Dhananjayarao-Gadgil Library GIPE-PUNE-009266

THE MEANING OF RATIONALISATION

BY THE SAME AUTHOR

- "OBGANISING A SALES OFFICE"
- "FACTOBY OBGANISATION" (with C. H. Northcott, Oliver Sheldon, W. Wardropper)
- "PEINCIPLES OF DIRÉCTION AND CONTROL" and "UNIVERSITY TRAINING FOR BUSINESS" in the Dictionary of Industrial Administration.

OF RATIONALISATION

BY L. URWICK O.B.E., M.C., M.A.

DIRECTOR, INTERNATIONAL MANAGEMENT INSTITUTE, GENEVA



London NISBET & CO., LTD. 22 BERNERS STREET, W.I

First Published 1929

X:E-1(D) F9 9266

PRINTED IN CREAT BRITAIN BY PORNELL AND SOME PAULTON (SOMERSET) AND LONDON

.

TN May, 1927, the League of Nations assembled at L Geneva a World Economic Conference representative of employers, employed, and economists. The work of the Conference was largely carried out by means of two committees, one dealing with commercial and the other with industrial questions. Among its other activities the Industrial Committee produced a series of resolutions under the title of "Rationalisation" which were finally adopted by the Conference as a whole.¹ These resolutions recommended "that Governments, public institutions, professional and industrial organisations, and the general public should influence producers to direct their efforts along the channels described . . . and diffuse in every quarter a clear understanding of the advantages and obligations involved by Rationalisation and Scientific Management, and of the possibilities of their gradual application."

In Great Britain a small group of employers had already taken certain steps to promote both in their own factories and among their fellows a wider appreciation and application of scientific methods of management, largely through an organisation for mutual co-operation and study in circles of

¹See Appendix A. Resolutions of the World Economic Conference, Geneva, 1927, on "Rationalisation."

non-competing undertakings known as Management Research Groups. This group felt that the opportunity presented by these authoritative resolutions should not be lost. Having ascertained that it was at the time improbable that any department of the State would take the initiative suggested by the Conference, they decided to see what could be done by voluntary effort.

They realised immediately that one of the chief difficulties in their path issued from the existing complexity of the organisations designed to assist industry or those engaged in industrial management in various specialised directions. Many great departments of state already exercised functions bearing upon the economic life of the nation. They included the Board of Trade, the Home Office, the Ministry of Health, the Ministry of Education, and the Ministry of Labour. In addition there were a variety of special bodies maintained by the Central Government. Among them may be mentioned the Department of Scientific and Industrial Research, with its dependent Trade Research Associations and special laboratories, the Industrial Fatigue Research Board, and the Empire Marketing Board.

Voluntary institutions of various kinds presented an even more complex picture. In almost every trade were organisations of employers and employed heading up to great national federations such as the Confederation of Employers Organisations, the Federation of British Industries, and the Trade Union Congress. While the object of such organisations was primarily political and economic influence, they had in practice developed many subsidiary services to their members bearing on the questions in-

cluded under the heading of "Rationalisation" by the World Economic Conference. There were research agencies either founded by trades on their own initiative or connected with educational establishments. There was a network of professional institutions who were inevitably compelled to consider the relationship of their members and of their special work to the general structure of industry. There were many undertakings founded to promote the application of some particular idea within the general field of Rationalisation—standardisation, psycho-technology, co-partnership, welfare, safety, and so on.

This situation had undoubtedly produced in the individual employer a certain impatience with new organisations. Owing to the rapid technical development of modern business methods, a development with which his methods of organisation and administration had not always kept pace, he found himself confronted with a large number of new activities somewhat outside the daily routine of his own undertaking. Conscious that failure to maintain contact with them might result in a loss of initiative and knowledge of value to his concern, he was at the same time aware that many of them were the product rather of enthusiasm than of practical experience. His time and his personal power of absorption were alike limited. Consequently he tended to regard with very definite suspicion any proposal to add to their number.

Two things were clear. The complexity of the existing institutions and their predominantly specialised character largely concealed the essential unity of the problem with which they were designed to deal.

vü

A definite movement for Rationalisation could only be founded on a policy which regarded the industrial life of the country, and the various aspects of management which were united in each separate industrial undertaking, as a whole. On the other hand, the employer, the individual in whom these multiple tendencies and activities met. as it were. at a point of action, could view with legitimate apprehension any attempt to add to the number of organisations and institutions. Without him any movement of opinion or ideas would fail of practical result. But his support on a large scale could only be anticipated if a more coherent and logical arrangement of the various specialised activities were presented for his co-operation, an arrangement definitely calculated to save him time and money. In short, the first requisite in Great Britain. if any national movement for Rationalisation was to be initiated, was some more rational arrangement of the existing forces dealing with one or other aspect of the total field. Mutatis mutandis, the same condition holds good for the majority of industrialised countries.

Accordingly, those concerned called a meeting of the officials of some fifty institutions to consider the possibilities of co-operation. That meeting appointed a committee of seven members, with power to add to their number, to consider the situation. The Committee included the Directors of the Federation of British Industries, of the British Engineering Standards Association and of the National Institute of Industrial Psychology, the Professor of Accountancy and Business Organisation at the London School of Economics, the Secretary of

viii

the Incorporated Association of Retail Distributors, and the Honorary Secretary of the Management Research Groups.

In examining the situation, the Committee concluded at an early stage that the number of institutions concerned was greatly in excess of those already consulted. From the point of view both of the employer and of the possibility of further collaboration, the first essential was a clear account of the existing activities and organisations arranged in a convenient form for reference. This work would obviously require considerable research; and for this arrangements were made. The results are to be published in the form of a handbook providing a Directory of the various institutions in Great Britain whose work is designed to contribute to industrial efficiency.

During the course of this work it became obvious that a great deal of misunderstanding existed both as to the scope and significance of the term Rationalisation itself, and as to the character of the contribution to be made, by the various forms of specialised activity; to the industrial situation viewed as a whole. Some more general account of the whole matter, viewed from this angle, was required. Originally it was intended to incorporate this account in the proposed handbook in the form of an introduction. But as opinions and knowledge of the subject developed, it seemed undesirable to do so, both on the ground of length, and the study necessarily touched upon because controversial and speculative questions with which the Committee, in its official capacity, did not wish to deal.

It was therefore decided to ask a single member of the Committee to use the material which had been prepared for this purpose, and to publish a monograph on the subject of Rationalisation on his own authority. Hence this book.

L. U.

, I

CONTENTS

CHAP.			PAGE
	PREFACE	•	v
L	HISTOBY AND DEFINITION	•	13
П.	SCIENTIFIC METHOD	•	28
Ш.	THE SCOPE OF RATIONALISATION .		33
IV.	IMPORTANCE FOR THE BUSINESS MAN		49
✓ _{₹.}	SCIENTIFIC MANAGEMENT		54
VI.	Research		78
VII.	THE FIELD OF MANAGEMENT	•	98
VIII.	THE FIELD OF ADMINISTRATION .		113
IX.	THE PRESENT POSITION IN GREAT BRITAIN		127
Χ.	Some Suggestions for Action .	•	135
XI.	Conclusion		148
	APPENDIX A: RESOLUTION ADOPTED B		
	THE COMMITTEE OF INDUSTRY, ECONOMI	σ	
	Confebence, Geneva 1927	•	151
	APPENDIX B: SOME DEFINITIONS O	Ì	
	RATIONALISATION	•	154

хi

APPENDIX A

ECONOMIC CONFERENCE, GENEVA, 1927

Resolution Adopted by the Committee on Industry, May 17th.

BATIONALISATION

"WHEREAS the rational organisation of production and distribution is one of the principal factors in increasing output, improving conditions of labour, and reducing costs of production:

And whereas such rationalisation aims simultaneously at:

- 1.—Securing the maximum efficiency of labour with the minimum of effort;
- 2.—Facilitating by a reduction in the variety of different patterns (where such variety has no obvious advantage), research into methods of manufacture, the use and replacement of standardising parts;
- 3.—Eliminating waste of raw materials and power;
- 4.—Simplifying the distribution of commodities by:
- 5.—Eliminating unnecessary transport, excessive financial burdens, and the useless multiplication of middlemen:

And whereas the judicious and constant application of this process of rationalisation is calculated to secure:

- 1.—To the community greater stability and a higher standard of life;
- 2.—To the consumer lower prices and goods more carefully adapted to his needs;

150 THE MEANING OF RATIONALISATION

both within and between nations, a competition which will in itself be healthy if directed and subordinated to the wider purposes for which industry exists. But the relative strength and prosperity of the different industrial and national groups will be determined to an overwhelming degree by the flexibility with which they can adapt themselves to an ever-widening range of technical development and of scientific knowledge.

APPENDIX A

ECONOMIC CONFERENCE, GENEVA, 1927

Resolution Adopted by the Committee on Industry, May 17th.

BATIONALISATION

"WHEREAS the rational organisation of production and distribution is one of the principal factors in increasing output, improving conditions of labour, and reducing costs of production:

And whereas such rationalisation aims simultaneously at:

- 1.—Securing the maximum efficiency of labour with the minimum of effort;
- 2.—Facilitating by a reduction in the variety of different patterns (where such variety has no obvious advantage), research into methods of manufacture, the use and replacement of standardising parts;
- 3.—Eliminating waste of raw materials and power;
- 4.—Simplifying the distribution of commodities by:
- 5.—Eliminating unnecessary transport, excessive financial burdens, and the useless multiplication of middlemen:

And whereas the judicious and constant application of this process of rationalisation is calculated to secure:

- 1.—To the community greater stability and a higher standard of life;
- 2.—To the consumer lower prices and goods more carefully adapted to his needs;

152 THE MEANING OF RATIONALISATION

3.—To the various categories of producers, larger and more certain remuneration to be fairly distributed among them:

And whereas rationalisation must be applied with the care necessary to prevent injury to the legitimate interests of the workers, and suitable measures must be taken, which do not impede the process in cases where it, in the early stages, may involve unemployment or more arduous conditions of work:

And whereas rationalisation requires, in all that concerns the organisation of labour in the strict sense of the term, the co-operation of the employees and the assistance of professional and industrial organisations and of scientific and technical experts:

The International Economic Conference recommends that Governments, public institutions, professional and industrial organisations, and the general public should:

- 1.—Influence producers to direct their efforts along the channels described above, and in particular that they should:
 - (a) Encourage and promote in every possible way the ascertainment and comparison of the most efficient methods and the most practical processes for rationalisation and scientific management and of their economic and social effects;
 - (b) Apply this process in industry, agriculture, trade, and finance, not merely to large-scale undertakings, but also to medium size and small undertakings, and eventually craftsmen and tradesmen, bearing in mind the useful results it is likely to have in the organisation and the requirements of domestic life;
 - (c) Direct special attention to suitable measures for ensuring the best, healthiest, and most dignified employment of labour, such as occupational selection, guidance and training, the distribution of labour and leisure, methods of remuneration which give the worker a fair share in any increase in output, and, in

APPENDIX A

general, conditions of labour and living favourable to the development and the strengthening of his personality;

- 2.—Carry on systematically, on an international as well as on a national scale, the standardisation of materials, parts, and products for all types of goods of international importance in order to remove the obstacles to production and trade that might arise from a policy of purely national standardisation;
- 3.--Undertake investigations on an international scale with a view to ascertaining the best methods employed and the most conclusive results obtained in every country in the application of the principles set forth above making use of the investigation already carried out in certain countries, and encourage the exchange of information among those concerned;
- 4.—And diffuse in every quarter a clear understanding of the advantages and obligations involved by rationalsation and scientific management, and of the possibilities of their gradual application."

APPENDIX B

SOME DEFINITIONS OF RATIONALISATION

World Economic Conference :

"Rationalisation, by which we understand the methods of technique and of organisation designed to secure the minimum waste of either effort or material. They include the scientific organisation of labour, standardisation of both materials and products, simplification of processes, and improvements in the system of transport and marketing."

Reichskuratorium für Wirtschaftlichkeit (Board of National Efficiency):

"Rationalisation consists in understanding and applying every means of improving the general economic situation through technical and systematic organisation. Its object is an increase in the standard of living by the provision of better and cheaper goods in larger quantities. This demands a common effort by all classes of the community."

Lord Melchett :

"The first thing rationalisation ought to aim at is a closer approximation between production and consumption. Unless you know fairly accurately what any country's production of a commodity is going to be, you cannot get that rationalisation of production and consumption that is required for economic prosperity."

Sir Arthur Balfour :

"The method of technique and organisation designed to secure a minimum amount of waste of effort and material, together with scientific organisation of labour, careful

APPENDIX B

standardisation of materials and products, and simplification of processes, and, finally, improvement in the system of transport and marketing."

Professor D. H. Macgregor :

"The right organisation of industry considered as a type of government, the producers being so related as to enable such policies to be applied as works specialisation, non-destructive elimination of the weak, and the control over the entrance of new establishments."

Sir Josiah Stamp :

In discussing the subject almost entirely in terms of amalgamations and price-fixing, and referring to the Armstrong-Vickers fusion, he writes: "It does indicate, however, a different kind of amalgamation, viz., the separation of those which are functionally different, and the joining, or rationalisation, of those that are really most alike in their activities."

Sir Gilbert Vyle :

"The conduct of industry in such a way that the price of its products was fixed, and by the aid of whole or part monopoly the agreed selling price was maintained without relation to costs of production. The condition essential to successful rationalisation was the absence of competition, and, as all of them were consumers, it was proper to inquire whether such a method of systematising industries was a good thing for the community as a whole."

Robert Boothby, M.P.:

"The conscious control of the production and development of industry."

/ The Rt. Hon. Philip Snowden, M.P. :

"Rationalisation aims at such a reorganisation of industry as will eliminate all waste in production and distribution, and will utilise, to the full, mechanical and scientific knowledge, and secure the co-operation of all the essential partners in industry."

156 THE MEANING OF RATIONALISATION

W. L. Hichens :

"The amalgamation of firms doing a similar kind of business with the object of promoting efficiency and economy."

Messrs. Donovan and Webster (Assistants to the Attorney-General, U.S.A.).

"The word rationalisation is indiscriminately applied to various firms of large scale European business combinations. In essence, the word stands for joint action to accomplish specific business purposes and the usage, of course, is misleading. . . Because combinations are useful and form economical expedients, it is now thought that they are part of the eternal order of nature—hence rational.

"The use of a single word to describe a highly complex situation is another unfortunate result. It satisfies the lazy mind and precludes equitable analysis and clear thought. It is not sufficient merely to say that rationalisation represents simplification, standardisation and stabilisation. The truth is, business enterprise may be 'rationalised' and at the same time take the form of a trust, a syndicate, a monopoly, a concern or a mere corporation."

*

										AUS
Abstract of I	abour	Stati	stice	•	•	•	• .	•	•	93
Advertising			Ŧ			•		-	47,	108
Agriculture								•	•	33
Amalgamated	Engi	leers'			•					73
American Fed						-	-	-	-	68
American Soc	iety o	f Mac	hanic	al Ens	, ineer		-		-	56
				~	5		•	•	•	~~
D-law as							40	100	100	
Balance .		•	٠	•	•	•	49,	100,	103,	
Balfour, Sir A			÷.,	•		:	•	•	•	139
Balfour Com	mittee	on i	ndust	ry an	d Tra	de	•	٠	83	, 95
Banking	.*	•	•	•	•	•	•	•	•	37
Board of Tra		•	•	•	•	٠	•	•	•	92
Board of Tra		umal	•	•	•	•		*	•	92
Bowley, Prof	10880	•	•		•	•	٠.	•	•	93
British Engin	eering	Stan	dards	Asso	ciatio	n	•	viii,	119,	142
Budgeting, T	echniq	ue of	•			•	•		•	85
Business For	ecastin	g					•	•	86,	107
		-								
Carr-Saunder	o Droi	loca o H	D N	7						93
Cartels .		165301	TA. U	1.	•	•	*	•	•	132
Capitalism		•	•	•	•	•	•	•	<u>ດັ່ດດ</u>	
	•	٠	•	•	•	•	•	. 2	0, 22	, 20
Charts .		·	Å	•	•	•	•	•	31	, 86
Committee of		ustry,	Cene.	¥86	•	•			<u> </u>	16
Competition		• •	• •	~	•	2	2, 24,	ZD, 3	Z, 40	
Confederation	a or fe	mpio	yers'	Urgan		INS	•	٠	٠	vi
Co-partnershi	ip.	•	٠	•	•	*	•		•	vi
Costing .	•		•	•	٠	•	34, 3	5, 46	, 85,	106
De Fréminvi	lle									16
Delegation			-	-		-	-			41
Dennison, H	. S.	· .	•						•	100
Department					•	•	-	. 45	73,	
Department					etrial	Rage	arch	-10	,,	• • •
weper maone	UL 001			111010	301 IOX	1000	vi, 6	n 70	00	112
Department	Stone						¥1, U	V3 10	1 001	37
Design .	200100	•	•	•	•	•	*	•	•	107
Distribution	٠	*	•	•	•	00	88, 96,	105	100	
1000000	•	•	٠	•	•	30,	00, 00,	100	100,	110
Eastern Rat						•		•	•	56
Economic Sc	ience		•	•		•	•		•	86

157

.

										PAGE
Education, Minist	er of	•		-		· .				138
Einstein	•	•	•			•				29
Empire Marketing	ζ Boa	rd	•	•	•	•	vi,	95,	112,	139
Export	•	•							•	118
Extractive Indust	ries				•					34
Famal Hand										A 7
Fayol, Henri . Federation of Bri				•	*	VIII,	^	04	• • • •	97
Mas	618 <u>0</u> 1		rice	•	V1,	vm,				119
			5.	•	•	*	•		*	
Finance	•	•	٠	•	-	•	•		*	105
Functional Farmer		- '	•	•	٠	•	•		4	52 55
Functional Forem	<u>84151111</u>	₽, -	•	•	•	•	•		•	99
General Managem	ent									104
Germany . Grading .	*	-]	3,	15,	120,	132
Grading .			-						•	35
Graphic Methods					-	-				31
-										
Trailet Minister	*									~~
Health, Ministry o	а. тт	_1 .	.		•	•	•		•	92
Health of Munitio	n we	orkers	Com	niccee	•	-	•			, 73
Home Office .	•	•	•	•	•	۰,	. •	H.	YZ.	, 95
Hoover, Herbert	•	•	•	•	٠	4	ð,	13,	119,	130
T			D - 4 - 11	D !-4-	4					
Incorporated Asso ———————————————————————————————————	nager	nent 4			of the	Unit				21
Sales Ma Individualism .	nagei	nent /	Associa	ation o	of the	Unit				96 21
Individualism . Industrial Fatigue	Rese	ment 1 earch	Associe Board	stion o	of the					96 21
Sales Ma Individualism .	nager Rese Soci	nent A sarch ety	Associe Board	ation o	of the . v	Unit			- 3, 87,	96 21 94
Sales Ma Individualism . Industrial Fatigue 	Rese Soci and	nent A sarch ety Work Admi	Associa Board s Acco	unter	of the . v	Unit			- 3, 87,	96 21 94 95
Sales Ma Individualism . Industrial Fatigue 	Rese Soci and	nent A sarch ety Work Admi	Associa Board s Acco	unter	of the . v	Unit			- 3, 87,	96 21 94 95 95
Sales Ma Individualism . Industrial Fatigue 	Rese Soci and	nent A sarch ety Work Admi	Associa Board s Acco	unter	of the . v	Unit			- 3, 87,	96 21 94 95 95 94 60
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus	Rese Soci and strial trial	nent A sarch sty Work Admi Psych Welfa	Associa Board s Acconistratiology re Wo	ountar bountar	of the . v	Unit			- 3, 87,	96 21 94 95 95 94 60 73
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus Indus Indus Indus Indus Indus	Rese Soci and strial trial c Adu	ment A sarch ety Work Admi Psych Welfe minist	Associa Board s Acco nistrat ology re Wo ration zue	ountar bion bion	of the	Unit i, 60,	68		3, 87, 60,	96 21 94 95 95 73 95 97 75
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus 	Rese Soci and strial trial c Adu	ment A sarch ety Work Admi Psych Welfe minist	Associa Board s Acco nistrat ology re Wo ration zue	ountar bion bion	of the	Unit i, 60,	68		3, 87, 60,	96 21 94 95 95 94 60 73 95 95
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus Indus Indus Indus Indus Indus	Rese Soci and strial trial c Adu ress a nittee	ment A sarch ety Work Admi Psych Welfa minist t Prag for i	Associa Board s Acco nistrat ology re Wo ration zue	ountar bion bion	of the	Unit i, 60,	68		3, 87, 60,	96 21 94 95 95 73 95 97 75
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus Public International Cong Comr	Rese Soci and strial strial strial c Adu ress a nittee ur Of	ment A earch ety Work Admi Psych Welfa minist t Prage for S	Associa Board s Acco nistratiology re Wo ration gue Scienti	stion (ounter bion orkers fic Ma	of the	Unit i, 60, ment	68		3, 87, 60,	96 21 94 95 94 60 73 95 97 75 76
Sales Ma Individualism . Industrial Fatigue 	Rese Soci and strial strial strial c Adu ress a nittee ur Of	ment A earch ety Work Admi Psych Welfa minist t Prage for S	Associa Board s Acco nistratiology re Wo ration gue Scienti	stion (ounter bion orkers fic Ma	of the	Unit i, 60, ment	68		3, 87, 60,	96 21 95 94 60 73 95 95 97 75 76 76
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus Indus Indus Indus Com Labo Mana	Resc Soci and strial trial trial c Adu ress a mittee ur Of geme	ment A sarch ety Works Admi Psych Welfs minist t Prass o for i fice nt In	Associa Board s Acco nistratiology re Wo ration gue Scienti	stion (ounter bion orkers fic Ma	of the	Unit i, 60, ment	68		3, 87, 60,	96 21 95 95 94 73 95 97 75 76 76 122
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus Indus Indus Com Labo Mans Joint Industrial Co	Resc Soci and strial strial strial trial trial trial ress a nittee ur Of geme	ment A sarch ety Works Admi Psych Welfs minist t Prass for a fice mt In s	Associa Board s Acco nistratiology re Wo ration gue Scienti	stion (ounter bion orkers fic Ma	of the	Unit i, 60, ment	68		3, 87, 60,	96 21 94 95 95 94 60 73 95 97 75 76 76 122 118
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus Indus Indus Indus Com Labo Mana	Resc Soci and strial strial strial trial trial trial trial trial trial trial trial striat strial strial striat str	ment A sarch ety Works Admi Psych Welfs minist t Prass for a fice mt In s	Associa Board s Acco nistratiology re Wo ration gue Scienti	stion (ounter bion orkers fic Ma	of the	Unit i, 60, ment	68		3, 87, 60,	96 21 95 95 94 73 95 97 75 76 76 122
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus Indus Indus Indus Indus Com Labo Mans Joint Industrial Ca	Rese Soci and strial trial c Adu ress a mittee ur Of gene ouncil ess	ment A ety Admi Psych Welfa minist t Prage for i fice nt In s	Associa Board s Accornistration ology re Wo ration gue Scienti stitute	ounter bion fic Ma	of the	Unit i, 60, ment	68		3, 87, 60,	96 21 94 95 95 97 75 76 76 122 118 113
Sales Ma Individualism . Industrial Fatigue Welfare Institute of Costs Indus In	Rese Soci and strial st	ment A ety Admi Psych Welfa minist t Prage for i fice nt In s	Associa Board s Accornistration ology re Wo ration gue Scienti stitute	ounter bion fic Ma	of the	Unit i, 60, ment	68		3, 87, 60, -	96 21 94 95 95 97 75 76 76 122 118 113 95
	Rese Soci and strial strial strial strial trial trial trial trial strial	ment A ety Admi Psych Welfa minist t Prage for i fice nt In s	Associa Board s Accornistration ology re Wo ration gue Scienti stitute	ounter bion fic Ma	of the	Unit i, 60, ment	68		3, 87, 60, -	96 21 94 95 95 95 97 75 76 76 122 118 113 95 95
	Rese Soci and strial strial strial strial trial trial trial trial strial	ment A ety Admi Psych Welfa minist t Prage for i fice nt In s	Associa Board s Accornistration ology re Wo ration gue Scienti stitute	ounter bion fic Ma	of the	Unit i, 60, ment	68		3, 87, 60, -	96 21 94 95 95 95 95 76 76 76 76 76 122 118 113 95 95 17
	Rese Soci and strial trial trial c Adu trial c Adu ur Of geme ouncil ess rship of	ment A warch ety Work Admi Psych Welfa minist t Prass for 5 fice nt In s	Associa Board s Acconistratiology re Wo retion gue Scienti stitute	ounter bion fic Ma	of the	Unit i, 60, ment	68		3, 87, 60,	96 21 94 95 95 95 97 75 76 76 76 76 122 118 113 95 17 16
	Rese Soci and strial trial trial c Adu ress a nittee ur Of geme ouncil ess campof	ment A sarch ety Work Admi Psych Welfa minist t Prag for a fice nt In s Asso	Association Board s Accornistratiology re Woration gue Scienti stitute	stion of ounter bion orkers	of the vector	Unit i, 60, ment	68		3, 87, 60,	96 21 94 95 95 97 75 76 76 76 76 76 76 76 76 76 76 76 71 113
	Rese Soci and strial trial trial c Adu ress a nittee ur Of geme ouncil ess campof	ment A sarch ety Work Admi Psych Welfa minist t Pray for S fice at In S Asso	Associa Board s Accornistratiology re Woration gue Scienti stitute	tion of the second seco	of the vector	Unit i, 60, ment	68		- 3, 87, 60, - - - - - - - - - - - - - - - - - - -	96 21 94 95 95 95 97 75 76 76 76 76 122 118 113 95 17 16

Management							3	PAGE
Balance .		•					100,	104
Distribution		•	•				•	105
Finance .	-							105
General Manager	ment	-						104
One-Man Busine							98.	102
Personnel .								105
Production .	•				-	-		105
Purchasing .	•	•	•		-	•	•	106
Research Librari	-	•	•	• •	•	- -	•	100
Technical Resea		•	•	•••	•		•	105
Transport .		•	•	• •	•		•	106
Management Rese		2	то ¹	• •	•		r; 97,	
Marketing .	aca i	2100	P	• •			108,	
Market Requireme		、 *	*	• •	•		100,	45
	uius	•	• . •		•	•	٠	89
	•		Baaaaak				*	99
Market and Man	ageme	n c	research	Associ	ation	OI GI	687	00
Britain	•	•	•	• •	•	1		96
Meaker, Walter	~`	*	•	• •	٠	15 note	, 132	
Medical Research	Counc	11	• •	• •	•	٠	•	94
Melchett, Lord	•	•	•	• •	•	•	14,	128
Melchett-Turner Co			•	• •	•	•	•	128
Ministry of Labour	r Gaze	tte	•		•			92
Money .		•	•			•	•	25
———– Market	•	٠	•		5 *	•	•	38
Motivation .	•	•	•		•	,	•	42
National Industria —— Institute				chology	and			95
Man Takatata Da			m t -			viii, (
New Industrial Re	voluti	on_{τ}	176	* *	٠	15 note	, 132	
"Normalcy "	•	•	•	• •	•	٠		61
Organisation .								35
of Inc	Instri		•	• •	•	•	•	117
Organised Labour			-	•••	•	•	•	71
organizore Addotte	•	•	•	•••	•	•	•	*1
Payment—								
Bonus Method			•					
Piece-Rate Meth	•							73
	nod		•		•			73 73
Personnel .		•	•	•	•	:	•	73
	•	ent		 	•	•	•	73 105
Philosophy of Mar	vagem	ent ogv	Applica	tion of	•		1. 87	73 105 116
Philosophy of Mar Physiology and Ph	vagem	ent logy	Applica	tion of	•	18, 4	£1, 87	73 105 116 , 94
Philosophy of Mar Physiology and Pe Planning	vagem	ent ogy	Applica	• •	•		•	73 105 116 , 94 107
Philosophy of Mar Physiology and Pe Planning Production	nagem sychol	ent logy	Applica	tion of	• • •		105,	73 105 116 , 94 107 110
Philosophy of Mar Physiology and Pe Planning Production Psycho-technology	nagem sychol	ent logy	Applica	• •	• • • • •		105, vii	73 105 116 , 94 107 110 , 68
Philosophy of Mar Physiology and Pe Planning Production	nagem sychol	ent ogy	Applica	• •	• • • • •		105, vii	73 105 116 , 94 107 110

•	• •				
Rationalisation-					FAGE
General Definition of	· .*	:	• •	. · .	20
Reconstruction, Ministry of	• •	-	 -		59
eichskuratorium für Wirt		chkeit.		14	15, 26, 129
Research				_ ^ _ ^	8, 78 et seq.
Libraries				-	100
loyal Statistical Society .		•.	· •		. 93
syde constance control .	1. 3	1 · ·			. 93
		1 - 1		3	1. Start 1.
amuel Commission on the	Coal In	dustr	7 -		93
cientific Discovery		-	· .		50
cientific Management				16. 2	0, 122, 148
	lication	of	΄, ¥		18, 59
cientific Method		••	28	31. 37.	38, 42, 44
elling	•	-			108
iheldon, Ö		-			. 116
hirley Institute					. •91
implification .			-		46, 129
mall Businesses	-				. 40
pecialisation .			•		47, 53, 105
tamp, Sir Josiah	•				. 93
tandardisation .	•	**	•-	46 5	2, 119, 129
	-			<u><u>av</u>, U</u>	-;;
	ification	Com	mittee		130, 142
and Simpl	ification	Com	mittee		130, 142 35
tetistics	ification	Com	mittee		. 35
	ification	Com	mittee :	· ·	
tatistics tatistical Research	•	•		· ·	. 35 . \$5
tatistics tatistical Research	•	•	; 60, 61	. 62, 63,	35 \$5 65, 70, 72
tatistics tatistical Research Faylor, F. W. 15, 26,	•	•	; 60, 61	. 62, 63,	. 35 . \$5
itatistics itatistical Research Saylor, F. W. 15, 26, Saylorism—	•	•	; 60, 61	. 62, 63,	35 \$5 65, 70, 72
tatistics tatistical Research Taylor, F. W. 15, 26, aylorism— Unpopularity of	•	•	; 60, 61	. 62, 63,	35 \$5 65, 70, 72
Taylor, F. W. 15, 26, Caylorism— Unpopularity of . Weaknesses of	•	•	; 60, 61	. 62, 63,	35 \$5 65, 70, 72 77, 96,-148
tatistics tatistical Research Taylor, F. W. 15, 26, aylorism— Unpopularity of	•	•	; 60, 61	. 62, 63,	35 85, 70, 72 77, 96,-148 70 65
tatistics tatistical Research Caylor, F. W. 15, 26, Caylorism— Unpopularity of Weaknesses of Sechnical Research	•	•	; 60, 61	, 62, 63, 75, 76,	35 85, 70, 72 77, 96,-148 70 65
Taylor, F. W. 15, 26, aylorism— Unpopularity of Weaknesses of cochnical Research	•	•	; 60, 61	, 62, 63, 75, 76,	35 \$5 65, 70, 72 77, 96,-148 70 65 105
tatistics tatistical Research Caylor, F. W. 15, 26, Caylorism— Unpopularity of Weaknesses of Sechnical Research	•	•	; 60, 61	, 62, 63, 75, 76,	35 \$5, 70, 72 77, 96,-148 70 65 105 6, 117, 118 90
Taylor, F. W. 15, 26, aylorism— Unpopularity of Weaknesses of Yrade Associations — Scope and Cost Yrade Research Association	, 54, 56	•	; 60, 61	, 62, 63, 75, 76,	35 \$5, 70, 72 77, 96,-148 70 65 105 6, 117, 118 90
tatistics tatistical Research Caylor, F. W. 15, 26, Caylorism— Unpopularity of Weaknesses of Sechnical Research Trade Associations — Scope and Cost Trade Boards	, 54, 56	•	; 60, 61	, 62, 63, 75, 76,	35 85, 70, 72 77, 96, 148 70 65 105 6, 117, 118 90 117
Taylor, F. W. 15, 26, aylorism— Unpopularity of Weaknesses of Yrade Associations — Scope and Cost Yrade Research Association	, 54, 56	•	; 60, 61	, 62, 63, 75, 76,	35 85, 70, 72 77, 96, 148 70 65 105 6, 117, 118 90 117 vi, 60
Taylor, F. W. 15, 26, aylorism— Unpopularity of Weaknesses of Yrade Associations 	, 54, 56	•	; 60, 61	, 62, 63, 75, 76,	35 85, 70, 72 77, 96,-148 70 66 105 6, 117, 118 90 117 vi, 60 vi
Taylor, F. W. 15, 26, Caylor, F. W. 15, 26, Caylorism— Unpopularity of . Weaknesses of . Yade Associations . Trade Boards . Trade Research Association Crade Resea	, 54 , 56	•	; 60, 61	, 62, 63, 75, 76,	35 85, 70, 72 77, 96,-148 70 65 105 6, 117, 118 90 117 vi, 60 vi 106
Tatistics tatistical Research Taylor, F. W. 15, 26, Unpopularity of Weaknesses of Sechnical Research Trade Associations Trade Boards Trade Boards Trade Research Association Trade Research Association Trade Union Congress Transport	, 54 , 56	•	; 60, 61	, 62, 63, 75, 76, ·	35 85, 70, 72 77, 96,-148 70 65 105 6, 117, 118 90 117 vi, 60 vi 106 5 0, 51
Taylor, F. W. 15, 26, Caylor, F. W. 15, 26, Caylorism— Unpopularity of . Weaknesses of . Yade Associations . Trade Boards . Trade Research Association Crade Resea	, 54 , 56	•	; 60, 61	, 62, 63, 75, 76, ·	35 85, 70, 72 77, 96,-148 70 65 105 6, 117, 118 90 117 vi, 60 vi 106 50 , 51 38, 39, 44
Tatistics tatistical Research Taylor, F. W. 15, 26, Vaylorism— Unpopularity of Weaknesses of Sechnical Research Trade Associations Trade Boards Trade Boards Trade Research Association Trade Research Association Trade Union Congress Transport	, 54 , 56	•	; 60, 61	, 62, 63, 75, 76, ·	35 85, 70, 72 77, 96,-148 70 66 105 6, 117, 118 90 117 vi, 60 vi 106 80, 51 38, 39, 44 vii
Taylor, F. W. 15, 26, aylorism— Unpopularity of Weaknesses of Yechnical Research Trade Associations Case and Cost Trade Research Association Trade Research Association Trade Research Association Trade Union Congress Transport War disturbance to Trade Waste, Elimination of Welfare Welfare Relations	, 54 , 56	•	; 60, 61	, 62, 63, 75, 76, ·	35 85, 70, 72 77, 96,-148 70 65 105 6, 117, 118 90 117 vi, 60 vi 106 50, 51 38, 39, 44 vif 95
Taylor, F. W. 15, 26, aylorism— Unpopularity of Weaknesses of Yeachnical Research Yrade Associations Trade Boards Trade Boards Trade Research Association Trade Research Association Trade Research Association Trade Union Congress Transport War disturbance to Trade. Waste, Elimination of Welfare	, 54 , 56	· 57, · · · · · · · · · · · · · · · · · · ·	60, 61 74,	, 62, 63, 75, 76,	35 85, 70, 72 77, 96,-148 70 65 105 6, 117, 118 90 117 vi, 60 vi 106 80, 51 38, 39, 44 vii

160

.

FHECKED

2

-

į,