

**The Knowledge Bank at The Ohio State University**  
**Ohio State Engineer**

**Title:** Interesting Marmon Demonstration

**Issue Date:** May-1922

**Publisher:** Ohio State University, College of Engineering

**Citation:** Ohio State Engineer, vol. 5, no. 4 (May, 1922), 26.

**URI:** <http://hdl.handle.net/1811/35048>

**Appears in Collections:** [Ohio State Engineer: Volume 5, no. 4 \(May, 1922\)](#)

## Interesting Marmon Demonstration

**O**N the evening of April 20th and again in the morning and afternoon of April 21st, the faculty and students in the College of Engineering and others on the campus who are interested in automotive engineering enjoyed a treat in the nature of a demonstration of tearing down and reassembling a Marmon motor. The demonstration on Thursday evening was before the student branch of the A. S. M. E. and the other two were open to all comers.

It was the same demonstration which has appeared at the National Automobile Shows and created widespread interest. Because of its instructional value it has recently been staged at Massachusetts Institute of Technology and Columbia University, and has been requested by numerous other prominent universities and technical schools where it will appear in the near future.

Two mechanics completely tore down and reassembled a standard Marmon automobile engine in the remarkably short time of 43 minutes and 14 seconds. Each operation and each part was fully explained by a special representative from the Nordyke and Marmon factory. Between the tear-down and reassembly the mechanics took time out and the spectators by their questions brought out many unique and interesting features of Marmon engine construction.

Some of the outstanding features which attracted

particular attention were the large overhead valves in the removable firing head, the perfectly balanced crank shaft of exceptional strength and rigidity, large cast iron backed shimless bearings, machined connecting rods of light weight and perfect balance, two-piece piston construction with aluminum head and cast iron skirt, and the vacuum controlled lubricating system which supplies oil under pressure according to the engine load.

From the demonstration the engineering students carried away a good conception of internal combustion engines as a whole and also a very vivid impression of what modern machine shop practice can accomplish when applied to a logically designed mechanical unit. The accuracy of the workmanship throughout was remarkable.

The exhibition was obtained through the efforts of Professor Wm. T. Magruder of the Department of Mechanical Engineering. All three of the demonstrations were well attended and numbers of the faculty expressed their appreciation of the instructional value of the exhibit.

A touch of further interest was added by the fact that the lecturer was an Ohio State alumnus. The explanation of the operation was given by C. Alfred Campbell, B. A., B. C. E. '20, who is connected with the sales department of Nordyke & Marmon Company.

### College Training is Serious Business with the Engineering Student

The engineering graduate especially needs to keep in touch with the school that trained them.

Maybe this accounts for the fact that the percentage of engineering grads who belong to the Ohio State University Association, official organization of the alumni, is unusually high, and the further fact that a surprisingly large proportion of the officers of local alumni associations over the country are engineers.

These folks read the Ohio State University Monthly, official alumni magazine of the University---*they keep in touch!*

**Senior fees, including membership in the alumni association and subscription to the Monthly are payable now, at the Office of the Bursar, University Hall.**

**ARE YOURS PAID?**



Illustration from "De Re Metallica" by Agricola, published in 1546

## Breaking Ground by Fire-setting

The ancients "blasted" by fire-setting—slow, laborious, dangerous, and ineffectual.

Describing Hannibal's crossing the Alps in 218 B. C., Livy says: "The cliff heated by fire was broken by iron tools so that not only the beasts of burden but also the elephants could be led down."

In "De Re Metallica" (1546) Agricola explains the early fire methods in detail—how the sticks were prepared; how these were piled against the face of the rock; how the fire softened or cracked the stone for a certain depth; and how water was sometimes dashed on the heated rock, which was shattered by the sudden and uneven cooling. Even as late as the 17th century, fire setting was practised, and an advance

of 5 feet per month in headings was often considered good.

In May 1921, a contractor drove a total of 942.3 feet in  $4\frac{1}{2}' \times 6'$  drifts and crosscuts, using Hercules Dynamite. An average of 11 feet advance was made per machine shift with a dynamite consumption of 8.7 pounds per lineal foot. Explosives have made possible greater results in eight hours than our ancient brethren accomplished in a month.

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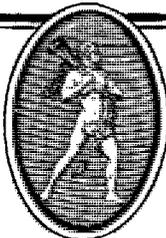
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