, crush the bean until reduced to the condition of a coarse powder. Prepare a percolator for percolation, introduce the powder in the usual manner, press gently, and cover with dilute alcohol (about twenty fluidounces). When this liquid appears at the exit, cork the percolator and allow maceration to progress for a period of twenty-four hours. Then remove the stopper and allow the percolation to progress slowly until one pint of tincture is obtained.

This extract is of a rich dark-brown color, and its quality will be in accordance with that of the bean used in its manipulation. If the operator uses stronger alcohol than we direct, the extract will be of a much lighter color. True extract of vanilla improves in flavor and aroma by age, and it is better to use that which has been made a month or more.

S-34. FLAVORING VANILLA EXTRACT (CHEAP).

Balsam Peru,..... $\frac{1}{4}$ ounce.
Vanilla,..... $\frac{1}{4}$ ounce.
Sugar, alcohol, water, of each a sufficient quantity.

Rub the balsam of Peru with magnesium carbonate sufficient to make a powder. Cut and bruise the vanilla with the sugar as directed in the preceding formula. Mix the two powders, pack in a percolator, and exhaust in the usual manner (see preceding formula), obtaining therefrom one pint of extract.

This extract is, in our opinion, to be preferred to flavoring extract of vanilla that is strengthened with Tonka.

S-35. FLAVORING VANILLA EXTRACT (CHEAP).

Vanilla,..... $\frac{1}{4}$ ounce.
Tonka,..... $\frac{1}{4}$ ounce.
Sugar, water, alcohol, of each a sufficient quantity.

Reduce the beans to a powder with sugar, as directed in formula No. 33, pack in a prepared percolator, and extract with dilute alcohol, making one pint of the extract.

S-36. FLAVORING VANILLA EXTRACT (CHEAP).

Tonka (or vanillons),..... 1 ounce.
Balsam Peru,..... $\frac{1}{4}$ ounce.
Sugar, alcohol, water, of each a sufficient quantity.

Reduce the beans and balsam of Peru to a powder, as directed in No. 34, and exhaust the mixture by percolation as directed therein. Make one pint of extract.

It will be observed that this preparation can make no claim (if made of Tonka) to the title of vanilla, and yet it is similar, in our opinion, to some of the cheap extracts of "vanilla" of the market.

From the foregoing formulæ the operator can likely make a selection to suit his taste or that of a patron. We would strongly urge, however, that, if consulted in the matter, he recommend the product

of formula No. 33, and that, if desirous of building up a good and permanent soda-water business, he use only an extract made of a fine quality of vanilla bean.

S-37. FLAVORING EXTRACT OF WINTERGREEN.

Oil of wintergreen,..... 1 fluidounce.

Alcohol,..... 15 fluidounces.

Mix them together.

This extract may be made of the fresh berries, but not of the flavor strength produced by the foregoing formula. There is perhaps a freshness in the extract that is made of the berries that is wanting in the solution of the oil, but few persons, however, can procure fresh wintergreen berries. In selecting oil of wintergreen, it is to be borne in mind that the commercial oil is likely to be either oil of white birch or synthetical oil.

SODA-WATER SYRUPS.

The foundation of most of these syrups is either simple syrup or rock-candy syrup. The latter of these can now be purchased in every American city, and, although it is a little more expensive than simple syrup, many pharmacists prefer it to that preparation. Rock-candy syrup is not prone to crystallize, and many believe its sweetening power to be enough superior to that of syrup made of sugar to repay the price of substitution. Again, in the rush of a busy season the druggist often has neither the time nor the conveniences to make the large bulk of syrup necessary to supply his demand, and the ready-made rock-candy syrup of the market is then a convenience.

Simple syrup made according to the U. S. P. is too thick for use as a soda syrup. It is difficult to mix it with the carbonated water, and it sticks to the glass. For a simple soda syrup the following formula has stood the test of years:

S-38. SIMPLE SYRUP (SODA SYRUP).

Pure white sugar,.....35 (avoirdupois) pounds.
Distilled water,..... 20 pints.

Pour the water into a kettle, add the sugar, and bring the mixture to a boil, stirring constantly. Then remove from the fire and strain while hot.

This syrup will neither crystallize in cold nor ferment in warm weather.

(The addition of certain vegetable extractives will cause any simple syrup to ferment.)

Either rock-candy syrup, or simple syrup made according to the foregoing formula, can be used in the formulæ that follow when "syrup" is commended.

S-39. SYRUP OF ALMOND OR PEACH.

Flavoring extract of almond (peach), $\frac{1}{2}$ fluidounce.
Syrup,..... $15\frac{1}{2}$ fluidounces.

Mix them together.

S-40. CHOCOLATE SYRUP.

Flavoring extract of chocolate, 4 fluid ounces.
Syrup, 12 fluid ounces

Mix them together.
This syrup is brown and unsightly.

S-41. SYRUP OF COFFEE.

Flavoring extract of coffee, 4 fluid ounces.
Syrup, 12 fluid ounces

Mix them together.

S-42. SYRUP OF COFFEE.

Coffee (Java), 8 troy ounces.
Sugar, 20 troy ounces
Boiling water, a sufficient amount.

Percolate the coffee with the hot water until ten fluid ounces of percolate are obtained, and in the percolate dissolve the sugar.

S-43. SYRUP OF GINGER.

Flavoring extract of ginger, 1 fluid ounce.
Syrup, 32 fluid ounces.

Mix them together.

This syrup is likely to be unsightly from the presence of finely divided resin. It is also too peppery for some persons, and must be made with less ginger than is called for by our formula. The formula that follows is more mild and yields a transparent product.

S-44. SYRUP OF GINGER.

Soluble extract of ginger,.....2 fluidounces.
Syrup,..... 30 fluidounces

Mix them together.

S-45. SYRUP OF LEMON.

Syrup,..... 1 pint.
Flavoring extract of lemon,.....2 fluidrachms.
Citric acid,..... 1 drachm.
Curcuma color, water, frothing
liquid, (see S-67 through S-70)..of each a sufficient amount.

Dissolve the powdered citric acid in one-half fluidounce of water, add to the syrup, and then add the extract, frothing liquid, and enough curcuma color to bring to a lemon-yellow color. By referring to our remarks concerning lemon extract the operator will find that the quality of syrup of lemon depends upon the quality of the lemon extract employed in making it. Since we give several formulæ, choice thereof is readily made.

S-46. SYRUP OF NECTARINE.

Flavoring extract of nectarine,...1 fluidounce.
Syrup,..... 15 fluidounces.

Mix them together.

S-47. SYRUP OF ORANGE.

Syrup,..... 1 pint.
Flavoring extract of orange,.... 2 fluidrachms.
Citric acid,..... 1 drachm.
Curcuma color, water, frothing
liquid,.....of each a sufficient amount.

Dissolve the powdered citric acid in one half fluidounce of water, add to the syrup, and then add the extract, frothing liquid, and enough curcuma color, modified by a small amount of cochineal color, to bring to an orange-yellow color. By referring to our remarks concerning orange extract, the operator will find that the quality of syrup of orange depends upon the quality of the orange extract employed in making it. Since we give several formulæ, choice thereof is readily made.

S-48. SYRUP OF BLOOD ORANGE.

Syrup of blood or red orange is not distinguished from the foregoing excepting by its color. To make it, color the syrup of orange with cochineal color until it is of a rich red color.

S-49. SYRUP OF PINE:APPLE.

Syrup,..... 1 pint.
Flavoring extract of pineapple, 1 fluidrachm.
Curcuma color, frothing liquid,
..... of each a sufficient amount.

Mix the simple syrup and the extract of pineapple, color the liquid appropriately with tincture of curcuma, and then add the frothing liquid.

S-50. SYRUP OF RASPBERRY.

Flavoring extract of raspberry, ... 2 fluidrachms.
Simple syrup, 1 pint.
Cochineal color, frothing liquid,
..... of each a sufficient amount.

Mix the extract with the syrup, color with an appropriate amount of cochineal color, and add the frothing liquid if desirable.

S-51. SYRUP OF ROSE.

Flavoring extract of rose,..... 1 fluidounce.
Syrup,..... 1 pint.

Mix them together and color red with cochineal color.

S-52. SYRUP OF SARSAPARILLA.

Flavoring extract of sarsaparilla,...1 fluidounce.
Syrup,..... 1 pint.

Mix them together and color dark brown with caramel.

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S-53. SYRUP OF STRAWBERRY.

Flavoring extract of strawberry,...2 fluidrachms.
Simple syrup,..... 1 pint.
Cochineal color, frothing liquid,
.....of each a sufficient amount.

Mix the extract with the syrup, color with an appropriate amount of cochineal color, and add the frothing liquid if desirable.

S-54. SYRUP OF VANILLA.

Syrup,..... 1 pint.
Flavoring extract of vanilla,...2 fluidrachms.
Caramel, cochineal color, frothing
liquid,.....of each a sufficient amount.

Mix the extract and the syrup, then add caramel and cochineal color enough to give a clear red brown, and finally add the frothing liquid.

By referring to our remarks on flavoring extract of vanilla, it will be seen that the quality of syrup of vanilla depends on the quality of the extract employed in making it. The operator can, therefore, select as his judgment dictates, but our experience is to the effect that the extract made of prime long vanilla is best suited to build up a

business and retain it.

In like manner other soda syrups may be extemporaneously prepared by mixing together flavoring extracts and syrup. It is unnecessary for us to consume space with details that will suggest themselves to every druggist.

CREAM SYRUPS.

These syrups have long been favorites, and when made of pure fresh milk are delicious. In former times they were made with much care and replenished daily. Now we learn that condensed milk is often substituted for fresh milk, and simple syrup is mixed therewith. The formulæ that follow are such as were used thirty years ago, and in our judgment have no superiors.

S-55. CREAM SYRUP (ORANGE CREAM).

Milk,.....1 quart.
Sugar,..... 2½ pounds.

Dissolve the sugar in the milk by the aid of a gentle heat, stirring constantly, strain, and when cool add four fluidrachms of flavoring extract of orange and enough curcuma color to bring to a rich cream color. This syrup must be freshly made each day.

S-56. NECTAR SYRUP (NECTAR CREAM).

Milk,1 quart.
Sugar,2½ pounds.

Dissolve the sugar in the milk by the aid of a gentle heat, stirring constantly, strain, and when cool add four fluidrachms of flavoring extract of best vanilla (or nectar) and enough cochineal color to bring to a deep pink. This syrup must be freshly made every day.

FRUIT SYRUPS.

In recent years fruit juices have largely replaced some of the artificial flavors of former times. These juices are manufactured in large amounts by experienced men, and druggists usually find it better to purchase them than to attempt their manipulation. They produce delicious syrups, and, in our opinion, are very much to be preferred to most of the ordinary imitation syrups that are made of artificial ethers. Full directions for making syrups accompany them, and we need not, therefore, consider these substances in detail. While we do not recommend an attempt at manufacturing these juices generally in a small way, we believe it often judicious for the apothecary to make syrups direct from some of the juicy fruits when they are plentiful and in season. The following are suggested if the respective fruit is abundant and cheap; if not, it is better to purchase fruit juices on the market and make the syrup therefrom*.

*Men who devote their entire attention to these problems become expert, and even learn to make close imitations of natural juices by artificial methods. Their knowledge is gained at the expense of much study and experiment, and represents heavy investments, and it is needless to observe that detailed results are not distributed promiscuously .

S-57. BLACKBERRY (FRUIT) SYRUP.

Heat ripe blackberries to the boiling point and express the juice. To four pints of juice add six pounds of sugar, dissolve by heat, and bottle securely while hot. It must be kept in a cool, dark location.

S-58. RASPBERRY (FRUIT) SYRUP.

Heat ripe berries to the boiling point and express the juice. To four pints of juice add six pounds of sugar, dissolve by heat, and bottle securely while hot. It must be kept in a cool, dark location.

S-59. STRAWBERRY (FRUIT) SYRUP.

Heat ripe berries to the boiling point and express the juice. To four pints of juice add six pounds of sugar, dissolve by heat, and bottle securely while hot. It must be kept in a cool, dark location.

S-60. CHERRY (FRUIT) SYRUP.

Heat ripe fruit to the boiling point and express the juice. To four pints of juice add six pounds of sugar, dissolve by heat, and bottle securely while hot. It must be kept in a cool, dark location.

S-61. GRAPE (FRUIT) SYRUP.

Heat ripe fruit to the boiling point and express the juice. To four pints of juice add six pounds of sugar, dissolve by heat, and bottle securely while hot. It must be kept in a cool, dark location.

S-61. PINEAPPLE (FRUIT) SYRUP.

Wash and then slice the pineapples thinly, without removing the peel; then mix therewith one pound of sugar for each pound of fruit, and occasionally stir the mixture for two or three days, then squeeze the syrup therefrom and bottle it.

S-63. QUINCE (FRUIT) SYRUP.

Quarter and seed the quinces without removing the peel. Slice thinly, and mix therewith one pound of sugar for each pound of fruit, and occasionally stir the mixture for two or three days, then add some water if too thick, and squeeze the syrup therefrom and bottle it. Most persons peel such fruits as pineapple and quince, and thereby lose the rich aroma which mostly resides in the peel. Quince especially becomes insipid if peeled.

Other fruit syrups can be made of juicy fruits by similar methods.

WINE SYRUPS.

These artful compounds of liquors are in our opinion neither calculated to encourage a desirable trade nor promote the general welfare of the community. Whether we are believers in alcoholic

beverages or not, we must all admit that the drug-store is not the place for tippling. Some of the most pronounced opponents of "wine syrups" are to be found among men who uphold the liquor traffic in its lawful sphere. In our opinion, apothecaries may very consistently refuse to supply such flavors, and in many instances, when they are furnished, the act is apparently one of thoughtlessness on the part of the proprietor. The soda fountain of a drug-store, it seems to us, is designed as a location where the families of our patrons may obtain harmless beverages and refreshing drinks, and it seems to be a breach of trust to confront them indiscriminately with liquors and wines, sweetened and flavored to better suit the taste of children and beget an appetite therefore.*

*In my former experience (see Introduction) I well remember a curious occurrence in this direction. An officer of the army asked me for brandy and soda water: I informed him that it was against the rules of the store to furnish liquors. He abused me roundly, and finally Mr. Gordon came to my rescue and told him plainly that he must go to a saloon if he wanted liquor. Afterward he returned and apologized to me for his violent language and complimented the management of the establishment.

"TONIC" SYRUPS.

We cannot too strongly condemn the indiscriminate use of nervines in the form of beverages. Perhaps there may be an excuse for the affixing of a name only to a fanciful, harmless syrup, the name reminding one of a remedy, and yet it seems as though the use or imaginary use of medicines should be left to the discretion of physicians.

Such "tonics" even as solution of phosphate of calcium in acid water, so fashionable in some instances at present, may better be left to the discretion of physician prescribers who understand the systemic condition of the "debilitated." It seems to us as though much injury may result in the continued drinking of phosphoric acid and other medicines by persons who do not need such substances, and who simply imagine that they should "take a tonic."

The same remarks apply to "iron tonics" and "calisaya tonics," and other similar syrups; and while "syrup of beef extract" may do no harm, it seems to us enough out of place as a beverage to give even a man in health the horrors and a dislike for beef tea in its proper place. We may, with our views of this matter expressed, be pardoned for omitting formulæ for such compounds.

COLORS.

Throughout this work various substances for coloring are occasionally commended. They are, or should be, harmless, and are necessary adjuncts, for the public taste must be pampered in the way of bringing certain syrups to resemble the colors of the fruits that they are designed to imitate. It is important that these colors should be innocuous, and luckily the shades desired can be easily obtained. At the present time beautiful, concentrated red, yellow, green, and other colors can be purchased of dealers in essential oils, and are warranted free from any poison or objectionable impurity, and may be substituted for those we commend. The colors we direct may be made as follows (natural fruit syrups do not demand artificial colors).

S-64. SOLUTION OF COCHINEAL (CARMINE).

This preparation has been used some years by the writer in preference to any "tincture" of cochineal. The fat in cochineal causes such preparations to putrefy in warm weather; and to extract the fat by means of ether from the powdered cochineal, previous to tincturing it, is expensive and tedious. The term "tincture of cochineal" is scarcely appropriate as applied to the aqueous solutions made of cochineal, cream of tartar, and alum, and, as the object is simply to secure a coloring matter, the term might with equal propriety be applied to our solution of carmine, made as follows:

Carmine, No. 40,..... 60 grains.
Distilled water, glycerin,..... of each 4 ounces.
Ammonia water,..... a sufficient quantity.

Powder the carmine and triturate with the water, gradually adding ammonia water until the carmine disappears and a dark red liquid, free from insoluble matter, remains. To this add the glycerin and mix. Should this solution ever become murky, a little ammonia water will restore its transparency.

Solution of carmine is necessarily alkaline and cannot be employed to color acid liquids. For all neutral or alkaline solutions it is admirable, and for soda-water syrups is far preferable to aniline red.

S-65. CURCUMA [TURMERIC] (YELLOW).

Macerate four ounces of good curcuma in a pint of alcohol, shaking occasionally for seven days, then filter.

S-66. CAMEL [BURNT SUGAR] (BROWN).

In a capacious iron kettle, over a direct fire, melt a pound of sugar, and increase the temperature until empty reumatic vapors have been freely driven off and the residue has acquired a deep black color. Then remove from this fire, allow to partially cool, and gradually and cautiously stir two pints of hot water into it.

This operation must be performed in the open air or over a good flue, for the vapors are very irritating when inhaled. Caution must also be employed in pouring the water into the hot mass, for if it be very hot the material will be thrown violently from the kettle by the sudden expansion of steam. If caramel is only wanted in small amount, it is best to purchase it.

FROTHING LIQUIDS.

In some cases it is desirable that a syrup should froth considerably. Judgment, however, must be employed in adding the frothing liquid, as well as drawing the carbonated water into the syrup, for some syrups are naturally inclined to foam too much. Among our formulæ we occasionally direct the use of a frother, and the operator can select from the following that which best suits his taste.

S-68. The white of one egg added to a quart of the syrup specified.

S-68. One ounce of mucilage of acacia added to a quart of the syrup.

S-69. Two drachms of tincture of soap bark (quillaya) added to a quart of the syrup.

The first and second of these have been in use for a long time; the last is a comparatively recent addition. That the first and second are both harmless is evident, and we have as yet heard no complaints concerning tincture of quillaya.

S-70. TINCTURE OF SOAP BARK (QUILLAYA).

Take of ground or powdered quillaya,..4 ounces.

Alcohol, water,.....of each a sufficient amount.

Moisten the quillaya with a mixture of alcohol two ounces, water fourteen ounces, and, having allowed the moistened powder to stand an hour to expand, pack it loosely in a percolator. Cover with menstruum, and when it appears at the exit of the percolator cork the exit and allow the mixture to macerate from twelve to twenty-four hours. Then continue the percolation until one pint of tincture be obtained.

This tincture is of an opalescent color and is likely to precipitate by age; it should be kept in a cool locality. It can be made clear by increasing the proportion of alcohol in the menstruum, but this increase of alcohol is at the expense of the frothing power of the product. The larger the amount of alcohol the less its comparative value as a froth producer. One ounce of the foregoing tincture is sufficient for a gallon of syrup.

FANCIFUL TITLES.

Recent years have introduced a number of fanciful titles for syrups, such as "tutti-frutti," etc., and it is not uncommon to find the advantages of such syrups individualized and boldly advertised by means of great placards. These we are not expected to consider, as both the names and the mixtures are purely fanciful, and all druggists are at liberty to formulate a name designed to strike the public, and make for the name a mixture of flavors to suit their fancy.