

brief periods, the core of European culture has been north of the Alps and the Loire from the ninth century to our own day? If Pirenne's answer has been refuted, his question remains.

A more durable solution of the historical problem of the change of the gravitational centre of Europe from south to north is to be found in the agricultural revolution of the early Middle Ages. By the early ninth century all the major interlocking elements of this revolution had been developed: the heavy plough, the open fields, the modern harness, the triennial rotation—everything except the nailed horse-shoe, which appears a hundred years later. To be sure, the transition to the three-field system made such an assault on existing peasant properties that its diffusion beyond the Frankish heartland was slow; but Charlemagne's renaming of the months indicates how large the new agricultural cycle loomed in his thinking. We may assume safely that its increased productivity was a major stimulus to the north even in his day.

The agricultural revolution of the early Middle Ages was limited to the northern plains where the heavy plough was appropriate to the rich soils, where the summer rains permitted a large spring planting, and where the oats of the summer crop supported the horses to pull the heavy plough. It was on those plains that the distinctive features both of the late medieval and of the modern worlds developed. The increased returns from the labour of the northern peasant raised his standard of living and consequently his ability to buy manufactured goods. It provided surplus food which, from the tenth century on, permitted rapid urbanization. In the new cities there arose a class of skilled artisans and merchants, the burghers who speedily got control of their communities and created a novel and characteristic way of life, democratic capitalism. And in this new environment germinated the dominant feature of the modern world: power technology.

Medieval
Technology and
Social Change

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