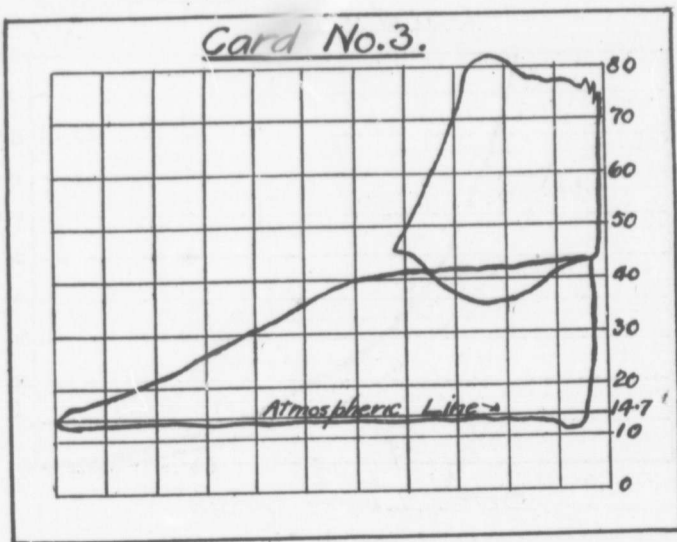


of the free air before compression, therefore reducing its volume, also the slamming of the valves causing them soon to leak.

The principal reason why I think two stage compression is necessary even for pressures as low as 100 pounds, is that as air is a poor conductor, that very little is accomplished in cooling the air by water jacketing and about all that it does is to keep the compressor at a normal temperature, but with an intercooler, the air can be split up and passed through small areas between the cooling pipes and cooled to about its original temperature and therefore received into the second stage cylinder in a larger volume.



Here you will experience another loss by using an intercooler that is too small. Card 3 is a rough card which will show this. The depressed inlet curve of the second stage card shows this loss which is due to the small area of the intercooler and to the shrinkage of volume in it caused by cooling and causing a loss in the second cylinder. With cooling receivers of the proper capacity this loss would not be. Card 4 shows the economy of two stage compressors to 100 pounds.

The economy in power saved by two stage compressors for even as low a pressure as 60 pounds is very evident by inspection of this table, which shows for 60 pounds, a saving of 14.5 per cent. and for 100 pounds, 17.8 per cent.