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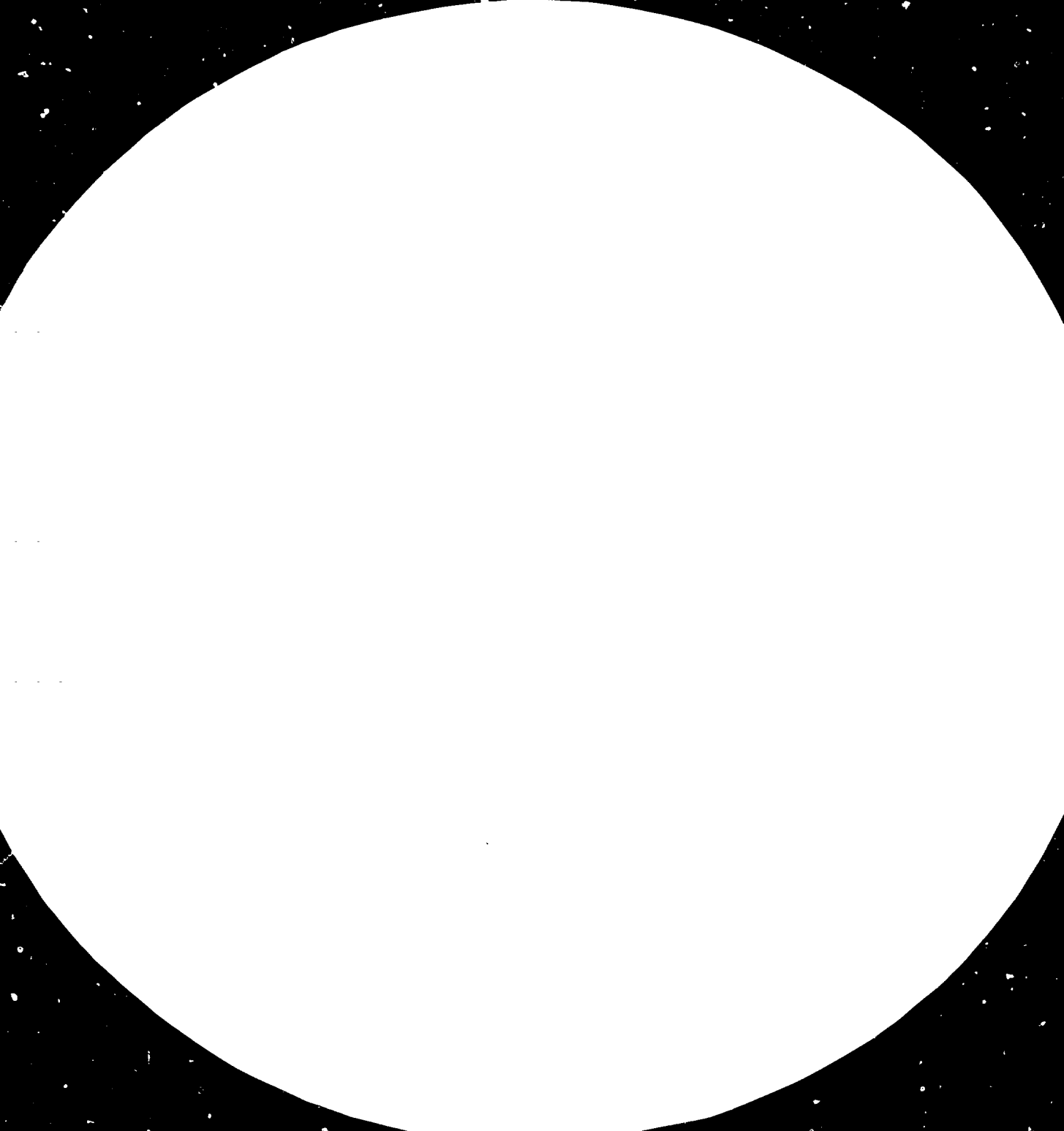
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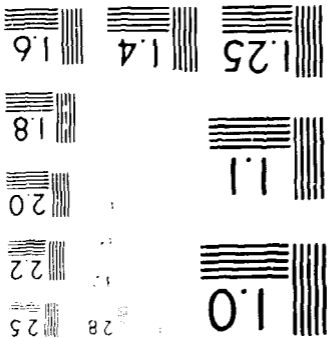
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DEVELOPMENT OF FARM MACHINERY INDUSTRY

IN CHANGZHOU CITY*

by

Changzhou Tractor Company**

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** Changzhou, Jiangsu, People's Republic of China.

Changzhou is a medium-sized city in Jiangsu province, east China. It is near Shanghai, China's biggest old industrial base. Before liberation, it only had some textile and grain processing mills and small-sized enterprises in its machinery industry which mainly turned out spare parts and accessories and did repairs for these mills. The equipment was outdated, the techniques were backward and the products were seldom up to standards.

In 1950s, after socialist transformation was carried out by the state in agriculture, handicraft industry and capitalist industry and commerce, the city, by giving active support and through readjustment and amalgamation in a planned way, relatively concentrated the technical forces and equipment and gradually formed the production capacity for manufacturing water pumps, electric motors and other products. In early sixties, we decided to shift the focus of our work to the vast rural areas and turn out small-sized farm machinery urgently needed by the countryside, in accordance with the principle of taking agriculture as the foundation for developing national economy put forward by the state. We organized four of the eight machinery factories and,

through a division of labour and coordination, made vigorous efforts to trial produce walking tractors suitable for the rural areas in south China. We designed and manufactured a multi-purpose Dongfeng-12 walking tractor which can do both rotary tilling and ploughing. This tractor has compact structure, is durable and easy to operate, and therefore can be used to do different kinds of farm work in different kinds of terrains, especially in the small plots of plain and hilly areas. It is very popular among the peasants. In order to form the capacity for mass production, achieve good quality and performance at low cost and meet the increasing demand of the vast rural areas, we pooled the efforts of the scattered enterprises, worked out a unified plan, conducted coordination at fixed places with a rational division of labour, carried out transformation energetically, established a walking tractor production line and quickly formed the production capacity for turning out ten thousand tractors a year. With the development of production, we formally set up an integrated complex in January last year, namely the Changzhou Tractor Company.

The company has 7,000 workers and 14 factories. Of these factories, two produce main engines, another two turn out auxiliary machines for the main engines, four turn out tractor-drawn machines and implements, another four are specialized in technological processing of machine parts and accessories, one supplies technological equipment and one is in fact a farm machinery research institute.

Major products are: S-195 12 h.p. diesel engines, S-195-A 15 h.p. diesel engines, S-195-L water condensation cooling diesel engines, S-195-LD water condensation cooling diesel engines for forming complete sets of equipment with generating units, S-195-C marine diesel engines, and S-395 diesel engines, Dongfeng-12, Dongfeng-12-A and Dongfeng-12-R walking tractors, and Dongfeng-35 tractors, as well as trailers for farm use, double shared ploughs, tipcarts, various kinds of springs, cogwheels and sheet metal work. The company can provide complete sets of equipment and assembly lines for turning out these products. This year, the company will turn out 55,000 S-195 diesel engines, its main product which has won state gold medal, and 22,000 Dongfeng-12 walking tractors, which has won state silver medal. So far, our company has turned out a total of 150,000 walking tractors and 350,000 diesel engines. Apart from supplying 28 provinces, autonomous regions and municipalities of the country, our company has exported 60,000 diesel engines and 15,000 tractors to 52 countries and regions including Mexico, Canada, Jamaica, Thailand, the Philippines, Bangladesh, Pakistan, Indonesia, Nepal, the Sudan and Tanzania.

The relatively rapid development of agricultural machinery industry of Changzhou city from a weak foundation and with a very moderate investment has been the outcome of making full use of its previous industrial conditions and of vigorously conducting specialized coordination. Specialized coordination has promoted the development of productive

forces. Its evident advantages are:

First, it is favourable for tapping the potential of the existing enterprises. It saves investment and time and yields good results. From trial manufacture to serial production and to the attainment of the production capacity to turn out 50,000 diesel engines and 20,000 walking tractors annually, no new factory was built and no large numbers of labour force added. The only thing we did was to fill up the blanks and the fund given us by the state for taking measures was equivalent to only one-third of the fund needed for building an all-purpose factory of the same size. Since 1965, the output of diesel engines and tractors has registered an average annual increase of 22 per cent and 27 per cent respectively.

Second, it is favourable for conducting technical innovations and technical transformation. It will bring about high output and more varieties with good quality and at low cost. Specialized production is conducive to technical innovations and the adoption of new technological processes once the design of a product is finalized for mass production. In the past few years, the company's various factories have manufactured 650 special-purpose machine tools, established 22 automatic and semi-automatic lines and 25 streamlines for production and spread 150 new technological processes and new techniques. Take the cogwheel factory for instance. After specialized production was introduced and through technical transformation, the factory produced 850,000 cogwheels in 1979 as against 36,000 in 1965 and the rate of rejects was lowered

from 20 per cent to below 5 per cent. The cost for each set of cogwheels is only one-third of the original and the actual labour productivity has been increased 6 times. Three to eight new varieties of tractors and diesel engines are now produced as against a single variety in the past and the cost for each tractor or diesel engine has been lowered by half.

Third, it is favourable for raising the managerial level of the enterprises and promoting the coordinated development of the factories turning out the main engines and the factories turning out auxiliary machines. Specialized production has created conditions for strengthening scientific management. Comprehensive quality control systems, comprehensive business accounting systems and comprehensive planning and management systems have been established in all the major factories of the company. As a result of coordination and division of labour, common economic interests have brought together the factories formerly separated from each other and formed an organic body in which they rely on each other for existence. Once a major product is manufactured, a number of auxiliary products must also be made. The improvement of a main engine factory will give an impetus to a number of factories coordinating with it. The factories thus promote each other and develop in harmony.

Our next objective is to vigorously develop small-sized tractors and small horsepower diesel engines suitable to the areas in south China and to southeast Asian countries and other countries with similar conditions, further improve

our technical services, extend international technical exchanges and provide our domestic and foreign consumers with various kinds of cheap and good farm machinery products in a better way.

First of all, we will strengthen scientific research and vigorously develop new products. With regard to diesel engines, we will develop serial products between 6 to 20 horsepowers, with a rotational speed of 2,000 to 2,600 revolutions per minute and sound technical and economic properties. They will be used on ships, for farm work, for generating electricity together with generators and for other purposes. Changed forms of walking tractors will be vigorously developed for other purposes such as vehicles, tipcarts and fork lifts. Small and light walking tractors with 5 to 6 horsepowers suitable for small plots and simplified tractors in simple structure and at low cost will be designed and tested in order to meet the conditions of different places and the needs of different consumers. We will develop various kinds of farm machines and implements with good adaptability and reliability for forming complete sets of equipment, in accordance with the needs of the consumers.

Second, we will continue to improve the quality and produce more reliable farm machines and implements. The service life of basic parts and key spare parts of diesel engines will be prolonged and the principal technical and economic properties of diesel engines will catch up with and surpass the advanced international level of the same types

of products. The inherent quality and surface quality of tractors will be further improved and the service life of tractors will last longer so that the honour of wellknown products will be maintained. Other products should all meet the requirements of the main engines for forming complete sets of equipment and reach the standards of quality products.

Third, we will strengthen technical services. To cater to the needs of the domestic and foreign consumers, we will energetically promote the economic and technical cooperation and exchanges with other developing countries, enthusiastically provide various kinds of services including the supply of various kinds of products, accessories, equipment, information and techniques for manufacture and repairs. We will set up service stations at places where more of the products are used and provide regular services to the consumers. We will create conditions to meet the different needs of the consumers, so as to better serve our consumers at home and abroad.