THE FIRST TOOL ENGINEER

by
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The background material for this short presentation was suggested to me by Worshipful Brother John J. Miller, a Past Master of Tuscan Lodge #77, holden under the Grand Lodge of Minnesota. We both thought that it might be a good lesson in Masonic Education and that you might enjoy it.

It concerns the question of who was the first tool engineer. Much of the thesis was given us by Mr. Robert B. Douglas, whom we do not know to be a Mason, but we do know he is a Past President of the American Society of Tool Engineers. It is an expression of how some of the things we learn as Masons are also part of the sectarian world, and as we know them as part of our legend many are pretty close to the facts.

Time and again one finds Eli Whitney, famed for the invention of the cotton gin and for the introduction of mass production techniques in the manufacture of arms, accoladed as the first tool engineer.

In the cavalcade of tool engineers, Mr. Eli Whitney is very much of a johnny-come-lately. Let us bow to his genius; let us acknowledge his extraordinary contribution to interchangeability in complex mechanisms; but, let us not call him Father. The art and science of tool engineering has deeper roots than the nineteenth century.

The Father of Tool Engineering was born just eight generations out of Eden in the anti-diluvian night. Scholars put his birth at 1056 years after the birth of the first man. He was the son of Lamech, and the grandson of Metusaleh and his name was Tubalcain. We can read his brief but eloquent biographical sketch in Genesis, IV, 22 "Tubalcain, an instructor of every artificer in brass and iron." In other words, the Father of Tool Engineers and Tool Engineering Education.

"There were giants in the earth in those days." Lamech, crude, cruel, lusting descendant of Cain was a mighty hunter and a mighty warrior. But his scope was limited. The old man was so taken up with the day by day task of protecting the family and homestead against the depredations of rival families and wild beasts, that there was no progress and but little feeling of security in the family. The oldest son was a musician the other a singing cowboy. Then came Tubalcain, son of the practical mother Zillah.

Watching his father hunt with rough but precious weapons, he realized how tenuous was the claim to survival of the whole tribe, should ill fortune break or carry off one of the few miserable spears or arrows in the side of a wounded lion. The family was left defenseless for days while a new one was painstakingly fashioned out of stone by hand methods. The herds were neglected, the music was stilled, while everyone pitched in to make a new supply. The key to survival was production.

Only with a large and assured supply of weapons could the family maintain the unrelenting struggle against its environment. Stop or threaten that supply and not only the arts of his Brother Jubal, but food itself must be rationed or cut off altogether until the deficiency was made up.

So little Tubalcain, while hardly more than a boy, studied the problem of production. From foundry to forge to finish grind, he studied and experimented with the processes of forming and shaping metal. When one process had been mastered, he lost no time in breaking in a couple of slaves to keep production rolling, while he went on to pioneer the next step. Thus was the division of labor first applied.

The same techniques that made arrowheads were gradually applied to spears, knives and

short swords. A continuous flow of weapons came from the production lines out behind old Lamech's hut. Behind the wall of weapons in the field, Jubal's commerce, and Jubal's cultural arts were free to flourish, and in Lamech's yard the music of Tubalcain's forge made fitting background for the melody of Jubal's oaten pipes. But, restless Tubalcain must needs press on if the future be secured. The discovery of the techniques must be formulated into an organized body of knowledge, certain theories drawn, and the principles laid down for the guidance of others. Tool engineering as a formal science was conceived and born in the wilderness in the Land of Nod.

The safety of the tribe, the advancement of science, the encouragement of commerce and the arts, in short, the upward progress of mankind, could not be secured or consolidated, if these secrets were left to rust and grow stale in the mind of one man. So Tubalcain called them all in — his brothers and his cousins, and their slaves, and their children — and he taught them those things that he knew and they laboured together, each according to his abilities and his industry.

As great as had been his contribution in the perfection of technique, greater still was his vision of the "free interchange of scientific knowledge."

When the critical shortage of arms had been changed to an abounding surplus, their lines were converted to the implements of peace — to the production of brass bowls and lamps and great was the light and prosperity that settled on the land.

Unfortunately, with the great floods that were sent, after his death, to cleanse the world, were washed away both the tools and the memory of Tubalcain's works.

To Eli Whitney and the famous tool engineers that have followed him, has been given once more the key to gradually unlock the door of that golden science once put into the hands of Tubalcain in his youth.

As later children of their heritage, let us honor Father Tubalcain's memory and cherish his dream.