Wallace Eckert

Nakumbuka Dk Eckert aliniambia, "Siku moja, kila mtu atakuwa na kompyuta kwenye dawati lao." Macho yangu yalifunguka. Hiyo lazima iwe katika miaka mapema ya 1950's. Aliona mapema. -Eleanor Krawitz Kolchin, mahojiano ya Huffington Post, Februari 2013.

Picha: Karibu 1930, Jalada la Columbiana.

Wallace John Eckert, 1902-1971. Pamoja na masomo ya kuhitimu huko Columbia, Chuo Kikuu cha Chicago, na Yale, alipokea Ph.D. kutoka Yale mnamo 1931 chini ya Profesa Ernest William Brown (1866-1938), ambaye alitumia kazi yake katika kuendeleza nadharia ya mwongozo wa mwezi. Maarufu zaidi kwa mahesabu ya mzunguko wa mwezi ambayo yaliongoza misheni ya Apollo kwenda kwa mwezi, Eckert alikuwa Profesa wa Sayansi ya Chuo Kikuu cha Columbia kutoka 1926 hadi 1970, mwanzilishi na Mkurugenzi wa Ofisi ya Taasisi ya Taaluma ya Thomas J. Watson katika Chuo Kikuu cha Columbia (1937-40), Mkurugenzi wa Ofisi ya Amerika ya US Naval Observatory Nautical Almanac (1940-45), na mwanzilishi na Mkurugenzi wa Maabara ya Sayansi ya Watson ya Sayansi katika Chuo Kikuu cha Columbia (1945-1966). Kwanza kabisa, na daima ni mtaalam wa nyota, Eckert aliendesha na mara nyingi alisimamia ujenzi wa mashine za kompyuta zenye nguvu kusuluhisha shida katika mechanics ya mbinguni, haswa ili kuhakikisha, kupanua, na kuboresha nadharia ya Brown. Alikuwa mmoja wa kwanza kutumia mashine za kadi za kuchomwa kwa suluhisho la shida tata za kisayansi. Labda kwa maana zaidi, alikuwa wa kwanza kusasisha mchakato wakati, mnamo 1933-34, aliunganisha mahesabu na kompyuta za IBM kadhaa na mzunguko wa vifaa na vifaa vya muundo wake ili kusuluhisha usawa wa aina, njia ambazo baadaye zilibadilishwa na kupanuliwa kwa IBM ya "Aberdeen "Calculator inayoweza

kupatikana ya Udhibiti wa Mpangilio, Punch Kuhesabu elektroniki, Calculator ya Kadi iliyopangwa, na SSEC. Kama Mkurugenzi wa Watson Lab na Mkurugenzi wa Sayansi safi ya IBM, alisimamia ujenzi wa SSEC (kwa kweli kompyuta ya kweli) na NORC (chini ya hoja ya kwanza supermomputer ya kwanza), kompyuta zenye nguvu zaidi za siku zao, na pia IBM 610 - "kompyuta ya kibinafsi" ya kwanza ulimwenguni - na akaweka kompyuta za kwanza huko Columbia kufunguliwa kufanya utafiti na maagizo, wakati huo akianzisha kile ambacho kinaweza kuwa mtaala wa kwanza wa sayansi ya kompyuta, mnamo 1946, pamoja na kozi yake mwenyewe, Astronomy 111-112: Mashine Mbinu katika Kompyuta ya Sayansi, pamoja na kozi zingine ambazo mwaka huo huo zilifundishwa na wanasayansi wa Watson Lab Grosch na Thomas.

Masilahi ya angani ya Eckert hayakuwa mdogo kwa Mwezi. Pia alitengeneza ephemeris ya sayari tano za nje na anafanya kazi kwenye nadharia ya orbital na mbinu za kupima. Aliboresha wakati wa ujio wa Watson Lab Aberdeens kuziba pengo la baada ya vita katika hesabu ya ephemeris ya mwaka, Kleine Planeten, wakati hakuna kituo cha kitaifa kinachoweza kujibu kwa wakati [59].

Picha: [103]; BONYEZA kupanua.

Wakati Eckert alitumia nguvu kubwa kusanikisha mahesabu yake mwenyewe, hakuwa macho ya kuzimu akifanya kila kitu mbele yake. Katika barua ya Januari 11, 1941, barua kwa IBM's D.W. Rubidge inayohusu Mradi wa WPA wa Ujumuishaji wa Jedwali la Hisabati, Eckert aliandika, "Katika kujadili mradi mkubwa wa kutengeneza meza lazima uzingatie kama wazo ni kuzuia kazi au kuifanya. Mashine yako haifai kabisa kwa mwisho, na kwa hivyo haifai kama suluhisho la shida ya ukosefu wa ajira wakati wa unyogovu. "

Mnamo 1948 Eckert alipokea Chuo cha kitaifa cha Sayansi James Craig Watson medali ya utafiti bora wa angani. Mpango wake ulioboreshwa wa Lunar Ephemeris aliongoza ujumbe wa Apollo [92]; alihudhuria uzinduzi wa Apollo 14 kabla ya kifo chake. Eckert pia ni mwandishi wa Mbinu za Kadi za Punch katika Kitabu cha Sayansi (1940), alizingatia kitabu cha kwanza cha kompyuta,

ambacho kiliwashawishi mapainia wengine wa kompyuta kama vile Presper Eckert (hakuna uhusiano!), Howard Aiken, na Vannever Bush [90], na anaweza pia uthibitishwe, kwa maana, na "kompyuta" ya kwanza-aina ya udakuzi (1945). Eckert alileta kompyuta katika Chuo Kikuu cha Columbia na alichukua jukumu muhimu katika kuileta ulimwengu wote.

Kutoka kwa Jamhuri ya Lunar, akielezea asili ya jina Eckert Crater (17.3 N Latitude; 58.3 E Longitude):

Picha: IBM, muda 1970

Eckert, Wallace John (1902-1971), mtaalam wa nyota wa Amerika; painia katika utumiaji wa kompyuta kusambaza data za angani. Mkurugenzi wa Ofisi ya U.S. Nautical Almanac wakati wa Vita vya Kidunia vya pili. Katika chapisho hili alianzisha mbinu za mashine ya kuandaa na kuchapa meza na kuanza kuchapisha Hewa ya Almanac mnamo 1940. Eckert alielekeza ujenzi wa kompyuta kadhaa za ubunifu kwa kufanya mahesabu ya unajimu, pamoja na Uhesabuji wa safu ya elektroniki ya Uteuzi (SSEC, 1949) na Calculator Calculator ya Naval Ordnance (NORC, 1954), ambayo kwa miaka mingi ilikuwa kompyuta yenye nguvu zaidi ulimwenguni. Usahihi wa mahesabu ya Eckert ya mzunguko wa Mwezi ulikuwa mzuri sana kwamba mnamo 1965 aliweza kuonyesha kwa usahihi kwamba kulikuwa na mkusanyiko wa misa karibu na uso wa mwezi. Mnamo 1967, alitoa data ambayo iliboresha kwenye nadharia ya Brown ya Mwezi.

Maneno ya lazima (hayakuhusishwa) katika operesheni ya Eckert-Smith Nautical Almanac ya 1966 inahitimisha, "WJ Eckert alikuwa ameshafanya kazi na EW Brown katika ufafanuzi wa nadharia ya mwisho wakati wa miaka ya 1930. Alirudisha mawazo yake kwa nadharia ya Lunar miaka ya 1950 wakati wa moja kwa moja. mashine za kompyuta - ambazo kwa maendeleo yake yeye mwenyewe alikuwa na msaada mkubwa - alifanya shughuli inayoweza kudhibitiwa zaidi. Ni muhimu kukumbuka kuwa alikufa muda mfupi baada ya kumaliza maandishi kwa sehemu ya mwisho ya maandishi haya. " Kazi yake ilikamilishwa na Martin Gutzwiller (mtaalam wa fizikia na mwenzake wa Eckert Watson-Lab) na Dieter S. Schmidt (sasa kwenye kitivo cha EE&CS katika

Chuo Kikuu cha Cincinnati) na kuchapishwa katika karatasi za Gutzwiller zilizoorodheshwa hapo chini.

Martin Gutzwiller anasema, "Licha ya mafanikio yake yote ya ajabu Eckert alibaki mtu bila kuwa na ujanja mdogo. Mawazo yake yalikuwa wazi na uamuzi wake ulikuwa na msingi mzuri na wazi kila wakati." [90]. Wote waliomjua wanakubali alikuwa kimya, wa kupendeza kuwa na, na mwenye adabu kwa kosa.

Kuhusu Wallace Eckert, Herb Grosch anasema, "Kama angalikuwa anataka kuachana na unajimu na kuwa mtu wa kompyuta, nina hakika angekuwa mtu anayejulikana zaidi. Michango yake ilikuwa kubwa lakini walificha kwa ukweli kwamba yeye ni kweli waliwafanya ili kufanya nyota bora "(Hotuba ya Makumbusho ya Kompyuta, Oktoba 22, 1982). Na baadaye, "Kama kungekuwa na tuzo ya Nobel katika unajimu [Eckert] na makubaliano yake Dirk Brouwer huko Yale na Gerald Clemence huko Naval Observatory wangeyashinda kwa mchango mkubwa walioutoa kwa ufahamu wetu halisi wa mwendo wa Mwezi na sayari, kwa kutumia vifaa vya SSEC na IBM baadaye. " [57, p.118].

Maswali:

• Jukumu la Eckert katika ukuzaji wa kompyuta za kisasa limepuuzwa sana na, naamini, lilisimamishwa. Mchango wake muhimu ni kufanikiwa kwa mpangilio wa moja kwa moja, kwanza mnamo 1933-34 katika vifaa vyake vya Observatory vya Rutherford, kisha kwa kiwango fulani mnamo 1941-46 katika Naval Observatory (katika printa ya meza iliyoendeshwa na kadi yake), kisha katika uwanja wa posta wa Wars Watson Lab, kwanza na mahesabu ya majaribio ya kupeana kwa majaribio, Nancy na Virginia, kisha na SSEC na NORC. Njia ya mpangilio wa kiotomatiki ilikuwepo kwenye Kikokotoo cha Kuhesabu Aberdeen cha IBM (1944) na angalau historia moja (Rejista ya Campbell-Kelly hapo chini) inamthibitisha Eckert (lakini bila sifa) kwa kuwa na "maalum" mashine hizi wakati wa Naval Observatory, wakati John McPherson anataja safari za wakati wa vita na Eckert kwenda kwa Maabara ya Utafiti wa Ballistics [74]. Herb Grosch anasema:

Kuhusu Aberdeens, mimi ni upande wako: Siwezi kusaidia kuamini [Eckert] alichangia. Lakini haionekani kuwa na athari ya ushahidi. Kwa mfano, ni jinsi gani "aliamuru" zile za WSCL? Je! Ilikuwa ni sehemu ya mchakato wa kukodisha-kazi mwanzoni mwa 1945? IBM ilihamia haraka sana na The Old Man in control - kuongeza uzalishaji wa kutoka tatu (visas mbili na Dahlgren) hadi tano ingekuwa sinema, na sio neno la haja ya kuwa limeandikwa. Lakini hiyo ina maana Wallace alijua kuwa kusasishwa kunapaswa kutendeka wakati bado kwenye Naval Observatory! Mimi betcha Cunningham niliongea naye kwa simu mwishoni mwa 1944, labda kurudia tena, lakini hatutawahi kujua.

Usijali! Julai 29, 2010: Allan Olley anaripoti juu ya mahojiano ya Historia ya Orali ya IBM ya 1967 ambapo siri hiyo itatatuliwa:

S: Je! Umewahi kujiingiza katika vitu kama hesabu ya kupeana kama vile Aberdeen na kuyatathmini ili uweze kutumia katika operesheni yako?

E: Hapana. Vitu hivi vilikuja kwa kuchelewa vitani na kwa wakati huo nilikuwa najiandaa kuondoka katika Oleazari ya Naval ...

Nancy na Virginia zilijengwa na Pete Luhn huko IBM na kupelekwa Watson Lab mnamo 1946; jukumu la Eckert katika kubuni na uzalishaji wao lilikuwa nini? Je! Juu ya Calculator ya Mpangilio wa Kadi ya IBM (1949)? Mwisho huo kawaida hupatikana nyuma ya mfano katika Ndege ya Northrop iliyojengwa mnamo 1948 kutoka kwa mashine ya IBM 603 na mashine ya kupata habari 405, lakini ninashuku kwa nguvu kwamba maoni ya Northrop yalipata maoni kutoka kwa mawasilisho ya Eckert's 1946 na / au 1947 IBM ya Mkutano au Utaratibu. alimtambulisha Nancy na Virginia (ingawa sio kwa jina) kama "hesabu za mlolongo wa watoto" zilizopangwa kutoka kadi [89,105]. Brennan [9] anaandika ya:

... elektroniki kuongezeka kwa aina anuwai (inayojulikana tu na majina ya nambari kama Nancy na Virginia). Ya riba maalum ilikuwa mfano wa majaribio wa processor ya hesabu ya haraka, ambayo Eckert aliunganisha kwa mashine ya uhasibu. Badala ya kupangwa kupitia wiring kwenye jopo la kudhibiti, mashine hiyo ilidhibitiwa na viboko vyenye alama kwenye kadi. Matokeo yalikuwa aina ya mapema ya hesabu ya mlolongo ambayo ilitarajia Calculator ya Mpangilio wa Kadi ya IBM.

• Je! Sehemu gani ya hesabu ya Eckert huko Pupin Hall ilishiriki katika Mradi wa mapema wa Manhattan, wakati Fermi, Szilard, Rabi, Urey, et al., Walikuwa huko Columbia mwishoni mwa miaka ya 1930 katika jengo lile lile? Kwa kuzingatia kiwango cha kizazi kijacho cha wanasayansi wa nyuklia kwa kukusanya na kuchambua data kubwa, ni ngumu kuamini wasingetaka kwenye mashine hizi. Lakini kulingana na Herb Grosch, hii haikuwa hivyo:

Wavulana [wa nyuklia] wote walitaka kuruka kwenye mashine BAADA ya kumuona von Neumann na Feynman wakitumia (1944, say). Sio mapema. Urey na Rabi walimjua Eckert kama MFCCU wenzake [Kituo cha Kitivo cha Wanaume cha Colombia] na mtaalam wa nyota, lakini kama ninavyosema kwenye p.30 hakuna mtu aliyechanganya vitu vyao - nje ya swali. Kile kidogo kilifanywa kutatua takwimu za PDE kilifanywa na mbinu za kupumzika, na zaidi na wahandisi kama Southwell kuliko na Courants. Kulikuwa na njia kwa sababu ya bloke inayoitwa Ritz ..... Hizi hazikufanikiwa vizuri kwa mashine [za kadi iliyopigwa], au mizigo ya mapema ama. Aina ya kusaga mbali ambayo wanajimu walikuwa wamefanya kwa kusita - maisha kwa kichapisho kimoja - hawakupata takriban Thirties katika [fizikia]. Walijenga vimbunga badala!

Kwa vyovyote vile, ni ukweli kwamba vifaa vya kompyuta vya Maabara ya Sayansi ya Los Alamos ya Mradi wa Manhattan, pamoja na Aberdeen Proving Ground ya Jeshi la Merika, zilitokana na Eckert's Columbia Lab.

Je! Ni mawasiliano gani yaliyokuwepo kati ya Wallace Eckert na Presper Eckert na John Maucily? Je! Ni ushawishi gani, ikiwa kuna wowote, maabara ya Colombia ilikuwa na ENIAC? Njia hiyo (ikiwa kuna moja) imejificha vizuri kwa kuwa vipengele vya mradi wa ENIAC viliainishwa au angalau siri katika maana ya kawaida ya neno. Hakuna mawasiliano katika makaratasi ya Eckert, lakini hizi hazijumuishi karatasi zake za Naval Observatory, ambazo zimepotea. Allan Olley anaripoti tarehe 25 Julai 2006:

Hivi majuzi niligundua kulikuwa na nakala ya IEEE Spectrum iliyoandikwa na Henry Tropp (ambaye aliandika kuingia kwa DSB kwenye Eckert) iliyonukuu kitabu cha Eckert cha 1940. Kichwa ni "Miaka ya ufanisi: uvumbuzi" (IEEE Spectrum Vol. 11 (2) pp. 70-79, 1974). Inazungumza sana juu ya George Stibitz, Howard Aiken na John Mauchly. Wallace Eckert ametajwa kwenye ukurasa wa 74 wakati akizungumza juu ya John Mauchly:

"Wakati alipokuwa Ursinus [ilianza mnamo 1933], [Maucily] aligundua machapisho ya kutumia kadi za kuchomwa kwa maandishi ambayo yalikuwa yameandikwa na Wallace J. Eckert wa maabara ya kompyuta ya Chuo Kikuu cha Colombia ... Wakati Mauchly alisoma makaratasi ya Eckert, aligundua jinsi kidogo alielewa juu ya takwimu na akaanza kusoma mada hiyo. Mnamo 1936 alipata kazi ya majira ya joto katika sehemu ya baba yake katika Taasisi ya Carnegie na akaanza kutumia yale aliyojifunza juu ya takwimu kwa takwimu za hali ya hewa ... "

Kwa bahati mbaya kunukuu katika kifungu hiki ni lax (haionyeshi chochote katika sehemu hii isipokuwa kitabu cha Eckert). Ikiwa ninaelewa vizuri chanzo chake labda ni kitu katika Mradi wa Historia ya Kompyuta ya Smithsonian ambapo Tropp alikuwa akifanya kazi karibu wakati huu, kwa hivyo barua, akaunti iliyochapishwa au mahojiano).

Ningedhani inaweza kuwa kumbukumbu na Maucily mwenyewe ambayo ndio msingi wa hii. Kuzingatia tarehe ni sawa 1933-1936 nyaraka pekee za Eckert kwenye hesabu ya kadi za kuchomwa ambazo zilichapishwa ilikuwa nakala ya hotuba yake katika shirika la Astronomy (1934), nakala yake juu ya ujumuishaji wa hesabu za asteroid katika AJ na nakala katika kitabu cha Baehne . Kwa kuzingatia shauku ya usomaji ulisababisha kitabu cha Baehne kuonekana kama mgombea anayewezekana zaidi (kwani nadhani ilikuwa na vitu zaidi kwenye mstari huo).

• Je! Printa ya Jalada la Jalada la Eckert la Eckert pia ni mfano wa kwanza wa programu ya kadi? Maelezo ni sketchy, lakini siwezi kupata mfano wa mapema. Ikiwa hii ni kweli, ni muhimu. Ni wazo la nani lilikuwa kutekeleza mpango huo kutoka kwa kadi badala ya kabisa kutoka kwa plugboard? Tena, makaratasi ya Eckert kutoka miaka yake ya Naval Observatory yamepotea. (Herb Grosch anasema "kuendeshwa kwa kadi" sio sawa na "kadi iliyowekwa"; inaonekana kadi za data na kadi kuu zilikuwa tofauti, na uwongofu mwingi wa kadi za bwana na plugboards ulihitajika, kinyume na ubadilishaji wa Eckert wa Rutherford Lab Kikasha cha 1934, ambacho Herb anasema, "'kilibadilisha plugboard' bila kuacha - tofauti kabisa na asili zaidi.")

Je! Eckert aliwasiliana moja kwa moja na NASA? Kwa kuwa alianza tena kazi yake ya mzunguko wa mwezi tu Apollo alipokuwa akijitayarisha, utafikiria kungekuwa na uhusiano wowote, lakini siwezi kupata ushahidi wowote. (Ripoti zote zinaonyesha kwamba kipindi chake cha Uboreshaji cha Lunar Ephemeris cha 1949 kilikuwa "kizuri") na NASA haikutaka kulazimisha mambo kwa kuanzisha meza au mbinu mpya.) Lakini kwa njia moja au nyingine, kazi ya Eckert, kweli iliongoza ujumbe wa Apollo. Na inawezekana kabisa kwamba Kielelezo cha Siri Katherine Johnson (na wengine) kulingana na kazi yake kwenye Eckert. Nashangaa kama waliwahi kuwasiliana au kukutana.

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New York Times:

These were reported in July 2010 by Allan Olley.

- Letter to the Editor 2 -- No Title; Wallace J. Eckert New York Times (1857-Current file); Oct 26, 1969; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. BR48 [Actual letter by Eckert responding to a review of Think by Rodgers]
- SIGMA XI ADMITS 63 AT COLUMBIA New York Times (1857-Current file); May 6, 1936; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 12 [Eckert joins Sigma Xi]
- STATESMEN ASKED TO BE PILOTS, TOO By CHARLES A. FEDERER Jr., Member Hayden Planetarium StaffSpecial to THE NEW ... New York Times (1857-Current file); Jun 13, 1942; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 30 [Eckert affirms the call of others for better navigational training of US pilots]
- CONFERENCE PICKS LEONIA CANDIDATES Special to THE NEW YORK TIMES. New York Times (1857-Current file); Feb 2, 1948; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 11 [Eckert runs for the School Board in Leonia NJ, which has an odd electoral process]
- ROBOT BRAIN PLOTS ORBITS OF PLANETS By ALEXANDER FEINBERG New York Times (1857-Current file); Sep 12, 1949; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 23 [Announcement of Outer Planets Problem to be run on SSEC]
- SCIENTIFIC PUZZLER SOLVED BY 'BRAIN' New York Times (1857-Current file); Jul 18, 1952; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 17 [Solution of the longstanding problem relating to the emergence of turbulence in fluid flow]
- About New York By MEYER BERGER New York Times (1857-Current file); Dec 10, 1954; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 29 [article on the NORC]
- Role of Computers in Astronomy Shown in Planetarium's Exhibit By PHILIP BENJAMIN New York Times (1857-Current file); Sep 13, 1958; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 40 [A show at the Hayden Planetarium, also Eckert commented on the computers he saw in the Soviet Union reassuring people that they were not ahead of the USA.]
- Soviet's Scientific Surge Found Cutting U. S. Lead By WALTER SULLIVAN New York Times (1857-Current file); Jul 20, 1959; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 1 [Mostly worrying about Soviet scientific resources. Eckert is quoted as pointing out the relative lack of computers on his trip to the Soviet Union.]
- Calculations Pinpoint Position Of the Moon Within a Few Feet New York Times (1857-Current file); Apr 14, 1965; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 2 [Report on the Eckert/Smith solution of the Lunar problem by Airy's method and the empirical confirmation of its largest correction. Also mentions the Hollow Moon problem.]

- LUNAR EQUATIONS CALLED IMPRECISE By WALTER SULLIVAN New York Times (1857-Current file); May 24, 1968; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 11 [The JPL find errors in Brown's theory as modified by Eckert.]
- I.B.M. Thomas J. Watson Jr. New York Times (1857-Current file); Oct 26, 1969; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. BR48 [A letter from Watson Jr. responds to the review of Think by Rodgers]
- Letter to the Editor 3 -- No Title H.T. RoweRidgewood, N. J. New York Times (1857-Current file); Oct 26, 1969; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. BR48 [Another letter responding to the review of Rodgers book]
- Think By JOHN BROOKS New York Times (1857-Current file); Oct 5, 1969; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. BR3 [The actual book review of Rodgers book that led to all the letters]
- Eckert Memorial Friday New York Times (1857-Current file); Oct 13, 1971; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 48 [A very short announcement of Eckert's memorial service; this is distinct >From his obituary.]
- Science: Luna 10 is Telling Much About the Moon By WALTER SULLIVAN New York Times (1857-Current file); Apr 17, 1966; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 213 [New information on the Moon from Russian probe. Eckert mentioned in connection with the Hollow Moon paradox]
- BAKHMETEFF JOINS COLUMBIA FACULTY New York Times 1857; May 17, 1931; ProQuest Historical Newspapers The New York Times (1851 - 2006) pg. 33 [Eckert makes assistant professor, it's tucked in right at the end. This is also the time during which Jan Schilt was hired to the astronomy department as an associate professor.]

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- New York Times Obituary, 25 Aug 1971.
- Machines: Switch, Table Printer, Aberdeen, CPC, SSEC, NORC.

Offsite Links...
How To Erase History: Of the sixteen links I put here in 2004, only one still worked in in 2019.

- Wallace John Eckert, biographical sketch by J.J. O'Connor and E.F. Robertson.
- Wallace J. Eckert Papers, Charles Babbage Institute, University of Minnesota.
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