

**CHEMISTRY OF AGRICULTURE:  
THE FOOD OF PLANTS:  
INCLUDING THE COMPOSITION,  
PROPERTIES, AND  
ADULTERATION OF MANURES**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649531790

Chemistry of Agriculture: The Food of Plants: Including the Composition, Properties, and Adulteration of Manures by Charles A. Cameron

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.  
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

[www.triestepublishing.com](http://www.triestepublishing.com)

**CHARLES A. CAMERON**

**CHEMISTRY OF AGRICULTURE:  
THE FOOD OF PLANTS:  
INCLUDING THE COMPOSITION,  
PROPERTIES, AND  
ADULTERATION OF MANURES**



©  
CHEMISTRY OF AGRICULTURE.

THE FOOD OF PLANTS:—

INCLUDING

THE COMPOSITION, PROPERTIES, AND ADULTERATION

OF

MANURES.

BY

CHARLES A. CAMERON, M.D.,

PROFESSOR TO THE DUBLIN CHEMICAL SOCIETY; LECTURER ON CHEMISTRY  
AND NATURAL PHILOSOPHY IN THE ORIGINAL SCHOOL OF  
MEDICINE, DUBLIN, ETC., ETC.

“Nihil agricultura malum, nihil dulcius, nihil libero homine dignius.”—Cicero.

© DUBLIN:

W. B. KELLY, 8, GRAFTON-STREET.

LONDON: SIMPKIN, MARSHALL, AND COMPANY,  
STATIONERS'-HALL COURT.

1857.

Chem 568.57

1862, Apr. 10.

.75  
gray sand.

PRINTED AT THE FARMERS' GAZETTE OFFICE,  
23, BACHELOR'S-WALK, DUBLIN.

TO

SIR ROBERT KANE, F.R.S., V.P.R.I.A., &c. &c.,

PRESIDENT OF THE QUEEN'S COLLEGE, CORK; DIRECTOR OF THE  
MUSEUM OF IRISH INDUSTRY.

MY DEAR SIR ROBERT,

It is with no ordinary feelings that I dedicate to you this little work on Agricultural Chemistry.

Your career, distinguished not more by brilliant achievements in the field of science than by the zeal and success with which you have labored to ensure their practical application, confirms the appropriateness of this dedication.

It cannot but be to me a source of the sincerest gratification to have my name thus associated with that of one who is so intimately identified with the scientific and industrial progress of our country.

Believe me,

My dear Sir Robert,

Yours most faithfully and obliged,

CHARLES A. CAMERON.

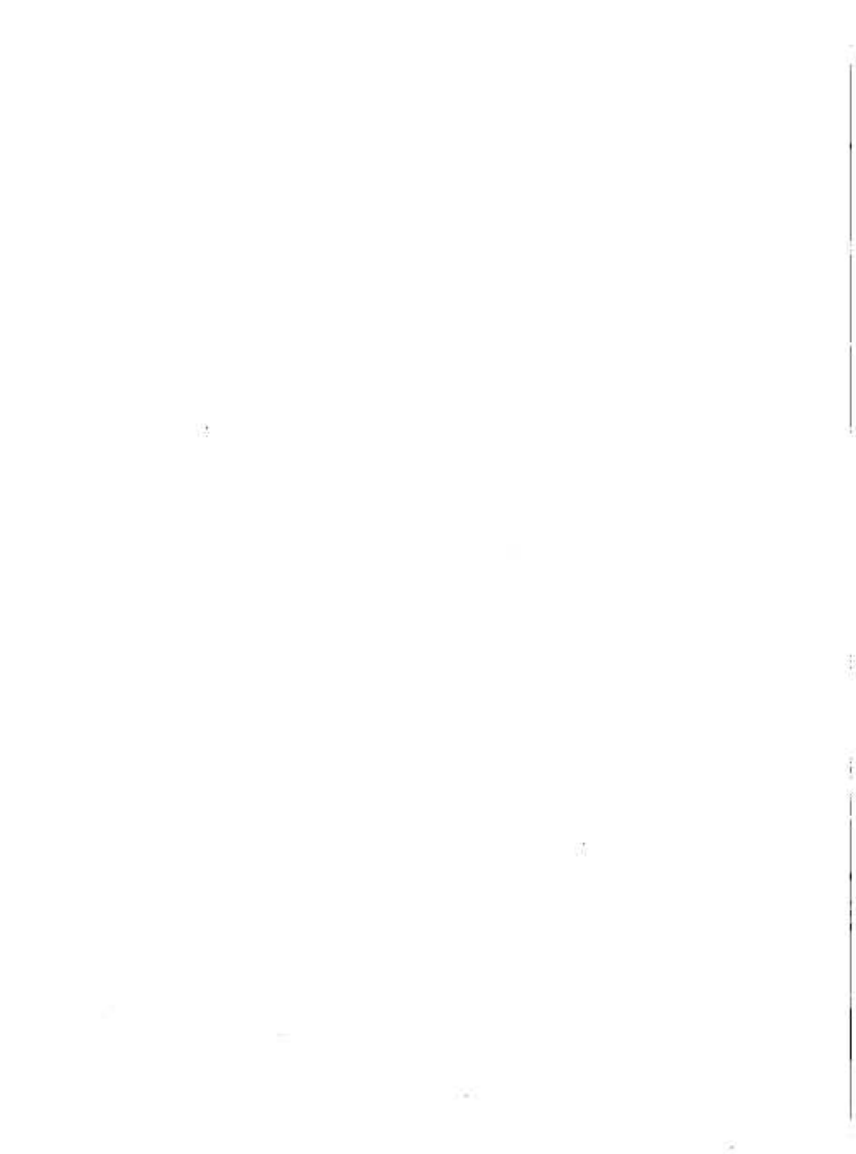


Figure 1. A 3D plot of the function  $f(x, y, z) = 1 - x^2 - y^2 - z^2$  over the domain  $[-1, 1] \times [-1, 1] \times [0, 1]$ .



## PREFACE.

---

A PORTION of the following treatise formed the subject of some lectures delivered by me at meetings of the agricultural section of the Dublin Chemical Society. Many of the members, and others present, conceiving that such a course would be advantageous to the agricultural classes, requested me to publish the substance of those lectures in a more permanent and popular form.

In acceding to their request I have endeavoured, when practicable, to avoid the use of scientific phraseology, in order that the general reader, for whose perusal this little book has been specially written, may not be unnecessarily inconvenienced. At the same time I may here observe, that it would be quite impossible to treat of any department of science without the introduction of terms which, to a reader for the *first time*, must appear embarrassing, if not discouraging. I would, however, urge upon all readers, under such circumstances, the necessity of perseverance—a little patience and application, and they will find ample compensation in the discovery which inevitably follows—that the difficulties which at first appeared unconquerable are gradually disappearing, and also in the reflection that they will have acquired knowledge, the advantages of which cannot be over estimated.

I am aware that a great deal has been done to extend and promote a knowledge of agricultural chemistry by means of several deservedly popular works on the subject ; but vast is the work which remains still unaccomplished ; indeed, it would seem to be a task to which there are no limits.

It is my most earnest desire to see a more general recognition of the importance of a scientific application of chemistry to agriculture ; and being convinced that the future prosperity of the country is, to a great extent, involved in such a recognition, I will, indeed, be gratified if, by the publication of the following pages, I have in any degree contributed to awaken a spirit of enquiry amongst the cultivators of the soil on this most important subject.

CHARLES A. CAMERON.

DUBLIN, 17, ELV-PLACE,

15th October, 1857.

## TABLE OF CONTENTS.

---

	Page.
I.—IMPORTANCE OF CHEMISTRY IN RELATION TO AGRICULTURE AND THE ARTS . . . . .	9
II.—ON THE ELEMENTARY COMPOSITION OF ORGANIC BODIES . . . . .	19
III.—ON THE NUTRIMENT OF PLANTS . . . . .	22
IV.—ON THE CONNECTION AND HARMONY EXISTING BETWEEN THE MINERAL, VEGETABLE, AND ANIMAL KINGDOMS . . . . .	28
V.—ON THE ROTATION OF CROPS . . . . .	33
VI.—ON THE RELATION BETWEEN THE PLANT AND THE SOIL . . . . .	42
VII.—ON THE IMPROVEMENT OF SOILS . . . . .	53
VIII.—ON MANURING . . . . .	64
IX.—ON FARM-YARD MANURE . . . . .	67
X.—ON NIGHT SOIL . . . . .	83
XI.—ON BONES . . . . .	89
XII.—ON GUANO . . . . .	105
XIII.—ON SEWAGE MANURE . . . . .	122
XIV.—ON NITROGENOUS MANURES . . . . .	130
XV.—ON THE DETERMINATION OF THE COMMERCIAL VALUE OF MANURES . . . . .	136
APPENDIX.—ON URRA AS A DIRECT SOURCE OF NITROGEN TO VEGETATION . . . . .	139