St Croix Abstract p. 432.

Educational (1901) Department.

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INDEXED

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[Despatch Abstract.]

Professorship Chemistry, Presidency College

Com.d to the D.P.I. & the A.G. despatch from the Secy: of State intimating that Mr. W.P. Blossom has been engaged for ten months to act as ——— during the absence of Dr. W.H. Wilson on leave

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

Government {1901} of Madras.

EDUCATIONAL.

Recd. } 1901. *Enclosures*

Regd. *Spare copies*

G.O., No. 379, 6th July 1901.

JULY.

Professor of Chemistry, Presidency College.

Communicating to the Director of Public Instruction and the Accountant-General despatch from the Secretary of State intimating that Mr. W. P. Bloxam has been engaged for ten months to act as — during the absence of Dr. W. H. Wilson on leave.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

Read—the following paper:—

Despatch from the Right Honourable Lord GEORGE HAMILTON, His Majesty's Secretary of State for India, to His Excellency the Right Honourable the Governor in Council, Fort St. George, dated India Office, London, 14th June 1901, No. 7, Public (Educational).

Referring to the letter of your Excellency's Government, No. 1, of the 4th April last, I have to inform your Excellency that Mr. W. P. Bloxam has been engaged, on the terms proposed by you, to act as Professor of Chemistry in the Presidency College, Madras, for ten months from the 15th July next, during the absence of Dr. W. H. Wilson, and will leave this country on the 14th June in the British India Steam Ship Company's S.S. *Goorkha*.

2. One part of Mr. Bloxam's agreement and a copy of his testimonials are enclosed.

Enclosures.

Testimonials submitted in support of the candidature of W. Popplewell Bloxam, for appointment as Lecturer on Chemistry and Physics in St. Mary's Hospital Medical School.

Chemical Department, University College,
Gower Street, London, W.C.,
October 14*th*, 1898.

Mr. W. P. Bloxam, having informed me that he is a candidate for the Chair of Chemistry in the Victoria College, Wellington, N.Z.,* I have much pleasure in stating, in furtherance of his candidature, that he is, in my opinion, well qualified to fill such a post.

He is a fluent and interesting lecturer, and I have reason to know that he is a careful and conscientious teacher.

He has published several interesting communications in scientific journals on points of Chemistry which he has done much to elucidate.

And lastly, Mr. Bloxam is a gentleman of courteous manners, and yet of decision of character, whose presence among the Staff of a College could not fail to be of advantage to the Institution.

WILLIAM RAMSAY, Ph.D., f.r.s.,
Professor of Chemistry in University College, London;
Examiner in Chemistry in the University of London.

* Professor Ramsay being at present in India, I am unable to contribute a testimonial of the present date.—W. P. B.

The Cloisters, Windsor Castle,
October 21*st*, 1898.

While I was Principal of King's College, London (from 1868—1884), I had the pleasure of knowing Mr. W. P. Bloxam, assistant to our distinguished Professor of Chemistry, Professor Charles Bloxam.

I can testify that his service in teaching and lecturing, under his uncle's direction, was conscientious and efficient, and that he was a loyal and valued member of the College staff.

ALFRED BARRY, D.D.,
Formerly Bishop of Sydney and Primate of Australia and Tasmania; formerly Principal of King's College, London; Canon of Windsor; Assistant Bishop to the Bishop of London.

Admiralty,
October 28*th*, 1898.

Sir,

In reply to your letter of 21st instant I beg to state that you held the appointment as Demonstrator of Chemistry at the royal Naval College, Greenwich, from 1st March, 1884, to 15th January, 1897, during which period you gave every satisfaction in your professional capacity; and I beg to add that you resigned your appointment on the latter date.

You are at liberty, should you so desire, to refer to the Admiralty any person or corporate body whose employment you desire to enter.

I am, Sir,
Yours faithfully,

EVAN MACGREGOR,
Secretary to the Admiralty.

To W. P. Bloxam, Esq.,
The Davy-Faraday Research Laboratory
of the Royal Institution, 20 Albemarle St., W.

Cassel,
June 3*rd*, 1900.

Mr. W. P. Bloxam, B.Sc., f.c.s., some time ago held the post of Demonstrator in the Laboratory of the Royal Naval College, Greenwich. At his request, I state, with much pleasure, that he did his duties to my entire satisfaction.

H. DEBUS, f.r.s.,
Late Professor at the R.N. College; formerly Professor of Chemistry in Guy's Hospital Medical School; formerly Examiner in Chemistry, University of London.

Chemical Department,
King's College, London, W.C.,
November 20*th*, 1900.

I have much pleasure in bearing testimony to the scientific qualifications and ability as a teacher of Mr. W. P. Bloxam, who is, I understand, a candidate for the post of Lecturer on Chemistry and Physics at St. Mary's Hospital Medical School.

I have known Mr. Bloxam since his student days, and have had many opportunities of observing and forming an estimate of his work.

Mr. Bloxam, in the appointments he has held in connection with the Chemical Department of the Royal Naval College at Greenwich, and with the University Extension Lectures in and around London, has had exceptional facilities for becoming acquainted with methods of teaching, and having taken advantage of these opportunities, has proved himself an energetic and able teacher.

Besides the routine of teaching work, Mr. Bloxam has devoted himself to original work in his subject, which has been published in the "Transactions of the Chemical Society," and he is at the present time engaged in important Research Work in the Laboratories of the College of Physicians.

From all I know of Mr. Bloxam's ability as a teacher and his power to interest and create enthusiasm in his students, I consider him eminently suited for the post he now seeks.

I may add that he has had experience in the management of large classes, and is an excellent disciplinarian.

I consider Mr. Bloxam in every way suited for the post of Lecturer at a London Medical School.

JOHN M. THOMSON, LL.D., F.R.S.,
Professor of Chemistry, King's College, London;
President of the Institute of Chemistry.

34, Cavendish Square, London, W.,
November 20th, 1900.

I am personally acquainted with Mr. W. Popplewell Bloxam, B.Sc., of the Conjoint Research Laboratories, candidate for the post of Lecturer on Chemistry and Physics in St. Mary's Hospital.

Mr. Bloxam was Assistant in the Chemical Department of King's College, London, during my tenure of the Chair of Forensic Medicine there, and I was frequently indebted to him for much valuable assistance in connection with my duties.

Mr. Bloxam is a highly-trained Chemist, and he has had large experience in analytical work.

He is, in my opinion, extremely well qualified to discharge the duties of the office which he now seeks.

DAVID FERRIER, M.D. (Lond.), LL.D., F.R.S.,
Formerly Professor of Forensic Medicine
in King's College, London.

The Chemical Department,
Royal Naval College, Greenwich,
November 20th, 1900.

Mr. W. P. Bloxam was my colleague in the Chemical Department of this College for nearly twelve years, at first as a fellow Assistant, and afterwards as my Demonstrator.

He is a most able Chemist, and his published researches on sulphur compounds bear ample testimony to the originality of his work.

He is a good lecturer and an efficient teacher, and would be a valuable addition to the Staff of St. Mary's Hospital Medical School.

VIVIAN B. LEWES,
Professor of Chemistry in the Royal Naval College;
Chief Superintending Gas Examiner to the
Corporation of the City of London.

Department of Physics,
Royal Naval College, Greenwich, S.
November 20th, 1900.

Mr. W. P. Bloxam, who is a candidate for the appointment of Lecturer on Chemistry and Physics in St. Mary's Hospital, has asked me to testify to his fitness for that post. So far as Chemistry is concerned I am not competent to give an independent opinion; but as I understand that among the duties of the Lecturer is included that of teaching Physics, I am able to accede to his request, and do so with much pleasure.

Mr. Bloxam worked in the Physical Laboratory of the Royal Naval College for some time before his examination for the degree of B.Sc. in the University of London, about twelve years ago; and the fact that he took a first class, with Experimental Physics as one of his subjects, is a proof that at that time his knowledge of Physics was wide and accurate. Since that time Mr. Bloxam's knowledge has extended and improved. I have frequently had conversations with him on physical matters, and have been impressed by his readiness and ingenuity in attacking difficulties. As an Examiner at Woolwich he has necessarily been obliged to maintain thorough acquaintance with the details of the subject.

As a Lecturer, Mr. Bloxam is persuasive and exceptionally fluent, while the manipulation of his experiments is carried out with skill and success.

As far as concerns Physics I have no doubt whatever that Mr. Bloxam's work as a teacher—should he be elected to the post he is seeking—will be highly appreciated not only by the students, but by his colleagues on the staff.

A. W. REINOLD, M.A., F.R.S.,
Professor of Physics in the Royal Naval College,
Greenwich; formerly Fellow of Merton College,
and Lee's Reader at Christ Church, Oxford.

Fire Brigade,
Southwark, London, S.E.,
November 20th, 1900.

W. Popplewell Bloxam, Esq.,
Examination Hall,
Victoria Embankment, W.C.

Dear Mr. Bloxam,

I hope you will be successful in the post you are seeking for. I remember the pleasure I took in your instruction classes at the Royal Naval College; certainly, the Laboratories and organisation at the Royal Naval College, Greenwich, where you were Demonstrator, should speak for themselves.

I am,
Yours faithfully,

L. LE L. WELLS,
Commander R.N., Chief Officer M.F.B.

Government Laboratory,
London, W.C.,
Nov. 20th, 1900.

To The Medical School Committee of
St. Mary's Hospital.

Gentlemen,

Mr. W. P. Bloxam, B.Sc. (London), is well known to me as an active worker in Chemistry, who has contributed to the Chemical Society long and elaborate papers on the Alkaline sulphides and Hydrosulphides—a branch of Inorganic Chemistry, in fact, which he may be said to have made peculiarly his own.

He has had considerable experience in teaching Chemistry, both at King's College under the late Professor Bloxam, and at the Royal Naval College, Greenwich, under Professors Debus and Lewes.

As he is a fluent and ready speaker he would, no doubt, make an effective teacher.

I am, Gentlemen,
Your obedient servant,

T. E. THORPE, C.B., F.R.S.,
President of the Chemical Society,
Chief of the Government Laboratory.

The Davy-Faraday Research Laboratory of the
Royal Institution,
20 Albemarle Street, Piccadilly, W.,
November 20th, 1900.

I have much pleasure in calling the attention of the Electors to the Lectureship in Chemistry and Physics in St. Mary's Hospital Medical School, to the claims of Mr. W. P. Bloxam, of whose work as an original investigator I have seen much during the year and a half he worked in this Laboratory. Mr. Bloxam's great experience as a teacher and as an analyst, his perseverance and enthusiasm in working at difficult chemical problems, combined with a genial presence, ought to make him, if elected, not only a pleasant colleague, but also a teacher highly respected and loved by his pupils.

ALEXANDER SCOTT, M.A., D.Sc., F.R.S.,
Superintendent of the Davy-Faraday Research Laboratory
of the Royal Institution; late Jacksonian Demonstrator
in the University of Cambridge; Secretary to the
Chemical Society.

Royal Naval College, Greenwich, S.E.,
November 21st, 1900.

Mr. W. P. Bloxam having informed me of his intention to stand for the post of Lecturer on Chemistry and Physics in St. Mary's Hospital, I have much pleasure in giving my testimony in his favour.

He was for twelve years Demonstrator in Chemistry at this College, and during that time he was most successful in imparting instruction and in handling classes of Officers under his charge. He was most regular in the discharge of his duties, and always painstaking and sympathetic. Although it is not a part of the Demonstrator's duty to deliver lectures, he occasionally did so, in the absence of the Professor, with great satisfaction; and I have understood that in lecturing to audiences under the University Extension Scheme he has proved himself unusually able in exposition.

Mr. Bloxam has a natural bent for Research work, and has for some time back taken advantage of the facilities afforded by the Davy-Faraday Laboratory for carrying on original work.

W. D. NIVEN, M.A., C.B., F.R.S.,
Director of Studies, Royal Naval College, Greenwich.

Guy's Hospital,
November 21st, 1900.

In my opinion Mr. W. Popplewell Bloxam is a desirable candidate for the post of Lecturer on Chemistry and Physics at St. Mary's Hospital Medical School, in view of his ample knowledge of these sciences.

Mr. Bloxam is an able and accomplished Chemist, and an original worker in the science; his researches have an intimate bearing upon Medicine.

He has a sound practical knowledge of Toxicology.

He is an energetic teacher, and has, I believe, been a successful one.

I have pleasure in recommending Mr. Bloxam for the vacant post, and I feel confident that, if elected, he will fulfil the duties of his office with ability, conscientiously and carefully.

THOMAS STEVENSON, M.D., F.R.C.P.,
Late Lecturer in Chemistry, and now Lecturer in Forensic Medicine at Guy's Hospital.

[*From the Proceedings of the Physiological Society, March* 16, 1901.]

The ammonium sulphate method of separating the proteids of horse serum.

By W. Popplewell Bloxam.

Preliminary communication.

Information was required by Dr. T. G. Brodie as to the proportions existing between globulin and albumin in the serum of horses (*a*) under normal conditions, (*b*) during treatment with diphtheritic toxin.

The ammonium sulphate method was employed to effect the desired separation of globulin from albumin.

The term "half saturation" as applied to ammonium sulphate requires some qualification, for it is a matter of importance whether a saturated aqueous solution or solid ammonium sulphate be employed.

Again, it is necessary to ascertain the strength of reputed saturated solutions, either by determination of their specific gravities, or by a chemical titration of which details will be given.

At the outset is met the difficulty of separating globulin from albumin brought down by the former on precipitation by salt. The necessity for this precaution seems to have been overlooked, although the characteristic power of proteids on precipitation to carry down substances previously in solution is universally recognised.

To meet this difficulty there are two courses of procedure open.

(*a*) Serum largely diluted with weak solution of ammonium sulphate of known strength is then raised to the point of half saturation by addition of saturated solution of ammonium sulphate. In this way at each precipitation only a comparatively small enclosure of albumin is possible; and, after resolution and reprecipitation being effected several times, the enclosed albumin must be negligible in quantity.

Unfortunately, however, ammonium sulphate behaves very differently with undiluted and diluted serum. Briefly, it may be stated that, for the same concentration of salt present, precipitation goes further in the case of diluted serum, and, that at a position just exceeding two-thirds of the amount of salt required for full saturation, all proteid is thrown out of solution. This knowledge rendered necessary a revision of the conditions under which the globulin precipitation is complete in diluted serum, whilst the precipitation of albumin has not yet commenced.

(*b*) Here, precipitation of the undiluted serum, or, if only moderately diluted serum, is effected by addition of an equal volume of saturated solution of ammonium sulphate.

The first precipitated globulin, containing entangled albumin, is redissolved in water and several times reprecipitated with solution of ammonium sulphate; the filtrates, in all cases, being collected and determination made of the dissolved albumin.

It appears to have escaped attention, that to effectually purify by resolution and reprecipitation in this fashion, it was absolutely necessary to know what quantity of ammonium sulphate remained adherent to the moist precipitated impure globulin.

This can be determined by subjecting an aliquot portion of the redissolved globulin to distillation, under diminished pressure, in contact with calcium hydroxide, the liberated ammonia being absorbed in excess of standard acid placed in the receiving flask. The process is, however, so tedious that another method was adopted.

Fortunately, a determination of the density of the globulin ammonium sulphate solution reveals the percentage of ammonium sulphate present, the dissolved proteid not interfering. The same density is attained whether "*x*" grams of ammonium sulphate be dissolved in distilled water or in the proteid solution.

In this way employing specific gravity floats of suitable values, the precipitation and reprecipitation of globulin can be effected at always the same degree of saline concentration. In the paper itself are given the experimental conditions observed in a full analysis of serum involving determinations of (1) total proteids, (2) globulin, (3) albumin.

Details of the results attained are also given, showing the relation existing $\frac{\text{globulin}}{\text{albumin}}$ in normal serum and in the serum of horses under treatment with diphtheritic toxin.

These results are at present put forward tentatively, as the proteid material, although in each case washed with boiling water, until the filtrate is free from dissolved ammonium sulphate, still contains adherent ammonium sulphate.

At present no rapid and satisfactory method exists, for determining the nitrogen present as ammonium sulphate without involving the nitrogen of the heat coagulated proteid. The author has made a considerable number of experiments on this subject and has hopes of introducing a satisfactory process. Experiments have also been made to determine: whether the material, known as "globulin," and obtained by half saturation with ammonium sulphate, and subsequent resolution and reprecipitation at the same salt concentration, becomes free from albumin and gives evidence of its existence as an "entity"?

Quantitative determinations show that the so-called "globulin" constantly loses weight on resolution and reprecipitation. The results then tend to show that:

(*a*) Either globulin can be changed into albumin by the ammonium sulphate treatment adopted. Or:

(*b*) That the ammonium sulphate method is faulty and allows globulin to pass into the filtrates during reprecipitations; when the results of analyses would return it as albumin.

This is to be regarded as a preliminary communication, and the author is engaged in further enquiry into the apparent transformation of globulin into albumin.

AGREEMENT made the First day of June One thousand nine hundred and one Between William Popplewell Bloxam of 7 Cromwell Residences Kenway Road Earls Court in the County of London of the first part and The Secretary of State for India in Council of the second part Whereas the Secretary of State for India in Council has engaged the party of the first part to serve His Majesty in India as Professor of Chemistry at the Madras Presidency College for the term of Ten months from the fifteenth July One thousand nine hundred and one subject to the conditions and agreements hereinafter contained Now these presents witness and the said parties hereto respectively agree as follows.

1. That the party of the first part will on being provided with the equivalent of a first-class return passage to Madras proceed thither within such time as may be prescribed by the Secretary of State for India in Council.

2. That the party of the first part will on arrival at Madras forthwith report himself to the Officers of Government there and will submit himself to the orders of the Government and of the

Officers and Authorities under whom he may from time to time be placed by the Government and that he will at all times obey the rules prescribed for the time being for the regulation of the branch of the public service to which he may belong.

3. That the party of the first part will devote his whole time to the duties of the service and will not engage directly or indirectly in any trade business or occupation on his own account and that he will not (except in case of accident or sickness certified by competent medical authority) absent himself from his said duties without having first obtained permission from the Government or its authorised Officers.

4. That if the party of the first part shall during the said term of Ten months relinquish the service of the Government (whether after having given notice or otherwise) he shall forthwith on demand repay to the Secretary of State for India in Council the sum of ninety-six pounds five shillings and four pence being the equivalent of the cost of the return passage to and from Madras paid to him on the signing of this Agreement.

5. That from the date of the party of the first part leaving England for India the Government will pay him so long as he shall remain in the said service and actually perform his duties a salary at the rate of Five hundred rupees per mensem, Provided always that if on the expiration of the said term he shall return to England within such time and by such means as the Government shall direct his Salary shall be calculated and paid up to the date of his arrival in England.

6. That the Government may at any time during the said term of Ten months dispense with the services of the party of the first part without notice in the event of misconduct on his part or of a breach by him of any of the conditions herein specified.

7. That in any payments which may be made in Great Britain under these presents the rate of exchange between England and India annually fixed by the Secretary of State for India in Council in communication with the Lords Commissioners of the Treasury shall be observed.

8. That the proceedings letters and reports of the Governor-General of India in Council or of any of the Local Governments and of all others the Officers and Agents of Government or any copies thereof or extracts therefrom which shall be sent officially to the Secretary of State for India in Council or to any Officers or servants in the Indian Service of His Majesty in England or elsewhere in any way relating to the sums of money to be paid or allowed to the party of the first part or to his conduct or in any way relating to the premises shall be received as conclusive evidence of any matter therein contained in any action or in any legal proceedings by or between the parties to these presents or in any way relating thereto.

In witness whereof the party of the first part and Sir Philip Perceval Hutchins K.C.S.I. and Sir Dennis Fitzpatrick K.C.S.I. being two members of the Council of India have hereunto set their hands the day and year first above written.

Signed by the party of the first part in the presence of HORACE H. HOLLAND, *Naval Instructor, Royal Navy, Royal Naval College, Greenwich.* } (Signed) WILLIAM POPPLEWELL BLOXAM.

Signed by the said two Members of the Council of India in the presence of W. H. TREASURE, India Office. } (Signed) P. P. HUTCHINS. („) D. FITZPATRICK.

Order—No. 379, Educational, dated 6th July 1901.

Communicated to the Director of Public Instruction and the Accountant-General.

2. Mr. Bloxam's agreement will be forwarded to the Superintendent, General Records, for safe custody.

(True Extract.)

C. J. WEIR,
Ag. Secretary to Government.

To the Director of Public Instruction.
„ Accountant-General.
„ Superintendent, General Records, with original agreement.

Ed. S. J. Pereira.

Educational (190 /) Department.

a b

CURRENT No. 925 A.

From

[Name] _____

[Designation] Secretary of State for India

[Station] London.

No. 7

Dated 4th June 1901.

Enclosures 2.

Received _____ 190 .

Registered _____ 190 .

SUBJECT.

Stating that Mr. W.P. Bloxam has been engaged to act as Professor of Chemistry in the Presidency College for 10 months.

BACK PAPERS.

FURTHER PAPERS.

TESTIMONIALS

SUBMITTED IN SUPPORT OF THE CANDIDATURE OF

W. POPPLEWELL BLOXAM

FOR

APPOINTMENT AS LECTURER ON CHEMISTRY AND PHYSICS
IN ST. MARY'S HOSPITAL MEDICAL SCHOOL.

CHEMICAL DEPARTMENT,
KING'S COLLEGE, LONDON, W.C.,
November 20th, 1900.

I HAVE much pleasure in bearing testimony to the scientific qualifications and ability as a teacher of Mr. W. P. BLOXAM, who is, I understand, a candidate for the post of Lecturer on Chemistry and Physics at St. Mary's Hospital Medical School.

I have known Mr. BLOXAM since his student days, and have had many opportunities of observing and forming an estimate of his work.

Mr. BLOXAM in the appointments he has held in connection with the Chemical Department of the Royal Naval College at Greenwich, and with the University Extension Lectures in and around London, has had exceptional facilities for becoming acquainted with methods of teaching, and having taken advantage of these opportunities has proved himself an energetic and able teacher.

Besides the routine of teaching work, Mr. BLOXAM has devoted himself to original work in his subject, which has been published in the "Transactions of the Chemical Society," and he is at the present time engaged in important Research Work in the Laboratories of the College of Physicians.

From all I know of Mr. BLOXAM'S ability as a teacher and his power to interest and create enthusiasm in his students, I consider him eminently suited for the post he now seeks.

I may add that he has had experience in the management of large classes, and is an excellent disciplinarian.

I consider Mr. BLOXAM in every way suited for the post of Lecturer at a London Medical School.

(Signed) JOHN M. THOMSON, LL.D., F.R.S.,
Professor of Chemistry, King's College, London;
President of the Institute of Chemistry.

THE CLOISTERS, WINDSOR CASTLE,
October 21*st*, 1898.

WHILE I was Principal of King's College, London (from 1868—1884), I had the pleasure of knowing Mr. W. P. BLOXAM, assistant to our distinguished Professor of Chemistry, Professor Charles Bloxam.

I can testify that his service in teaching and lecturing, under his uncle's direction, was conscientious and efficient, and that he was a loyal and valued member of the College Staff.

ALFRED BARRY, D.D.,
Formerly Bishop of Sydney and Primate of Australia and Tasmania; formerly Principal of King's College, London; Canon of Windsor; Assistant Bishop to the Bishop of London.

34 CAVENDISH SQUARE, LONDON, W.,
November 20th, 1900.

I AM personally acquainted with Mr. W. POPPLEWELL BLOXAM, B.Sc., of the Conjoint Research Laboratories, candidate for the post of Lecturer on Chemistry and Physics in St. Mary's Hospital.

Mr. BLOXAM was Assistant in the Chemical Department of King's College, London, during my tenure of the Chair of Forensic Medicine there, and I was frequently indebted to him for much valuable assistance in connection with my duties.

Mr. BLOXAM is a highly trained Chemist, and he has had large experience in analytical work.

He is, in my opinion, extremely well qualified to discharge the duties of the office which he now seeks.

DAVID FERRIER, M.D. (Lond.), LL.D., F.R.S.,
Formerly Professor of Forensic Medicine in King's College, London.

Admiralty

October 28th, 1898.

SIR,

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You are at liberty, should you so desire, to refer to the Admiralty any person or corporate body whose employment you desire to enter.

I am, Sir,

Yours faithfully,

EVAN MACGREGOR.

Secretary to the Admiralty

To W. P. BLOXAM, Esq.,
The Davy-Faraday Research Laboratory
of the Royal Institution, 20 *Albemarle St., W.*

ROYAL NAVAL COLLEGE, GREENWICH, S.E.,
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MR. W. P. BLOXAM having informed me of his intention to stand for the post of Lecturer on Chemistry and Physics in St. Mary's Hospital, I have much pleasure in giving my testimony in his favour.

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W. D. NIVEN, M.A., C.B., F.R.S.,
Director of Studies Royal Naval College, Greenwich.

CASSEL, *June 3rd*, 1900.

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H. DEBUS, F.R.S.,

Late Professor at the R.N. College; formerly Professor of Chemistry in Guy's Hospital Medical School; formerly Examiner in Chemistry University of London.

THE CHEMICAL DEPARTMENT,
ROYAL NAVAL COLLEGE, GREENWICH,
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Chief Superintending Gas Examiner to the Corporation of the City of London.

Department of Physics,
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As far as concerns Physics I have no doubt whatever that Mr. Bloxam's work as a teacher—should he be elected to the post he is seeking—will be highly appreciated not only by the Students, but by his colleagues on the Staff.

A. W. REINOLD, M.A., F.R.S.,
Professor of Physics in the Royal Naval College, Greenwich; formerly Fellow of Merton College, and Lee's Reader at Christ Church, Oxford.

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FIRE BRIGADE,
SOUTHWARK, LONDON, S.E.,
November 20th, 1900.

W. POPPLEWELL BLOXAM, Esq.,
Examination Hall,
Victoria Embankment, W.C.

DEAR MR. BLOXAM,

I hope you will be successful in the post you are seeking for. I remember the pleasure I took in your instruction classes at the Royal Naval College; certainly the Laboratories and organisation at the Royal Naval College, Greenwich, where you were Demonstrator, should speak for themselves.

I am,

Yours faithfully,

L. LE L. WELLS,
Commander R.N., Chief Officer M.F.B.

GOVERNMENT LABORATORY,
LONDON, W.C.,
~~May 20th,~~ Nov. 20th, 1900.

To THE MEDICAL SCHOOL COMMITTEE OF
ST. MARY'S HOSPITAL.

GENTLEMEN,

MR. W. P. BLOXAM, B.Sc. (London), is well known to me as an active worker in Chemistry, who has contributed to the Chemical Society long and elaborate papers on the Alkaline Sulphides and Hydrosulphides—a branch of Inorganic Chemistry, in fact, which he may be said to have made peculiarly his own.

He has had considerable experience in teaching Chemistry, both at King's College under the late Professor Bloxam, and at the Royal Naval College, Greenwich, under Professors Debus and Lewes.

As he is a fluent and ready speaker he would, no doubt, make an effective teacher.

I am, Gentlemen,

Your obedient servant,

(Signed) T. E. THORPE, C.B., F.R.S.,
President of the Chemical Society.
Chief of the Government Laboratory

CHEMICAL DEPARTMENT, UNIVERSITY COLLEGE,
GOWER STREET, LONDON, W.C.,
October 14*th*, 1898.

MR. W. P. BLOXAM, having informed me that he is a candidate for the Chair of Chemistry in the Victoria College, Wellington, N.Z.,* I have much pleasure in stating, in furtherance of his candidature, that he is, in my opinion, well qualified to fill such a post.

He is a fluent and interesting lecturer, and I have reason to know that he is a careful and conscientious teacher.

He has published several interesting communications in scientific journals on points of Chemistry which he has done much to elucidate.

And lastly, Mr. BLOXAM is a gentleman of courteous manners, and yet of decision of character, whose presence among the Staff of a College could not fail to be of advantage to the Institution.

WILLIAM RAMSAY, PH.D., F.R.S.,
Professor of Chemistry in University College, London;
Examiner in Chemistry in the University of London.

* Professor Ramsay being at present in India, I am unable to contribute a testimonial of the present date.—W. P. B.

GUY'S HOSPITAL,
November 21*st*, 1900.

IN my opinion Mr. W. POPPLEWELL BLOXAM is a desirable candidate for the post of Lecturer on Chemistry and Physics at St. Mary's Hospital Medical School, in view of his ample knowledge of these sciences.

Mr. BLOXAM is an able and accomplished Chemist, and an original worker in the science; his researches have an intimate bearing upon Medicine.

He has a sound practical knowledge of Toxicology.

He is an energetic teacher, and has, I believe, been a successful one.

I have pleasure in recommending Mr. BLOXAM for the vacant post, and I feel confident that, if elected, he will fulfil the duties of his office with ability, conscientously and carefully.

(Signed) THOMAS STEVENSON, M.D., F.R.C.P.,

Late Lecturer in Chemistry, and now Lecturer in Forensic Medicine at Guy's Hospital.

THE DAVY-FARADAY RESEARCH LABORATORY OF THE
ROYAL INSTITUTION,
20 ALBEMARLE STREET, PICCADILLY, W.,
November 20th, 1900.

I HAVE much pleasure in calling the attention of the Electors to the Lectureship in Chemistry and Physics in St. Mary's Hospital Medical School, to the claims of Mr. W. P. BLOXAM, of whose work as an original investigator I have seen much during the year and a half he worked in this Laboratory. Mr. BLOXAM'S great experience as a teacher and as an analyst, his perseverance and enthusiasm in working at difficult chemical problems, combined with a genial presence, ought to make him, if elected, not only a pleasant colleague, but also a teacher highly respected and loved by his pupils.

ALEXANDER SCOTT, M.A., D.Sc., F.R.S.,
Superintendent of the Davy-Faraday Research Laboratory of the Royal Institution; late Jacksonian Demonstrator in the University of Cambridge; Secretary to the Chemical Society.

[*From the Proceedings of the Physiological Society*, March 16, 1901.]

The ammonium sulphate method of separating the proteids of horse serum. By W. Popplewell Bloxam.

Preliminary communication.

Information was required by Dr T. G. Brodie as to the proportions existing between globulin and albumin in the serum of horses (*a*) under normal conditions, (*b*) during treatment with diphthæritic toxin.

The ammonium sulphate method was employed to effect the desired separation of globulin from albumin.

The term "half saturation" as applied to ammonium sulphate requires some qualification, for it is a matter of importance whether a saturated aqueous solution or solid ammonium sulphate be employed.

Again, it is necessary to ascertain the strength of reputed saturated solutions, either by determination of their specific gravities, or by a chemical titration of which details will be given.

At the outset is met the difficulty of separating globulin from albumin brought down by the former on precipitation by salt. The necessity for this precaution seems to have been overlooked, although the characteristic power of proteids on precipitation to carry down substances previously in solution is universally recognised.

To meet this difficulty there are two courses of procedure open.

(*a*) Serum largely diluted with weak solution of ammonium sulphate of known strength is then raised to the point of half saturation by addition of saturated solution of ammonium sulphate. In this way at each precipitation only a comparatively small enclosure of albumin is possible; and, after resolution and reprecipitation being effected several times, the enclosed albumin must be negligible in quantity.

Unfortunately, however, ammonium sulphate behaves very differently with undiluted and diluted serum. Briefly, it may be stated that, for the same concentration of salt present, precipitation goes further in the case of diluted serum, and, that at a position just exceeding $\frac{2}{3}$ of the amount of salt required for full saturation, all proteid is thrown out of solution. This knowledge rendered necessary a revision of the conditions under which the globulin precipitation is

complete in diluted serum, whilst the precipitation of albumin has not yet commenced.

(*b*) Here precipitation of the undiluted serum, or, if only moderately diluted serum, is effected by addition of an equal volume of saturated solution of ammonium sulphate.

The first precipitated globulin, containing entangled albumin, is redissolved in water and several times reprecipitated with solution of ammonium sulphate; the filtrates, in all cases, being collected and determination made of the dissolved albumin.

It appears to have escaped attention, that to effectually purify by resolution and reprecipitation in this fashion, it was absolutely necessary to know what quantity of ammonium sulphate remained adherent to the moist precipitated impure globulin.

This can be determined by subjecting an aliquot portion of the redissolved globulin to distillation, under diminished pressure, in contact with calcium hydroxide, the liberated ammonia being absorbed in excess of standard acid placed in the receiving flask. The process is, however, so tedious that another method was adopted.

Fortunately, a determination of the density of the globulin ammonium sulphate solution reveals the percentage of ammonium sulphate present, the dissolved proteid not interfering. The same density is attained whether "x" grams of ammonium sulphate be dissolved in distilled water or in the proteid solution.

In this way employing specific gravity floats of suitable values, the precipitation and reprecipitation of globulin can be effected at always the same degree of saline concentration. In the paper itself are given the experimental conditions observed in a full analysis of serum involving determinations of (1) total proteids, (2) globulin, (3) albumin.

Details of the results attained are also given, showing the relation existing $\frac{\text{globulin}}{\text{albumin}}$ in normal serum and in the serum of horses under treatment with diphthæritic toxin.

These results are at present put forward tentatively, as the proteid material, although in each case washed with boiling water, until the filtrate is free from dissolved ammonium sulphate, still contains adherent ammonium sulphate.

At present no rapid and satisfactory method exists, for determining the nitrogen present as ammonium sulphate, without involving the

nitrogen of the heat coagulated proteid. The author has made a considerable number of experiments on this subject and has hopes of introducing a satisfactory process. Experiments have also been made to determine: whether the material, known as "globulin," and obtained by half saturation with ammonium sulphate, and subsequent resolution and reprecipitation at the same salt concentration, becomes free from albumin and gives evidence of its existence as an "entity"?

Quantitative determinations show that the so-called "globulin" constantly loses weight on resolution and reprecipitation. The results then tend to show that:

(*a*) Either globulin can be changed into albumin by the ammonium sulphate treatment adopted. Or:

(*b*) That the ammonium sulphate method is faulty and allows globulin to pass into the filtrates during reprecipitations; when the results of analyses would return it as albumin.

This is to be regarded as a preliminary communication, and the author is engaged in further enquiry into the apparent transformation of globulin into albumin.

SIX PENCE 9 5 01

27

Agreement

made the First day of June One thousand nine hundred and one

Between William Popplewell Bloxam of 7 Cromwell Residences Kenway Road Earls Court in the County of London of the first part and The Secretary of State for India in Council of the second part Whereas the Secretary of State for India in Council has engaged the party of the first part to serve His Majesty in India as Professor of Chemistry at the Madras Presidency College for the term of Ten months from the fifteenth July One thousand nine hundred and one subject to the conditions and agreements hereinafter contained Now these presents witness and the said parties hereto respectively agree as follows.

1. That the party of the first part will on being provided with the equivalent of a first class return passage to Madras proceed thither within such time as may be prescribed by the Secretary of State for India in Council.

2. That the party of the first part will on arrival at Madras forthwith report himself to the Officers of Government there and will submit himself to the orders of the Government and of the Officers and Authorities under whom he may from time to time be placed by the Government and that he will at all times obey the rules prescribed for the time being for the regulation of the branch of the public service to which he may belong.

3. That the party of the first part will devote his whole time to the duties of the service and will not engage directly or indirectly in any trade business or occupation on his own account and that he will not (except in case of accident or sickness certified by competent medical authority) absent himself from his said duties without having first obtained permission from the Government or its authorised Officers.

4. That if the party of the first part shall during the said term of Ten months relinquish the service of the Government (whether after having given notice or otherwise) he shall forthwith on demand repay to the Secretary of State for India in Council the sum of Ninety six pounds five shillings and four pence being the equivalent of the cost of the return passage to and from Madras paid to him on the signing of this Agreement.

5 That from the date of the party of the first part leaving England for India the Government will pay him so long as he shall remain in the said service and actually perform his duties a Salary at the rate of Five hundred Rupees per mensem Provided always that if on the expiration of the said term he shall return to England within such time and by such means as the Government shall direct his Salary shall be calculated and paid up to the date of his arrival in England.

6 That the Government may at any time during the said term of Ten months dispense with the services of the party of the first part without notice in the event of misconduct on his part or of a breach by him of any of the conditions herein specified.

7. That in any payments which may be made in Great Britain under these presents the rate of exchange between England and India annually fixed by the Secretary of State for India in Council in communication with the Lords Commissioners of the Treasury shall be observed.

8. That the proceedings letters and reports of the Governor General of India in Council or of any of the Local Governments and of all others the Officers and Agents of Government or any copies thereof or extracts therefrom which shall be sent officially to the Secretary of State for India in Council or to any Officers or servants in the Indian Service of His Majesty in England or elsewhere in any way relating to the sums of money to be paid or allowed to the party of the first part or to his conduct or in any way relating to the premises shall be received as conclusive evidence of any matter therein contained in any action or in any legal proceedings by or between the parties to these presents or in any way relating thereto

In witness whereof the party of the first part and Sir Philip Percival Hutchins K.C.S.I. and Sir Dennis Fitzpatrick K.C.S.I. —— being two members of the Council of India have hereunto set their hands the day and year first above written.

Signed by the party of the first part in the presence of
Horace St. Holland
Naval Instructor, Royal Navy
Royal Naval College
Greenwich.

William Bythewell Bloxam.

Signed by the said two Members of the Council of India in the presence of
W. A. Heneage
India Office

Phil. P. Hutchins
D. Fitzpatrick

Dated 1st June 1901

Education Department

W. P. Bloxam Esqre

Agreement

for service in India as a Professor of Chemistry, Madras Presidency College.

Educational
Edn
4770/01

INDIA OFFICE,

LONDON, 14th JUNE, 1901.

PUBLIC (EDUCATIONAL).

No. 7.

TO HIS EXCELLENCY THE RIGHT HONOURABLE THE GOVERNOR

IN COUNCIL, FORT ST. GEORGE.

ASSISTT SECY TO GOVT
4-JUL.1901
LOCAL MUNL EDL & LEG DEPTTS

My Lord,

Referring to the letter of Your Excellency's Government, No. 1, of the 4th April last, I have to inform Your Excellency that Mr. W. P. Bloxam has been engaged, on the terms proposed by you, to act as Professor of Chemistry in the Presidency College, Madras, for ten months from the 15th July next, during the absence of Dr. W. H. Wilson, and will leave this country on the 14th June in the British India Steam Ship Company's S.S. "Goorkha".

2. One part of Mr. Bloxam's Agreement, and a copy of his testimonials are enclosed.

I have the honour to be,

My Lord,

Your Lordship's most obedient humble Servant,

George Hamilton

[E. / 4]
1,500—8-11-00.

EDUCATIONAL DEPARTMENT.

26 nP

READ AGAIN G.O., No. ..... , dated ..... 190 .

" " " " ..... , " ..... 190 .

READ ALSO:—

C. No. 925-A From the Secretary of State , No. 7 , dated 14th June 1901.

" " ..... , " " ..... , " ..... , " ..... 190 .

" " ..... , " " ..... , " ..... , " ..... 190 .

ORDER No. 379, dated 6.7. 1901.

Communicated to the D.P.I. and the Accountant General.

2 Mr. Bloxam's agreement will be forwarded to the S.I.R. for safe custody.

Pdd 6/7/1

6.7.01

5.7.1

[Offic. Print testimonials & agreement]

as an appendix to order

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