

exclusively from these expressions and the ratio of the specific heats as determined by the theory of sound, are given. These tables show the mechanical values of the specific heats of air at different constant pressures, and at different constant densities. Taking 1390 as the mechanical equivalent of the thermal unit as determined by Mr. Joule's experiment on the friction of fluids, the authors find, as the mean specific heat of air under constant pressure,

·2390, from 0° to 100° Cent.

·2384, from 0° to 300° Cent.

XII. "Note on Nitro-glycerine." By A. W. WILLIAMSON, Ph.D., F.C.S., Professor of Practical Chemistry in University College. Communicated by Dr. SHARPEY, Sec. R.S. Received June 15, 1854.

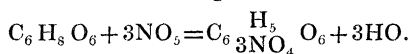
This compound is formed by acting upon glycerine with a mixture, in equal volumes, of concentrated nitric and sulphuric acids, the glycerine being added by a few drops at a time.

It is heavier than water, in which it is slightly soluble, and is soluble in alcohol and in ether.

From its proneness to decomposition in drying, even by the air-pump, a complete analysis could not be made, but a qualitative examination of the relative amounts of carbon and nitrogen gave the following results:—

| | 1. | 2. | 3. | 4. | |
|--|-----|------|-----|-----|-----|
| Volumes of mixed gases..... | 101 | 91·5 | 99 | 97 | |
| Volumes of nitrogen not absorbed by potash.. | 32 | 30·5 | 34 | 33 | |
| Carbonic acid absorbed by potash..... | 69 | 61 | 65 | 64 | |
| | 1. | 2. | 3. | 4. | 5. |
| Mixed gases..... | 178 | 194 | 173 | 194 | 192 |
| Nitrogen | 61 | 66 | 58 | 65 | 65 |
| CO ₂ | 117 | 128 | 115 | 129 | 127 |

From these results the following formula was deduced:—



It would therefore appear that 3H are replaced by 3NO₄.

On boiling this compound with concentrated solution of potash, it is decomposed into glycerine and nitrate of potash.