the blood. Snellen also contains a complete bibliography of
Marey's published work, which also reappears in Braun.
FRANK, a historian of science, is interested in the transfer of
scientific instruments and technologies from the physiological
laboratory to the practice of clinical examinations. In this
article he focuses especially on the cardiography of Marey
and his successors such as the English physiologist John Burdon
Sanderson and the Dutch cardiologist Willem Einthoven. Frank
examines the invention of the sphygmmograph, a device for
recording arterial pulse in graphic form and its promotion as
a tool for clinical diagnosis. BRAIN considers the development of
the graphic method in the 19th century in a range of
disciplines. In his account, Marey appears as a central figure in the
promotion of the graphic method as a universal means of scientific
communication.

Among the books which deal exclusively with Marey's
cardiography, FRIZOT'S is the most comprehensive and
insightful, and places Marey in a broader context of
related photographic studies. Marey's role in the early history of
cinematography has been entangled in debates about
who was the "true" inventor of the cinematographic method.
This complicated and perhaps badly posed question of priority
has been further muddled by polemics and partisanship,
often tinged with nationalist passions. Accordingly, Marey's
role has figured more prominently in French accounts and
has been downplayed by English language author in favor of
Thomas Alva Edison and others. SAUVAGE is a recent and
the most judicious French account.

Robert Brain

See also Graphical Method; Photography

Marshall, Alfred 1842–1924
British economist

Bigg, Robert J., Cambridge and the Monetary Theory of
Production: The Collapse of Marshallian Macroeconomics,

Blaug, Mark, Economic Theory in Retrospect, Homewood,
York: Cambridge University Press, 1985

Coase, R.H., Essays on Economics and Economists, Chicago:
University of Chicago Press, 1994

Eshag, Eprime, From Marshall to Keynes: An Essay on the
Monetary Theory of the Cambridge School, Oxford:
Blackwell, 1963

Groenewegen, P.D., A Soaring Eagle: Alfred Marshall,
1842–1924, Brookfield, Vermont, and Aldershot,
Hampshire: Edward Elgar, 1995

Maloney, John, Marshall, Orthodoxy and the
Professionalisation of Economics, Cambridge: Cambridge
University Press, 1983; as The Professionalization of
Economics: Alfred Marshall and the Dominance of
Orthodoxy, New Brunswick, New Jersey: Transaction,
1992

Marshall, Mary P., What I Remember, Cambridge:
Cambridge University Press, 1947

Figou, A.C. (ed.), Memorials of Alfred Marshall, London:
Macmillan, 1925

Reisman, David, The Economics of Alfred Marshall, New

Reisman, David, Alfred Marshall's Mission, New York: St

Stigler, George J., Production and Distribution Theories: The
Formative Period, New York: Macmillan, 1941

Whitaker, John K. (ed.), Centenary Essays on Alfred
Marshall, Cambridge and New York: Cambridge
University Press, 1990

Alfred Marshall is historically important because he was one of
the three or four leading economic theorists of all time. His
Principles is the last great comprehensive treatise on economics,
constituting the core document of neo-classical economics and
incorporating many of the tools of analysis that are currently
central to the foundation of economics (which is called either
"price theory" or "microeconomics").

Keynes's long biographical essay in PIGOU is a still useful,
elegant and stimulating introduction to the life of Marshall.
Keynes's sometime rival Schumpeter once described this essay
as "the most brilliant life of a man of science I have ever read".
Keynes was an admiring student of Marshall's (and Keynes's
father had been an ally), so it may not be surprising that
Keynes's essay has been criticized for being too protective of
Marshall. The Nobel prize winner COASE, for example, has
carefully collected evidence on Marshall's family background,
and found it less distinguished than Keynes claimed. A brief
source that enriches the biographical detail of Marshall's life is
the memoir written by his wife, Mary MARSHALL, near
the end of her long life.

GROENEWEGEN's careful and massive work will probably
be the definitive biography of Marshall for a very long time to
come. The author appears to have read and exploited nearly
all known sources of archival information on Marshall's life,
and to have subjected early drafts of his biography to useful
criticism from several of the leading Marshall scholars.
Although generally favorable to Marshall, Groenewegen does
not shy away from issues that may show him in an unfavor-
able light, such as his attitude toward women.

Several useful summaries of various aspects of Marshall's
views are available. Written in a non-technical style, REISMAN
(1986) summarizes Marshall's positions on issues such as the
evolutionary character of economics and how to lead a moral
and good life. The Nobel prize winner STIGLER, in his
published doctoral dissertation, devoted a chapter to explaining
clearly Marshall's position on the key theoretical tools of
marginal productivity. Late in his career, Stigler (in the
WHITAKER volume) also summarized Marshall's main contribu-
tions. With characteristic Stiglerian mischief, he suggests
that one of Marshall's contributions is to have delayed by a
generation the dominance of the "abstract formalism" of the
Walrasian general equilibrium economists. A "reader's guide"
to Marshall's main work, the Principles, can be found in
a chapter in BLAUG.

MALONEY incites controversy by arguing that Marshall's
main contribution was not his addition to the toolbox of
economics, but rather his successful efforts to complete the
professionalization of economics. This professionalization is
seen as accompanied by an increased emphasis on theory, by the goal of scientific objectivity, and by a sympathy toward the marketplace in policy analysis. A quite different view is presented in REISMAN (1990), which argues that Marshall's main objective was to benefit humanity through social reform.

Although Marshall's main contribution to economics is usually seen as his development of price theory, his writings on macroeconomics have received attention, both because they were considered important when they were written, and because there is interest in how they may have influenced Marshall's student and colleague, Keynes. In ESHAG's brief monograph tracing the development of macroeconomics from Marshall to Keynes, the author finds little in this area that is original to Marshall. BIGG's analysis is more favorable to Marshall, arguing that his macroeconomic theory was a progressive research program that contained the seeds that eventually grew into the Keynesian revolution.

ARTHUR M. DIAMOND, JR

See also Keynes; Political Economy