INTRODUCTION

In the second half of the last century, the Germans Nikolaus Otto and Eugen Langer, encouraged by the increasing demand for prime movers, developed the first internal-combustion engines which could be used in industrial practice. They were superior to steam engines especially because of their reduced net weight and size and the use of initially gaseous and, later on, liquid fuels.

Soon after, ploughs which were directly coupled with an internal combustion engine were seen in the fields. These ploughs were primarily used for tilling stiff soil (Fig. 1). Designated as motor plough, they became well-known.

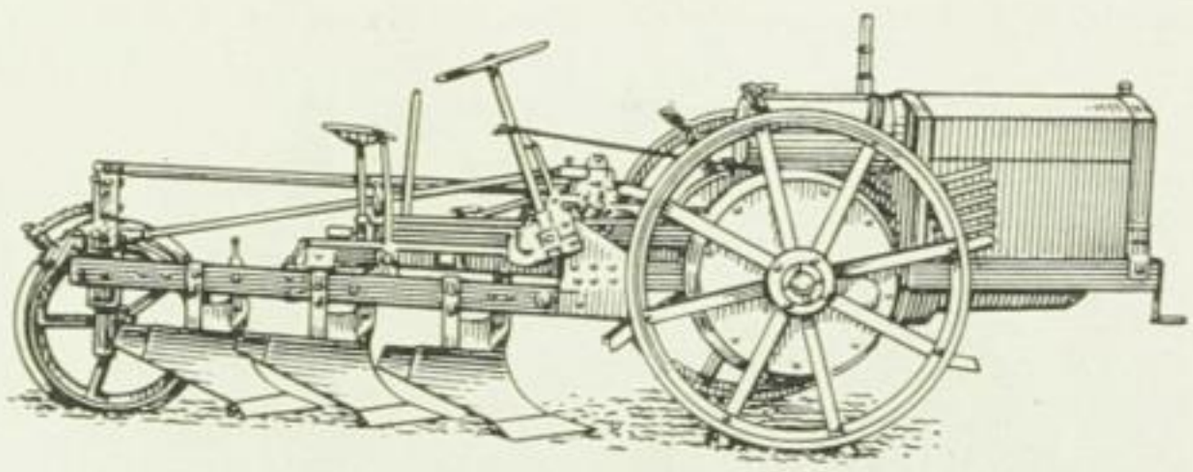

Fig. 1. Motor plough

Ploughing did not remain the only work which could be facilitated by towing vehicles. There are jobs in every branch of agriculture which can be performed quicker and at smaller costs with the help of a tractor than with the conventional draught animals.

Round about the beginning of 1920, the first iron-tyred tractors were employed in agriculture and forestry as engine-powered means of draught. Many a tillage equipment, e.g. Canadian cultivators, harrows, rollers, tedders, mowers, and grub breaker ploughs, could be coupled with the tractor which thus became a versatile means of agricultural production.

However, these first tractors showed several serious deficiencies. The iron-tyred wheels were not suitable for journeys on paved roads. Moreover, speed was relatively low. To use tractors also as stationary prime movers, e.g. for thrashing-machines, belt-pulley drives were attached to them. Another substantial improvement was achieved by the development of the power take-off shaft (see page 156). This shaft is driven by the engine and can be coupled with agricultural implements by means of appropriate connecting pieces (Fig. 2).