

# **NITRO-GLYCERINE AS A REMEDY FOR ANGINA PECTORIS**

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Nitro-glycerine as a remedy for angina pectoris by William Murrell

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**WILLIAM MURRELL**

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AS A REMEDY FOR  
ANGINA PECTORIS**



# NITRO-GLYCERINE AS A REMEDY

FOR

## ANGINA PECTORIS

BY

WILLIAM MURRELL, M.D., M.R.C.P.

LECTURER ON MATERIA MEDICA AND THERAPEUTICS AT THE WESTMINSTER  
HOSPITAL; SENIOR ASSISTANT PHYSICIAN TO THE ROYAL HOSPITAL  
FOR DISEASES OF THE CHEST.



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## PREFACE.

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THE object of this work is to give directions for the administration of Nitro-Glycerine as a remedy for Angina Pectoris, the principal points being illustrated by reference to cases that have been under my care. Some of these cases were published in the *Lancet* in 1879.

WILLIAM MURRELL.

38 Weymouth Street,  
Portland Place, W.  
February, 1882.

**NITRO-GLYCERINE IN ANGINA PECTORIS.**

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## NITRO-GLYCERINE AS A REMEDY FOR ANGINA PECTORIS.

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NITRO-GLYCERINE was discovered in 1847 by Sobrero, and its chemical properties have been investigated by Railton, De Vrij, De La Rue and Müller, Mills, Dupré, Martindale and others. It is commonly prepared by what is known as Liebig's process. Half an ounce of dehydrated glycerine is poured with constant stirring into a mixture of two ounces of oil of vitriol and one ounce of fuming nitric acid of specific gravity 1.52—the temperature of the mixture being kept below 25° C. (77° F.) by external cooling with ice, and as soon as oil drops begin to form on the surface, the mixture is poured with constant stirring into fifty ounces of cold water. Nitro-glycerine then separates and may be purified by washing and drying in small quantities in a vapour bath. The manufacture is carried on chiefly in Scotland, but there is reason to believe that small quantities are made even in London. The greatest possible care must be taken in the process, the glycerine being added drop by drop and the temperature carefully noted by means of the thermometer. The nitro-glycerine thus obtained must be well washed to free it from traces of acidity. It first appears as a white opaque milky-looking oily fluid, but on careful

drying by exposing it in a warm room in flat dishes containing thin layers, it becomes dehydrated and forms a transparent colourless oily fluid. It is slightly soluble in water and freely in alcohol and ether, and it has recently been found to dissolve readily in fats and oils. It is, although slightly volatile, inodorous and has a sweet pungent aromatic taste. It crystallises or freezes at low temperatures. It is largely employed as an explosive in mining and blasting operations, being fired by percussion, and forms the basis of the compounds known as "dynamite," "glyoxylon," "dualin," &c. When boiled with potash it decomposes, glycerine and nitrate of potash being formed.

The action of nitro-glycerine on the lower animals has been investigated both in this country and on the continent. A dose of six minims of a ten per cent. solution, injected under the skin of a frog produced, among other symptoms, languor, tetanus and finally paralysis. Immediately after the injection the animal became restless and the respirations very rapid. In a minute or two this restlessness subsided and gave place to lethargy, the frog showing a disinclination to move. The respiration continued rapid, and in about five minutes from the commencement of the observation the animal gave a sudden spring and fell into tetanic convulsions. These lasted about half a minute and then passed off; they soon returned however and were readily excited by touching the animal. After continuing for some time they gradually became weaker and the animal died. In some instances, the mouth seemed to be the part first affected by the convulsions,

as the jaws were seen to open and shut, but possibly this action was connected with respiration, rather than with the general convulsions; next it spread to the fore limbs and finally to the hind ones. It was noticed too that the fore limbs were more sensitive than the hind, as slight spasmodic twitches could sometimes be produced by touching or pinching the former, when similar irritation of the latter had no effect. To ascertain whether the tetanus was due to the action of the drug on the spinal cord, or on the nervous centres within the encephalon, the spinal cord was cut across before the poison was given, the upper part of the animal immediately became very restless, the fore limbs were outstretched with the toes spread out; but there was no alteration in the hinder part of the body or in the hind limbs. This result was confirmed by another experiment. A frog was decapitated, and after the spinal cord had recovered from the shock, and reflex movements were again observed, the drug was injected, but no spasm occurred. Dr. Lauder Brunton thinks that the tetanus is not due to any action on the cerebral lobes, but probably to the effect of the poison on the optic lobes.

The principal effects produced on cats by nitro-glycerine are great acceleration of respiration, paralysis, loss of reflex action and sensibility and death from arrest of respiration. It is recorded that a dose of about sixty minims of a ten per cent. solution having been injected into the peritoneal cavity of a cat, there was observed in a few minutes a stretching movement of the hind leg, as if the animal were trying to shake