

# **PLANT ANALYSIS: QUALITATIVE AND QUANTITATIVE**

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Plant Analysis: Qualitative and Quantitative by G. Dragendorff & Henry G. Greenish

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**G. DRAGENDORFF & HENRY G. GREENISH**

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QUANTITATIVE**



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# PLANT ANALYSIS:

*QUALITATIVE AND QUANTITATIVE.*

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Translated from the German

BY

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20 KING WILLIAM STREET, STRAND.

1884.

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## TRANSLATOR'S PREFACE.

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SOON after the publication in German of Professor Dragendorff's 'Pflanzenanalyse,' it was suggested to me that an English translation of the work would supply a want keenly felt by both English chemists and English pharmacists.

A thorough knowledge of the German language and a practical acquaintance with many of the processes described, gained whilst a pupil in the author's laboratory, would, it was thought, enable me to offer a translation of trustworthy accuracy; and this has been my endeavour. Such alterations or additions as have been considered needful have been made in the text, the proof-sheets of which have been submitted to the author.

Most of the references have been checked, as accuracy in this particular was deemed very important. To many of them, however, access could not easily be had; but it is hoped that even in these cases very few will be found to be incorrect. To secure to English readers the usefulness of the numerous quotations, reference has been frequently made, in brackets, to abstracts or translations that have appeared in English journals.

One word has been employed in a somewhat unusual sense. The solution obtained by treating a substance with spirit is called a 'tincture,' with cold water an 'infusion,' and so on. All such solutions have been included in the general term 'extract;' the latter will not, therefore, necessarily mean the dry residue commonly called 'extract.'

The name 'petroleum spirit' sufficiently indicates the origin of

the liquid. A petroleum spirit boiling above 60° C. should not be used. Benzene should boil at 80-81° C. ('Die gerichtlich-chemische Ermittlung von Giften,' Dragendorff, 1876.)

The index will be found more copious than in the original; it has been compiled from the English text.

The high reputation of the author and the favourable reception accorded to his 'Pflanzenanalyse' are a sufficient guarantee for the value of the work.

THE TRANSLATOR.

LONDON, October 1st, 1883.

## AUTHOR'S PREFACE.

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WHILST engaged in collecting the material for my 'Ermittelung von Giften,' I formed the intention of utilizing the knowledge then acquired of the alkaloidal and other constituents of plants to improve and extend the present methods of plant analysis. In accordance with this intention I subsequently discussed in my 'Chemische Werthbestimmung' the detection and estimation of the active principles of some powerful drugs, and at the same time promised further communications on allied substances.

In the meantime, I gradually became convinced of the need of devising a process of analysis that should include as many as possible of the more important constituents of plants. Such a process was, I thought, a desideratum, as I had frequently observed that the methods of examination published in some of my researches were adopted by other chemists in cases in which I myself should have deviated from them.

This consideration was mainly instrumental in inducing me to carry my plan into execution more rapidly than was originally contemplated. No one can be more thoroughly aware than I am myself of the insufficiency of the material at present available for the construction of a systematic process of analysis, nor can anyone be more conscious of the necessity for sifting and improving the contents of the following chapters. I may, however, be permitted to remark that in proposing to my pupils subjects for scientific investigation, I have never lost sight of the plan I had formed, and I have been able to benefit by the results of upwards



of one hundred dissertations or communications published by myself or by my scholars.

Comparatively few chemists will have learnt, as I have done, that nothing can tend so much to the end aimed at as increased activity in this much-neglected branch of chemistry; and it was the hope of stimulating young chemists to steady, persevering work in testing the methods now placed before them, and devising better ones, that finally decided me. I doubt the possibility of making, without assistance, such progress as I think necessary; and I trust, therefore, that the publication of this little work will be followed by an increase in the number of my fellow-workers.

As will be explained in the introduction, I have endeavoured to construct a method that shall comprise at once both the qualitative and the quantitative, micro- as well as macro-chemical analysis of plants and their constituents. All widely distributed vegetable substances are to be included, the detection of rarer ones facilitated, and the method so arranged that other principles not hitherto observed shall, if present, attract the attention of the investigator.

An exhaustive treatise on all the known constituents of plants would naturally have obscured the method of examination. This result I have endeavoured to avoid by compressing the method of examination proper (Part I.) into the smallest possible limits; and by following it up with further observations (Part II.) on the characters, etc., of the substances there mentioned. Numerous notes and a systematic, as well as alphabetical, index will guard the reader from confusion.

I have been compelled to restrict myself to the treatment of the more important constituents of plants, that is, those that are of importance to the plant itself, or that play an important part in its economical application. The extracts in which rarer or less important substances are to be looked for have been pointed out, but it has been left for the reader himself to gain further information about them from other sources. Numerous references will aid him in his search, and also direct his attention to a number of analyses that may be of service to him in modifying or extending the process here recommended.

I have assumed in my readers an acquaintance with the leading principles of general and analytical chemistry, and have, therefore, passed over parts of the latter, such as ultimate and ash-analysis, since these have been fully treated of elsewhere. Subjects that have been discussed at length in my 'Ermittlung von Giften,' and 'Chemische Werthbestimmung starkwirkender Drogen,' have been referred to as briefly as possible. An ultimate analysis is, of course, frequently necessary in order to demonstrate the identity of a substance isolated during the investigation with some other known body. I have, therefore, collected analyses of the constituents of plants, and have arranged them both alphabetically and according to the percentage of carbon they contain.

THE AUTHOR.

