



- 1) SKPEELAG = ciphertext encryption key = $7x + 11 \pmod{26}$
 blizzard = plaintext decryption key = $15y + 17 \pmod{26}$
- 2) There is no added security combining two affine ciphers to one encryption scheme. All it does is create one affine cipher
- 3) $\begin{vmatrix} 4 & 7 \\ 5 & 11 \end{vmatrix}$ encryption key
 (Hill's Matrix)
 a) Encrypt "winter" = ODQOFZ
 b) Calculate decryption matrix = $\begin{vmatrix} 3 & 11 & 19 \\ 21 & 4 \end{vmatrix}$

- 4) Key Length = 6
 Keyword = DARWIN

Context: Introduction when on board HMS Beagle as naturalist I was much struck with a certain facts in the distribution of the mammals of South America and in the geological relations of the present to the past. I was struck at that continent these facts seemed to me to throw some light on the origin of species that mystery of mysteries as it has been called by one of our greatest philosophers. On my return home it occurred to me that something might perhaps be made out on this question by patiently accumulating and reflecting on all sorts of facts which could possibly have any bearing on it. After five years work I allowed myself to speculate on the subject and drew up some short notes. These I enlarged into a sketch of the conclusions which then seemed to me probable from that period to the present day I have steadily pursued the same object. I hope that I may be excused for entering on the personal details as I give them to show that I have not been rashly in coming to a decision. My work is now nearly finished but as it will take me two or three more years to complete it and as my health is far from strong I have been urged to publish this abstract. I have more especially been induced to do this as Mr Wallace who is now studying the natural history of the Malay Archipelago has arrived at almost exactly the same general conclusions that I have on the origin of species last year he sent to me a memoir on this subject with a request that I would forward it to Sir Charles Lyell who sent it to the Linnean Society and it is published in the third volume of the journal of that society. Sir Lyell and Dr Huxley who

both knew of my work the latter having read my sketch of proposed me by thinking it advisable to publish with Mr Wallace's excellent men some kind of extracts from my manuscripts. These abstracts which I now publish most necessary be imperfect I cannot there give references and authorities for my several statements and I must trust to the reader supposing some confidence in my accuracy no doubt errors will have crept in though I hope I have always been cautious in trusting to good authorities as far as I can here give only the general conclusions at which I have arrived with a few facts in illustration but which I hope in most cases will suffice no one can feel more sensible than I do of the necessity of hereafter publishing in detail all the facts with references on which my conclusions have been grounded and I hope in a future work to do this for I am well aware that seriously a single point is discussed in this volume on which facts cannot be adduced as if it appeared leading to conclusions directly opposite to those at which I have arrived a fair result can be obtained only by fully stating and balancing the facts and arguments on both sides of each question and this cannot possibly be more fully done.