MÖLLER'S COD-LIVER OIL

*"The active principle of Cod-Liver Oil is the oil itself."*—Möller.

1853-1892

# MÖLLER'S COD-LIVER OIL:

THE

## NEW PREPARATION.



*A BRIEF STORY OF A GREAT DISCOVERY.*

W. H. Schieffelin & Co.,
New York.
1892.

# OLEUM MORRHUÆ.

(MÖLLER.)

## *THE STORY OF A GREAT DISCOVERY.*

### INTRODUCTORY.

To insure a clear understanding of the recent remarkable event whose immediate result has been to place *oleum morrhuæ* in the highest rank as a modern scientific product, it seems proper to review the important work which had previously been accomplished by the same house in preparing an oil suitable for therapeutic use. We refer to "Peter Möller's Pure Cod-Liver Oil," which, for the sake of convenience, we will call "THE OLD OIL," while remembering that until the recent advent of "THE NEW OIL" it had for forty years retained its position in medicine as the

THE OLD OIL

"BEST PREPARATION OF COD-LIVER OIL."

Many years ago, Mr. Peter Möller, of Christiania, Norway, believing that the difficulties experienced by physicians in pursuing a treatment by Cod-Liver Oil, were almost wholly due to the improper preparation of that complex body, succeeded in wholly reforming the process of manufacture, and this has long been known as

PETER MÖLLER'S IMPROVED METHOD FOR THE EXTRACTION OF COD-LIVER OIL.

Before the year 1853, Cod-Liver Oil was, in fact, no more than a crude product of domestic industry, difficult of ingestion and not well supported by patients, who, indeed, would not have touched it at all, had they known of the loathsome details of its preparation. Physicians, though in a measure aware of the objectionable features attendant upon its manufacture, and cognizant of its uneven quality and its tendency to injurious decomposition, continued, as a matter of necessity, to prescribe it, while regretting that they could not employ it in those cases in which it was most needed, that is, for those conditions of phthisis and struma in which the digestive organs were in a super-sensitive condition. Hence arose the more recent

But of these mixtures, with their gums, sugar, essential oils, pepsins, and medicaments of various kinds, the patients finally sickened, while the physician, for obvious reasons, distinctly disapproved of them. He wisely objected to giving medicaments which were not indicated, and he often refused to load the stomach of the patient with essences and aromatics.

Peter Möller, who had had, meanwhile, exceptional opportunities for observing the details of the oil industry, felt that the

OLD METHODS MUST BE WHOLLY REVOLUTIONIZED

before a satisfactory oil could be produced. Recognizing the fact that a pure oil, properly made, is easily taken by a majority of patients, he felt that the basis of a rational improvement lay, primarily, in a proper mode of manufacture. To reform the habits of the fishermen was out of the question. It was necessary to take this part of the work wholly out of their hands. To insure success it was evidently necessary to

PREPARE THE OIL ON A LARGE SCALE IN THE IMMEDIATE VICINITY OF THE FISHING GROUNDS.

Well, the cod-liver oil from the Lofoten fish, while by far the best of the morrhuic oils, oxygenizes or decomposes rapidly under the influence of heat or exposure to the atmosphere. This serious impediment could only be obviated by finding a system suitable to the chemical properties of the substance. After repeated failures,

PETER MÖLLER FINALLY SUCCEEDED

by means of the exterior application of steam. In this process the livers are taken from the fish and treated as soon as possible after being received. Small, bruised and diseased livers are rejected, and the selected livers are washed until free from blood, membrane and other impurities. They are then minced to a pulpy mass which is placed in an apparatus and heated externally by steam to the degree of 100° to 102° Fah. The oil, as it exudes, is drawn off and filtered, which completes the process. Fresh livers and low temperatures gave

A PURE, SWEET, LIGHT, BUT BRILLIANT YELLOW OIL.

Very pale or colorless oils, however, are articles which have been subjected to deleterious bleaching processes. The darker oils are, *without exception*, prepared by the poorer fishermen, from the refuse of diseased or putrid livers, and are unfit for therapeutic use. The light oil, prepared for many years by Peter Möller was not a "refined" article, but the pure, fresh oil as it existed

IN THE HEPATIC CELLS OF THE LIVING FISH;

hence its sweet taste, its digestibility and its consequent efficaciousness. The success of Möller's oil was unprecedented in the history of medicinal preparations. This afforded opportunity to unprincipled

imitators, but they succeeded only in producing an oil of a similar appearance to the Möller product. The requisite care was not bestowed upon the choice of the livers, and the resultant oil was not comparable to the Möller product. The imitators then instituted proceedings for "doctoring" the oil. But

THE INDIGESTIBILITY OF SUCH OILS

and their injurious effects upon the system were only exaggerated by this unwise course, and cases of eructation and vomiting on the part of patients became so common that the reputation of cod-liver oil in therapeutics must have received a severe blow had not the labors of Peter Möller held this invaluable medicament up to its high standard. And it is proper to state, in connection with these facts, that

PETER MÖLLER'S SERVICES IN IMPROVING THE PREPARATION OF COD-LIVER OIL

were everywhere recognized by the profession as well as by the laity, while His Majesty the King of Sweden and Norway conferred upon him the orders of knighthood of Vasa and St. Olaf for his

"SUCCESS IN PROMOTING THE INTERESTS OF AN IMPORTANT BRANCH OF NATIONAL INDUSTRY."

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# OLEUM MORRHUÆ.

(MÖLLER)

## *THE PRESENT PREPARATION.*

Judging from the notes of laboratory work lately presented by Dr. Möller, we believe we are not over-stating the matter when we say that Möller's NEW PREPARATION OF COD-LIVER OIL is the most important discovery—the utility of the substance considered—which has been made under the brilliant auspices of modern pharmacological research.

**THE NEW OIL**

THE PROPERTIES OF THE NEW OIL,

together with some hints as to the lines followed out in order to obtain the results described, are briefly given in the following pages, the matter consisting mainly of abstracts of letters on the subject, lately received by us from the inventor. The few lines we have incorporated were added solely with a view to making the circumstances perfectly clear to the reader.

We may state here that, although Dr. Möller has received for his preparation the protection of the Government of Sweden and Norway, THE NEW OIL IS IN NO SENSE A SECRET REMEDY, and A FULL SCIENTIFIC REPORT OF THE MATTER is in course of preparation.

## CONSTITUENTS OF COD-LIVER OIL.

What are the components of *oleum morrhuæ?* Dr. Möller justly observes that, according to the researches of chemists prolonged through the last fifty or sixty years, at least ninety-five per cent. of this composite body is made up of fats and fat acids to which therapeutists have attributed no special curative power. Hence, the zealous interrogations of most investigators have especially borne upon the remaining five per cent. of the oil in order to discover that substance, or compound, contained in it, which, if isolated, should represent the oil in a concentrated form and finally supersede it.

## WHAT DID THE CHEMISTS FIND?

Iodine, bromine, phosphorous and sulphur were severally proclaimed as being present. Then we had gaduinic acid, cholesterin, trimethylamine, phytosterin, various albuminates and analogous principles, and other compounds which the chemists obtained, or claimed to obtain. Later came the reports of Gautier and Mourgues, who presented a long list of "the ptomaines, leucomaines and acids" of cod-liver oil, so that the student of *oleum morrhuæ* is still further puzzled with a plexus of asselin, morrhuin, dihydrolutidin, morrhuic acid, etc., etc.

But we know that during the ordinary processes of manufacture, as well as in the various manipulations of chemical analysis, the oil undergoes far-reaching decompositions and inter-molecular changes. And these must largely account for the many "wonderful substances" found in *oleum morrhuæ*, while presenting the best possible explanation of the diversity of the results obtained.

## THE IMPORTANT QUESTION IS:

Can the investigators demonstrate that the substances they have isolated, really existed in the oil as found in the liver of the cod-fish? They cannot do this. And the impossibility of doing so is still more strongly emphasized by the fact that up to the time of Möller's recent discovery, no oil was ever prepared from cod-livers which presented to the senses the characters of oil recently taken from fresh livers; and none of it gave exactly the same therapeutic effects as the latter, though Möller's oil, as prepared after his series of experiments—undertaken some years ago—undoubtedly approached more nearly to an absolutely perfect cod-liver oil than any previously or subsequently known preparation up to the date of this recently patented oil.

AN INTERESTING CONSIDERATION

arises from the foregoing statement of chemists that the medicinal virtues of the oil rested wholly in the chemical principles contained in only about five per cent. of it. Now, if this be really the case, how is it that these chemists and many of those who have accepted their conclusions, have from time to time prescribed the various forms of free oleic acid, olive oil, butter, etc., as substitutes for cod-liver oil? Is it not natural to inquire how it is that the medicinal properties of cod-liver oil, being due to its various and complicated constituents, can possibly be replaced by substances which possess none of such components?

WHAT IS THE TRUTH OF THE MATTER?

After an active experience, covering many years, in the chemical examination of cod-liver oil and in its practical preparation for the markets of the world, Dr. Möller became impressed with the fact—which finally grew into a settled conviction—that the composition of *oleum morrhuæ* was not what the scientists had assumed it to be. He writes: "I felt that although, through the labors and heavy expenditures of my father and myself, an oil had been produced which was greatly superior to any which had thus far been known, no oil had yet been made which had the extremely delicate and pleasant flavor of the oil as it is found in *freshly boiled livers*. None of the oil could positively be said to have no tendency whatever to create final nausea or aversion in patients having a super-sensitive digestive apparatus."

THE NATURAL CONCLUSION

was, that a more thorough and accurate knowledge of the real nature of cod-liver oil must be had before a single step further in advance could be made. Holding these views, he now entered upon the erection of a great laboratory department to which every modern appliance for chemical investigation was duly added. This portion of the work was placed under the immediate care of Mr. Peter Möller Heyerdahl.

THE RESEARCHES HERE UNDERTAKEN

were full of difficulty, for the investigators had to do with one of the most complex of organic substances, and one which had long defied analysis. These labors were continued, however, for upward of eleven years, and the reward came, finally, in full measure. To use the words of a recent observer, writing upon this subject; "THE PRESENT INVESTIGATORS, USING NEW METHODS, CAME TO EXTREMELY INTERESTING AND HIGHLY SURPRISING RESULTS." The practical outcome of the experiments was, in fact, the production of

AN ENTIRELY NEW COD-LIVER OIL,

lighter in color, more fluid, more limpid, wholly free from the taste, the after-taste and the odor of even the better kinds of oil, and suited to the most delicate stomachs; for its ingestion is followed by no

sign of eructation or any of the disturbances liable to occur after the taking of other oils. The physicians of Copenhagen and of London are already enthusiastic over the oil for the reasons indicated, as also for the promptness and certainty of its therapeutic effects. They unite in saying that "*the new oil possesses the very agreeable flavor of fresh boiled cod-livers*," a dish much esteemed by European gourmets. Some impression of the

NATURE OF THE DIFFICULTIES

first encountered, is gained by a consideration of the fact that, no matter how carefully cod-liver oil may be analyzed, or prepared for the market, some chemical changes must necessarily take place when the old processes are used. To prevent these changes, a thorough knowledge of the oil and its characters and reactions was requisite, for, as will be readily understood, THE PRINCIPLES UNDERLYING THE MANUFACTURE OF THE NEW OIL are based upon the

REMOVAL OF THE CAUSES OF THOSE CHANGES.

Hence, a very important step in advance was effected when it was definitely discovered, after years of patient research, that, in reality,

THE CHIEF CONSTITUENTS OF THE OIL

are not olein or palmitin or stearin, as had been incorrectly assumed by the analysts. "Some of these compounds," says Dr. Möller, "may, to a small extent, be present in the oil, but it is just as likely that they are not there at all." The fat acids really in the oil, and chiefly constituting it, are, in his belief, unsaturated acids (or, rather, their glycerides), having either four double, or two triple bonds. "The former," says Dr. Möller, "would make it of a group of acids which are only theoretically recognized. The latter would be of a class of which only the lowest homologue — diacetylenemonocarboxylic acid—is known. Heyerdahl thinks that four of these acids are present in the oil. The chief of them belongs to the acetylene series, noted for the readiness with which they form new compounds with monad atoms, by which new members of the saturated compounds arise. HYDROXYL is one of them, which, if added to these unsaturated acids would convert them into the corresponding oxyacids."

THE DISCOVERY OF THESE PECULIAR ACIDS

gave an explicit explanation of the puzzling behavior of cod-liver oil. "Heyerdahl," says Dr. Möller, "found that the hydroxyls entered into the compounds in increasing numbers as he progressed."

THE DETERMINATION OF THE HYDROXYLS

was effected by ascertaining the acetylic equivalent, which, though variable, was always high. Disturbing influences were encountered which evidently arose from the sensitiveness of the acids to the oxygen of the air, so all of the experiments were repeated in currents of hydrogen. The saponification of the oil, the preparation of the

acids, and the acetylization of the washings, were performed under the same precautions, which were continued during the determination of the equivalent of saponification and the titration.

THE RESULT WAS CONSTANT,

but it was different from what it had been before, the acetylic equivalent being much lowered. For so-called stearin, similar results were obtained. These facts ascertained, it was obvious that *the preparation of cod-liver oil, as hitherto carried out must be very deficient.* Finally, during the season preceding 1890, Heyerdahl further experimented with the preparation of oil in currents of various gases.

HE FINALLY SUCCEEDED

in producing an oil, which, by analysis, proved to have the acetyl equivalent of O, that is to say, *an oil free from hydroxyls.* This oil is distinguished from the old oil by its property of *leaving no after-taste.* Indeed it has no "oily" quality and is

AS EASILY TAKEN AS A DRAUGHT OF WATER.

It was not so with any other oils. The tongue might accept them, or be deceived with the aromatics contained in them, but certain super-sensitive stomachs were not to be cheated in this way. The stomach was quite able, in spite of all disguises, *to discover the hydroxyls of the cod-liver oil* and to send the substance back to the mouth by that informal proceeding known as "belching." While better than any other, Möller's OLD OIL could not, like the NEW OIL, be said to be absolutely free from this objection, when the oil was used in certain super-sensitive gastric conditions. It was especially to this circumstance that those researches were due, which have finally lead to the preparation of a cod-liver oil which is powerless to create any disturbance of the digestive tract. A point in the new oil is, that

IT KEEPS BETTER THAN THE OLD.

If kept in a cool place, the last dose will be as sweet as the first. At temperatures above 77° F., it will, like the old oil, absorb hydroxyls, the particular substances which, as Heyerdahl has shown, will cause eructations and an after-taste, in direct proportion to the quantity of hydroxyls absorbed. The old oil excelled all others because its method of preparation lessened the amount of its hydroxyls. The new oil is free from them, and, under the above conditions, tends so to remain.

Heyerdahl, before his discovery of the unsaturated acids, made extensive researches on

THE SO-CALLED STEARIN OF COD-LIVER OIL.

Saturated acids are incapable of absorbing iodine, but unsaturated ones add two atoms of iodine to each double bond, or four atoms to each triple bond. Now, if the stearin, so-called, were in fact that

compound, no iodine would be absorbed by it. Investigation showed, however, that iodine *was* absorbed by it, and to a high degree. For in stearin separated at a low temperature, the iodine absorption was 113.4, and, after repeated crystallizations from petroleum-ether, ether and alcohol, it was still 97.7. Remembering that this stearin was not protected from air, the nature of these acids being then unknown, it is evident that the iodine figures were too low, for the stearin must have absorbed hydroxyls, and these take up the place of the iodine atoms. Therefore, the substances removed from the oil by cooling, which have been called stearin, are mostly if not wholly,

VALUABLE, UNSATURATED, FATTY GLYCERIDES,

that act upon the human system in the same way as the non-congealing oil. Hence, there cannot now be any doubt that the *efficaciousness of the oil rests with these fatty substances* which so easily split up in the organism into readily oxydizable compounds. This is a simple and reasonable explanation of its efficaciousness in tuberculosis and allied conditions. The absurd hypotheses concerning

"THE REMAINING FIVE PER CENT. OR LESS"

as containing the "really valuable constituents of cod-liver oil," will now come to an end, for THE ACTIVE PRINCIPLE IS, IN REALITY, THE OIL ITSELF.

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The importance of this discovery can hardly be over-estimated. It will put an end to the unscientific and unwholesome "EMULSIONS," to the ingenious and worthless "ALCOHOLIC EXTRACTS," and to the inert and injurious "SUBSTITUTES" for cod-liver oil, while it will place in the hands of the physician

A PURE, SOUND, SWEET, TASTELESS AND SCIENTIFICALLY MADE PREPARATION OF COD-LIVER OIL, WHICH WILL FULLY MEET ALL THERAPEUTIC REQUIREMENTS.

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☞ **MÖLLER'S COD-LIVER OIL** is put up, exclusively, in flat oval bottles, hermetically sealed.

Every bottle bears on the label, in perforated letters and figures, the season in which it was produced.

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W. H. Schieffelin & Co.,

**Sole Agents for the United States, Canada and Mexico.**

**NEW YORK.**

(1853-1892)

PUREST

# LOFOTEN NORWEGIAN COD-LIVER OIL

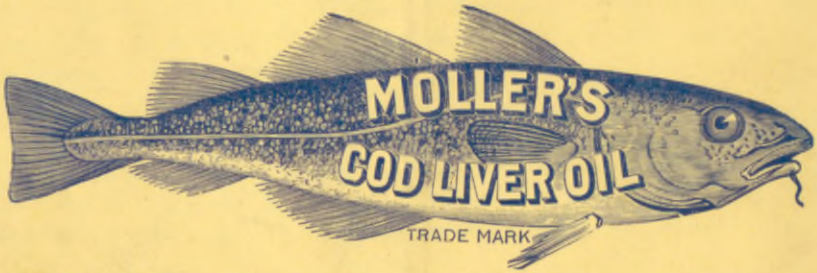
OR

# OLEUM MORRHUÆ (MÖLLER),

Manufactured and Prepared for Medicinal Use by

## PETER MÖLLER

*Of The Medical Society of Stockholm; The Société de Pharmacie de Paris; The Royal Philosophical Society of Drontheim; Author of the Section in Pharmacy of the Pharmacopœia Norvegica; Knight of the Orders of Vasa and of St. Olaf, etc., etc.*




**OLEUM MORRHUÆ (MÖLLER) obtained the only FIRST PRIZES**

AT THE FOLLOWING EXHIBITIONS:

LONDON, 1862; PARIS, 1867; BERGEN, 1865;
CHRISTIANIA, 1871; DRAMMEN, 1873; STOCKHOLM, 1866;
NAPLES, 1871; COPENHAGEN, 1872; MOSCOW, 1872;
VIENNA, 1873 (for "Progress"); VIENNA, 1873 (for "Merit");
PARIS, 1878;
THE FIRST PRIZE at PHILADELPHIA, 1876, and
THE GOLD MEDAL at BERLIN, 1880.

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