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Allal n Tmeckudt d usiḍen n waman

آلة «ميشكودا» وقياس المياه

L'instrument Meškuda et la mesure de l'eau

The Meškuda instrument and the measurement of water

Abdelwahhab Boussekar - Université de Bejaia et Moustapha Tidjet Centre de Recherché en Langue et Culture Amazighes-Bejaia

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Tazwert

Awras, seg talliyin n teglest ney ahat seg talliyin n uzermezruy, d adrar yettwazedɣen, d adrar i ibedden yer tama n umdan s wayen yelhan d wayen n diri, aya ma nmuqqel yer ugama, tagnawt akked tyessa n trakalt-ines.

Amdan d mmi-s n ugama-s, ɣef wayen i yettwali Ē. Masqueray :

« Agama werjġin yesselfa-d timettiyin, maca d yiwen n uferdis agejdan yesean azal meqquer deg umgired-nsent ; ma yella seg tazwara mehsub nenker atekki-nnes deg usiley n tyermin s umata, tura yessefk lħal ad nerr azal i talɣiwin n wakal d tewtilin n tagnawt »¹

Ihi, amgired n ugama yesea assay d usrid deg umgired n tmettiyin acku amdan s umata, yeqqen srid yer ugama d twennaɗt-ines, aya yettbin-d mliħ deg tayulin n tudert-is yemgaraden ama deg tutlayit-is, tusska n yixxamen-is, tafellaħt-is, tigemmi-ines, amezruy-is, deg usemmi d usmagi n yidgan d temnaɗin i as-d-yezzin, atg.

Tirzi d unadi-nney deg temnaɗin yemgaraden n Wawras, yessken-aɣ-d ayen yezmer ad t-ig umdan : tudrin yuglen ɣef leryaf n yiyezran, d teqliein yettwaskan ɣef tqacucin n yiẓerwan, tuẓẓut yemgaraden gar tin n tniri d tin n udrar, iqdicen iwamanen iqburen n temnaɗin yesean aman d tid yečča uyurar, atg.

Iyzer n Cennawra, ney *Lyerrar* akken i as-ssawalen yimezday n temnaɗt-a (ahat imi deg tuget n useggas yezga yeqqur), yettazzal kan deg talliyin n ugeffur, d yiwen gar yiyezran yessenɣalen aman-is deg yiẓzer Amellal.

1. « La nature ne produit pas les sociétés, mais elle les favorise ou leur nuit, et si, dès le début, nous avons presque nié son influence quand il s'agissait de la formation des cités en général, maintenant au contraire nous devons tenir grand compte des formes de terrain et des agents atmosphériques » (Masqueray 1886, P. 145).

Drus maḍi n yiqdicen iwamanen iqburen i d-yezgan yef yigemmaḍen n yiḍzer n Cennawra ma yella nesserwes-iten yer wid d-yemmugen yef yigemmaḍen n yiḍzer Amellal. Anagar n sin n yigelmimen i yellan, yiwen deg temnaḍt n *Tkukt tanijit* wayeḍ deg uqewwar n *Cennawra* s timmad-is, i ibeēden azal 05 km yef umenzu, yerna ila yiwet n tadra akked yid-s, almend n Robert Claude Maurice, d amnekcām arumani ay ten-d-yeḡḡan²

Agelmim n Cennawra d amayud n talya, yettwaska s yidyayen d imeqqranen nezzeh, yesea azal n 11 n tmizwin i d-yessufuyen aman, ma deg telqayt yur-s snat n lmitrat. Ttuy ittattaf 03 n wagguren akken ad yeččar deg wakken yehraw nezzeh³

Send ad as-rnun yimezday n Cennawra deg leēli yella yesea: 75m deg teyzi, 31m deg tehri d 1,60m⁴ deg leēli (wali tawleft 01).

Am tuget n temnaḍin n Wawras i d-ibedden yef wariwen n tliwa, anagraw n useswi deg uyir n Cennawra yeqqen yer unagraw n yigelmamen, anda i beṭṭan tasmekta n waman d tuna ney d tiram. Tasmekta n tuna tezmer ad ttizid ma qwan waman akken dayen i tezmer ad tenqes deg talliyin n uyurar.

Maca, amgired n unagraw n useswi i d-nufa gar temnaḍt-a d temnaḍt n Tkukt tanijit, yerza tarrayt n usiḍen n wakud akked wallalen yettusemrasen deg-s.

Deg leqdic-a ad neereḍ ad d-neglem tarrayt n usiḍen n tesmekta n waman, sḍin yer-s ad tt-nesserwes d tarrayt yettusemrasen deg ugelmim n Tkukt Tanijit.

Aya yella-d s tarrayt timettekkitt. Nerza yer temnaḍt n Cennawra, yer wadeg ideg yella ugelmim, nemlal d kra n yimellaken H.M. (89 n yiseggasen) akked E.M. (73 n yiseggasen). Nessexdem tamawt tusridt, d tadiwennit d yimsulya s yisteqsiyen azgen-usriden, acku mi ara nesteqsi kra n umselyu, nettak-as tagnit akken ad d-yessenfali akken yebya, ad d-yales amek i ssiḍinen tasmekta n waman, d wamek i tella zik, melmi i beddlen tarrayt d wamek i d-tt-ḡḡan ass-a.

Mi d-neglem deg umagrad-a aseswi deg ugelmim n Cennawra, nessawed deg tazwara nessken-d tawuri n *tmeckudt* deg usiḍen n waman, tamert-a

2. « Ce bassin séculaire n'est pas unique dans la région. A cinq kilomètres au Nord-Est, au lieu dit Chennaoura, parmi d'autres vestiges de l'occupation romaine, il en existe un autre de la même origine mais bien plus important » (Robert, 1938, P. 70).

3. « De forme rectangulaire, en pierres de gros appareil, il compte onze bouches d'écoulement et deux mètres de profondeur. Avant, tant il est vaste, il fallait trois mois pour le remplir » (Robert, 1938 : 70).

4. « Aux environs de Chenaoura, un bassin d'irrigation d'une dimension exceptionnelle (75 m, 31 m, 1,60 m) est encore utilisé aujourd'hui » (Morizot, 1992 : 34).

tawamant tamensay i semmrassen zik, ass-a tejla imi uyalen ssemrasen tamert tatrart. Sakin nesserwes-itt yer tamert tafukant tamensayt i tessemras temnaɖt n Tkukt tanijit.

Send 1912, ɣef wayen i ɣen-d-ulsen yimsulɣa, anagraw n useswi n temnaɖt n Cennawra, ur yemgarad ara aṭas ɣef win n Tkukt tanijit. Maca, seg 1912 d aswen yeɖra-d fell-as ubeddel.

1. Anagraw n useswi deg temnaɖt n Cennawra

Anagraw n useswi deg temnaɖt-a izger-d ɣef snat n talliyin. Yella yiwen unagraw d aqbur ay sseqdacen lejdud-nney, yeɖra-d fell-as ubeddel ɣer leğwahi n 1912. Deg wayen i d-itteddun, ad nwali amek i yella unegraw-a deg snat n talliyin-a, yeeni amek i yella uqbel 1912 d wamek i yuɣal syin d afella?

1.1. Send 1912

Seg 1912 d aksar, anagraw n useswi deg temnaɖt n Cennawra, deg tazwara tiram llant bɗant ɣef sin n yigelmimen; 08 d 09 maca skud tqæaden tamurt, gezzmen *zinba* d *uzir* skud tnerayent tiram, almi wwɗent 28 n tiram, aya i d-yeglan s wugur n uyurar n yineggura-a, ɣef waya i asen-heddren (wehhben) iɖ d wass akken ad d-menneen lyella-nsen.

Ihi, anagraw n useswi deg tallit-a yella yennebɗa ɣef 07 n wunniɖen; unniɖ n 08, 09, 12, 16, 20, 24 d wunniɖ n 28. Tiram n 10 d 11 demmnent yer wunniɖ n 09, tiram n 13,14 d 15 demmnent yer tid n 16, atg. (wali tafelwit 01) ɣer wadda ideg d-nessegza s telqey akk annect-a.

Tiram bɗant ɣef yiɖ d wass; 04 n lerbae d iɖ, 05 n lerbae d ass, (Rrbee d tunet tunnigt deg usiɖen s tmeckudt, yesæa azal n 2 n timar d 40 n tseddadin). Tibɥirin i d-yezgan s ufel ugelmim ur tent-ittetɥef ara, tessent srid seg tala deg wass, ttunehsabent d tiram n wass acku deg yiɖ aman n tala terran-ten i ugelmim akken ad yeččar, ma d tid i d-yezgan ddaw ugelmim ittetɥef-itent, tessent seg waman yettuxezznen deg-s deg yiɖ, ttunehsabent d tiram n yiɖ. Maca asemres n waman yettili-d deg wass deg tafat merra-nsent, tibɥirin ur yetɥif ara ugelmim tessent seg tala, tid yetɥef ugelmim tessent seg ugelmim.

1.2. 1. Tiram n wass

Tiram n wass, seant deg tuget-nsent 05 n lerbae, azal n 13 n timar d 20 n tseddadin, rzant 4 n terfiqin temnawabent, snat d timenza, snat d tineggura, nnuba i d-yusin ad mbeddalent, timenza ad uyalent d tinggura, tineggura ad uyalent d timenza. Asemres n waman yettili-d seg 04h40 almi 18h00 srid seg uybalu. (wali tafelwit 02)

1.2. 2. Tiram n yid

Yal id, agelmim n Cennawra yettawi isem n temnaḍt i yerza useswi (wali azenziy 01), ilmend n umyezwer n tnubawin d uzref-nnes deg usemres n waman (wali tafelwit 03), yal tamnaḍt tesea 04 n lerbæ, azal n 10 n timar d 40 n tseddadin. Axezzen n waman deg ugelmim yettili-d seg 18h00 almi 04h40 ma d asemres n ugelmim yettili-d deg wass deg tafat.

Imellaken yesean amur ameqqran n wakal, d At Ḥaba d Wat Eebd Rreḥman, tadra-nsen seg temnaḍt n Yinuyisen. Asmi neqsen waman n tala, At Ḥaba senzen tamurt n Ubekku mebla aman akken ad smersen tuna-nnes, ad d-sean aman ugar.

1.2. Seg 1912 d asawen

Seg 1912 d asawen, yeḍra-d ubeddel deg tarrayt n beṭṭu n waman imi uyalen tezzin-d yef 12 n wussan. Ma d wid i ur yetṭif ara ugelmim qqimen yef wass akken llan, ur ten-iḥuz ara ubeddel. Seg tama nniḍen gran-d sin n yigelmimen i itteddun s tarrayt taqburt, wa n Temxaleft d wa n Rrken.

Timental i yeḡḡan ad d-yeḍru ubeddel-a yemgarad almend n wayen i ay-d-ulsen yimsulya-nney. Kra yeqqar belli tiṭ-nsen deg ugelmim-nni n Ubekku n At Ḥaba, byan ad sdakklen igelmimen, ad d-qqen akk yef 12 bac ad sxelḍen aman, ad asen-eawden beṭṭu, ad simzin tiram n At Ḥaba d Wat Eebd Rreḥman. Yef waya, mlalen-d akk yimeqqranen n tejmaet d terfiqin anagar At Ḥaba d Wat Eebd Rreḥman, ttuy-iten deg temnaḍt n Yinuyisen, anagar ixemmasen i d-yeqqimen ad lethun d wakal, maca ur sein ara awal-nsen deg tejmaet. Deg tagara, teffey-d tejmaet s yiwen n lkayed n beṭṭu d amaynut, yetteddu s yiwen n wunniḍ n bu 12. At Ḥaba d Wat Eebd Rreḥman ur elimen ara s ubeddel-a almi zrin 13 n yiseggasen. Deg useggas n 1925 yusa-d yiwen seg yimeqqranen n At Eebd Rreḥman, yufa-d akal-nnes yetṭef-it uyurar, mi inuda ad yefhem, nnan-as yixemmasen-is aman n zik ruḥen, beddlen beṭṭu n tiram deg 1912, maca d ayen ifut-it lḥal.

Ma d wiyaḍ qqaren belli neqsen waman deg tala, atas i iḥuz uyurar, ladya wid n wunniḍ n 28. Ssawḍen yimeqqranen n tejmaet yer yiwet n tifat ara ten-yessufyen seg uyurar, ad rren unniḍen ukk yef 12, unniḍen yellan ddaw n 12, (8 d 9) rnan-asen lensab s wazal ara awḍen 12, ma d wid yellan nnig n 12, (16, 20, 24 d 28) sneqsen-asen lensab s wazal ara awḍen 12, ma d wid n 12 yakan, qqimen akken llan ur asen-rnun ur asen-sneqsen (wali tafelwit 04).

2. *Asiden n tesmekta n waman*

Beṭṭu n waman almend n tesmekta yettemgarad seg temnaḍt yer tayedt, yal yiwet s wallal i tesseqdac i beṭṭu d usiden, deg temnaḍt i ay-yerzan, llan sseqdacen *tareṭṭa* uyalen yer *tmeckudt*.

Deg ugelmim n Cennawra, yef wayen i ayen-d-ulsen yimɣaren, llan teddun s tarrayt yettusemrasen deg ugelmim n Tkukt tanijit; sseqdacen ayen i wumi qqaren *Aqecquc*, *Tayrit* ney *Tareṭṭa*.

Allal-a, d asɣar yettwabḍa yef 04 n yimuren, yal amur yesɛa azal n 02 n leesur⁵ ney yesskan-ay-d tallit seg talliyin n wass; *Amedday*, *Bufernezzayt*, atg. S unamek-nniḍen, tikkelt semrasen-t d timert tafukant, tikkelt semrasen-t deg usiden n tesmekta n waman (wali tawleft 02, 03).

Maca, imi neqsen waman uyalen ḍefren anagraw n usiden s wallal n tmeckudt i tessemras temnaḍt n Sidi ʔuqba d temnaḍin n Zzab⁶Tisaetin titrarin ulac ney drus iyer wumi llant, yef wakka i smersen timert tawaman.

Yef wayen i d-yenna M. W. HILTON-SIMPSON: « *Icawiyen, llan ur xeddmn ara laman deg tsaetin titrarin, ur tent-xeddmn ara d allal i usiden n wakud n tiram i yesɛa yal amellak, acku yeshel wurar deg-sent. Yef wakka, semrasen anagraw n usiden n wakud d aqbur nezzeh.* »⁷

Mi ara sxedmen agelmim, ad d-mlalen wat wakal i yerza useswi, akken ad bḍan aman ilmend n umyizwer n tiram deg yila⁸ Asma ara d-mlalen yer ugelmim, itteddu-d yid-sen yiwen seg yiεeggalen n tejmaet n taddart ney win i fernen d awkil yef ugelmim; yettawi-d yid-s abidun ney ssḍel n waman, ad d-yernu lmaɛun d amectuḥ yettwaxdem s nnḥas, yesɛa albuḅ ney taneqqirt d tamezɣzyant qqaren-as tameckudt⁹ deg temnaḍin-nniḍen tameccult (wali tawleft 04). Imezday n Cennawra semrasen-tt amzun d tamert n waman i usiden n yimuren n tiram.

5. Leaser : d tasmekta n waman yettefyen seg ugelmim deg wazal n 02 n timar.

6.« zāb, pl. zībān (Berber or Ar., Tunisia, Algeria): an oasis; e.g. in the Saharan Atlas of Algeria, the fertile Zab or Ziban palm district composed of four groups of oases (NITunisia, NIALgeria); Zab is also the name of two affluents of the Tigris, the Great and Little Zab, or Zab-ala, 'Upper Zab', and Zab-asfal, 'Lower Zab', though there seems to be no linguistic connection»Fitzwilliam-Hall, S. (2012), P126.

7.« the Shawia therefore mistrust the employment of modern watches, whose rate can be dishonestly adjusted, as a means for measuring the time for which each owner is entitled to the flow of the canal. Instead, they make use of a system of measuring time which must be of very great antiquity. » M. W. Hilton-Simpson, 1921, P44

8. Ila = tasyert

9.« meškuda (Zab): the bowl that serves as a water-clock called tanast by Moroccan Berbers is called kharruba at Figuig, meškuda in the oasis of Zab, and qadus at Ghadamès (Laoust7, p. 414)»(Fitzwilliam-Hall, 2012, P94).

2.1. Allal n tmeckudt

Tmeckudt d tagdurt tamectuḥt s nnḥas, tettusexdam d tamert n waman, ssawalen-as *tanest* yer yimaziyen n Lmerruk, *xerruba* deg temnaḍt n Figig, *meckuda* deg uyir n Zzab, *qadus* deg Yādames (ẓer tawleft 05).

Deg lawan ara d-serrḥen i waman seg ugelmim yer terga yettawin yer tebhirt tamenzut i yerza useswi, yessrusu ueeggal n tejmaet *tameckudt* deg ssḍel-nni n waman s lemḥadra. Seg tama-nniḍen, yessrusu amḍan n yedḡayen yer rrif-is yettqabalen azal i yesēa umellak-nni d imuren; deg umedyā: yesēa xemsa n tmeckadin, ad yessers xemsa n yidyayen; yal tikkelt ad teyli tmeckudt deg waman, ad yessenqes adyay, s wakka ur ittettu ur yettawi lḥeqq n yiwen (wali tawleft 06).

2.2. Tawuri n temeckudt d usefrek n yimuren n waman

Deg unagraw-a n tmeckudt, mi ara serrḥen i waman ad lhun, din din ad yessers ueggal n tejmaet tameckudt deg sḍel n waman, syin akkin, yal 05 n tseddadin teyli tmeckudt deg waman, d tayyi i yettuneḥsaben d tayunt taddayt i wumi semman **nnṣib**. (wali tafelwit 05)

- 01 tameckut = 01 n udyay = nnṣib

3. Amgired gar tiram n timert tawamant aked tfukant

3.1. Tiram n timert tafukant (tamnaḍt n Tkukt tanijit)

Asiḍen s timert tafukant yettili-d s wallal n treṭṭa, ad tt-sbedden deg wadeg iqublen iṭṭij, syin ad ssunḡen talliyin n wass deg lqaea, llant 04 n talliyin; Amedday¹⁰, Bu fernezzayt, Luguf, Bu tmeddit. Yal tallit tseēa azal n snat n timmar s wakud, sin n Leaser s tesmekta n waman (wali tafelwit 06).

- Leaser: Leaser d tunet tunnigt n beṭṭu ilmen-d n tesmekta, yesēa azal n 02 n timar.
- Taxerrubt: Taxerrubt¹¹ d tunet taddayt n beṭṭu n waman ilmend n tesmekta, tettwaḥsab d amur wis 16 seg leaser, tettatṭaf azal n 7,5 n tseddadin. Maca, azal n tesmekta-a yettemgarad seg temnaḍt yer tayeḍt, d ayen ara nwali yer sdat.

3.2. Tiram n timert tawamant (tamnaḍt n Cennawra)

Ma yella d asiḍen s timert tawamant, yettili-d s wallal n tmeckudt, i d-yettawin azal n dderj (05 n tseddadin) akken ad teyli deg waman, i ayen-d-yettaken ayen i wumi qqaren Nnṣib.

10. **amedday** «inférieur» (te.) adna. (Motylinski, 1898.)

11.« **kharouba** (Mzab): “The parts of water are named *kharouba*; the *kharouba* is equal to one sixteenth of the flow of a well which does not dry up; these last wells are called *ouarouara*” »Fitzwilliam-Hall, S. (2012), P. 93.

- Rrbee : Rrbee d tunet tunnigt n beṭṭu ilmend n tesmekta, yesea azal n 32 n lensab.
- Nnşib : D tayunt taddayt n usiḍen, yesea azal n 05 n tseddadin, maca deg temnaḍin-nniden yesea 15 n tseddadin (At Freḥ).

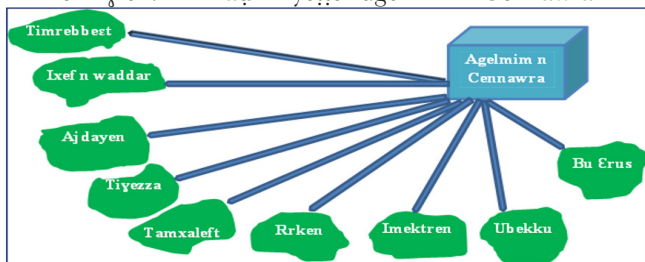
Tafelwit 07 d asemgired gar tiram n yal timert.

Tawleft 01. Agelmim n Cennawra



Aybalu: tawleft s yer yimyura n umagrad

Azenziy 01. Timnaḍin i yettef ugelmim n Cennawra



Aybalu : azenziy s yer yimyura n umagrad

Tawleft 02. asiden n tesmekta n waman s wallal n trettā

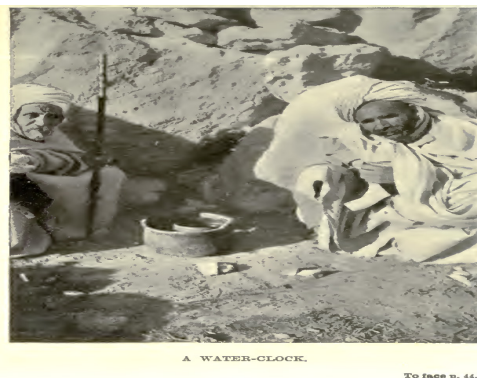


Aybalu: tawleft s yer yimyura n umagrad.

Tawleft 03. Timert tafukant



Tawleft 04. Tawleft n sin n yimḡaren, skanayen-d tarrayt n usiḍen n wakud s *Tmeckudt* deg temnaḍt n At Freḥ deg useggas n 1920.



Aybalu: HILTON-SIMPSON, Among the Hillfolk of Algeria , Journeys among the Shawia of the Aures mountains, 1921, 44.

Tawleft 05. Tameckudt ney Tameccult



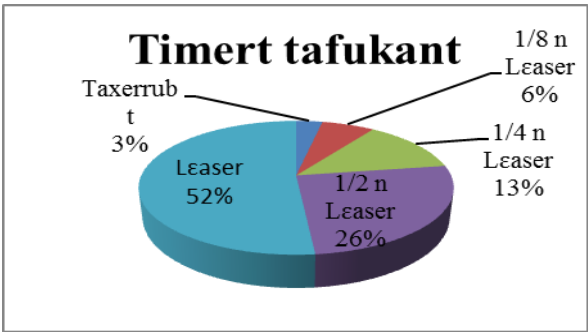
Aybalu : Tawleft seg ugraw n Facbook Beni ferah ain zaatout, <https://colibris.link/foE0c>

Tawleft 06. Tawleft tettbeyyin-d tarrayt n useqdec n tmeckut s yur uëeggal i tefren tejmaet.



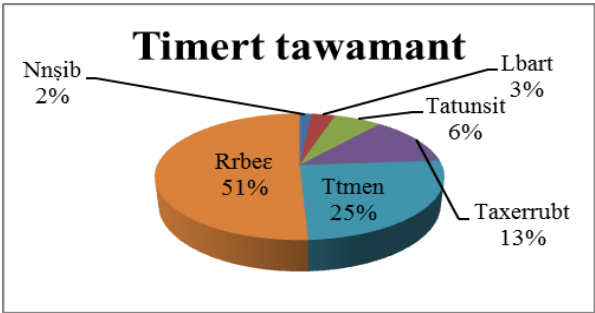
Aybalu: Tawleft yessuney-itt mass M.L.Boussekar s usalel n uselkim d MediBang Paint pro. Version 2022.

Tawleft 07. Timert tafukant



Aybalu: s yer yimyura n umagrad, s usalel n Microsoft Word 2010

Tawleft 08. Timert tawamant



Aybalu: s yer yimyura n umagrad, s usalel n Microsoft Word 2010

Tafelwit 01. Tafelwit n tikli n wunniḍen

Unniḍ	8				9				12				16				20				24				28
Tikli n wunniḍen	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28				
	8								8								8								
	1	9									9										9				
	2	1	10										10												
	3	2	1	11											11										
	4	3	2	1	12												12								
	5	4	3	2	1	13													13						
	6	5	4	3	2	1	14														14				
	7	6	5	4	3	2	1	15																	
	8	7	6	5	4	3	2	1	16																
	1	8	7	6	5	4	3	2	1	17															
	2	9	8	7	6	5	4	3	2	1	18														
	3	1	9	8	7	6	5	4	3	2	1	19													
	4	2	10	9	8	7	6	5	4	3	2	1	20												
	5	3	1	10	9	8	7	6	5	4	3	2	1	21											
	6	4	2	11	10	9	8	7	6	5	4	3	2	1	22										
	7	5	3	1	11	10	9	8	7	6	5	4	3	2	1	23									
	8	6	4	2	12	11	10	9	8	7	6	5	4	3	2	1	24								
	1	7	5	3	1	12	11	10	9	8	7	6	5	4	3	2	1	25							
	2	8	6	4	2	13	12	11	10	9	8	7	6	5	4	3	2	1	26						
	3	9	7	5	3	1	13	12	11	10	9	8	7	6	5	4	3	2	1	27					
	4	1	8	6	4	2	14	13	12	11	10	9	8	7	6	5	4	3	2	1	28				

Aybalu: tafelwit s yer yimyura n umagrad, s usalel n Microsoft Word 2010

Tafelwit 02. Tafelwit n tiram n wass

Uṭṭun n terfiqt	Tirfiqin i yerza nnub n wass (srid seg uybalu)	
1	At Zekri	Sesswayen d imenza
2	At Seɖdun	
3	At Salem	Sesswayen d ineggura
4	At Eebd Rrehman	

Aybalu: tafelwit s yer yimyura n umagrad, s usalel n Microsoft Word 2010

Tafelwit 03. Tafelwit n umyizwer n temnaḍin ilmend n uzref n usemres n waman

Uṭṭun n ugelmam ilmend n umsizwer	Isem n ugelmam
	Timrebbeet
	Ixef n waddar
	Ajdayen
	Tiyezza
	Tamxaleft
	Rrken
	Imektren
	Ubekku
	Bu Erus

Aybalu: tafelwit s yer yimyura n umagrad, s usalel n Microsoft Word 2010
Tafelwit 04. Abeddel n wunniḍen yef 12

Unniḍ	Azal n lensab ±			Unniḍ	Azal n lensab ±		
8	8	+ 4	12	20	20	- 8	12
9	9	+ 3			21	- 9	
	10	+2			22	- 10	
	11	+ 1			23	- 11	
12	12	+ 0	12	24	24	- 12	12
	13	- 1			25	- 13	
	14	- 2			26	- 14	
	15	- 3			27	- 15	
16	16	- 4	12	28	28	- 16	12
	17	- 5					
	18	- 6					
	19	- 7					

Aybalu: tafelwit s yer yimyura n umagrad, s usalel n Microsoft Word 2010
Tafelwit 05. Tafelwit-a tesskan-d timeckadin d wayen i tent-id-yettqabalen d akud.

Azal n tmuckudt	Azal s wakud	Isem-nnes	Tabadut
01 n tameckudt	05 n tseddadin	Nnşib	D tayunt taddayt n usiḍen, yesëa azal n 05 n tseddadin, maca deg temnaḍin-nniden, am At Freḥ, yesëa 15 n tseddadin.
02 n tmeckadin	10 n tseddadin	Lbart	D azal n sin n lenşab
04 n tmeckadin	20 n tseddadin	Tatunsit	D azal n 04 n lensab
08 n tmeckadin	40 n tseddadin	Taxerrubt	D azgen n ttmen ney d azal n 08 n lenşab
16 n tmeckadin	01 timer d 20 n tseddadin	Ttmen	D azgen n Rrbee ney d azal n 16 n lensab
32 n tmeckadin	02 timar 40 n tseddadin	Rrbee	D tayunt tunnigt n usiḍen, yesëa azal n 32 n lensab

Aybalu: tafelwit s yer yimyura n umagrad, s usalel n Microsoft Word 2010

Tafelwit 06. Tiram n timert tafukant

Tallit	Akud	Tasmekta n waman
Amedday	08 :00 – 10 :00	02 n leesur
Bu fernezzayt	10 :00 – 12 :00	02 n leesur
Luquf	12 :00 – 14 :00	02 n leesur
Bu tmeddit	14 :00 – 16 :00	02 n leesur

Aybalu: tafelwit s yer yimyura n umagrad, s usalel n Microsoft Word 2010

Tafelwit 07. Tafelwit-a d asemgired gar tiram n yal timert.

Timert tafukant (Tkukt tanijit)		Timert tawamant (Cennawra)	
Azal n temsekta	Azal-nnes s wakud	Azal n temsekta	Azal-nnes s wakud
Leaser	2 n timar	Rrbee	2 n timar 40 n tseddadin
$\frac{1}{2}$ n leaser	1 n timert	Ttmen	Timert d 20 n tseddadin
$\frac{1}{4}$ n leaser	30 n tesdadin	Taxerrubt	40 n tesdadin
$\frac{1}{8}$ n leaser	15 n tesdadin	Tatunsit	20 n tesdadin
$\frac{1}{16}$ n leaser	7,5 n tesdadin	Lbart	10 n tesdadin
(taxerrubt)		Nnsib	5 n tesdadin

Aybalu: tafelwit s yer yimyura n umagrad, s usalel n Microsoft Word 2010

Tagrayt

Mi d-neglem inagrawen-a n useswi deg temnaḍt n Cennawra d Tkukt tanijit, banen-ay-d sin n yinagrawen yeqqnen yer tgemmi tawamant n Wawras; anagraw n tmuckudt (timert tawamant) akked d unagraw n trettta (timert tafukant). Sin n yinagrawen-a mgaraden deg wallal yettusemrasen ama deg usiḍen n wakud ama deg usiḍen n tesmekta n waman.

Tigemmi-a tawamant, ass-a tettwali amihi n nnger d jellu deg temnaḍin-a n Wawras, yas ulama neered ad neḍfer tisigar i d-yugran deg wannar ama s tdiwennit d yimsulya, ama s usalel n warret iqburen yuran, maca abeddel n yinagrawen-a ney jellu-nsen yettili-d almennd n tegnatin d tmental yemgaraden.

Timental n umutti¹² seg unagraw n useswi yer wayeḍ, yettili-d ama s ubeddel n wallal n usefrek d usiḍen n tesmekta n waman (timert tatrart), ama s usihrew n uzeṭṭa awaman. Aqaeed ney aeawed n usiley n yinegrawen-a n useswi, yettili-d yal tikkelt ur yetteddu ara deg-s kra n unagraw d tegnit, ney ahat yuyal d aqbur yeḡḡa-t lḥal.

12. Amutti = abeddel

Ihi, yettbeddil kra n unagraw awaman simal izerri wakud akken ad iwulem tignatin, yal tikkelt yettuqaead almend n yiswiren itikniken, inmetteyyen, tiwetlin tiwamanin d yinezwa, akken dayen i yezmer ad ibeddel almend n wannaw n yiḃbula, anerni n usemres n waman, annaw n tuẓẓuyt, atg.

Yal anagraw awaman yeddren, yettbeddil yal tikkelt almend n yisugam yellan, akken ad yeddu d tagnit, ad iwulem tarrayt n usemres n waman. Maca, igmuḍen n ubeddel n yiknan-a d useggem-nsen, igellu-d s wugur d ameqqran yerzan azemz n tadra-nsen ney melmi i d-banen, yef waya, ilaq ad nnadi yef umezruy anmetti d umezruy atikniki n unagraw-a, acku abeddel n yiknan d umhaz-nsen, yettuneḥsab d aferdis agejdan n umezruy n unagraw awaman.

5. Umuy n yidlisen d yiḃbula

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Agzul

Seg wazermeszruy ar ass-a, amdan yezga yettnay yef tmeddurt-is. Yessnulfuy-d inagrawen ara yerr d asalel akken ad yerked. Gar yisnulfuyen i d-yufa nezmer ad d-nebder tafellaht i yellan d adda n tlatit n tyermiwin talsanin timenza, tesseghed assayen gar yimdanen. Akken ad yesseḥbiber yef wassay-a anmetti, yessawed yer kra n tmusniwin d tfukas tidamsanin akked tenmettiyin, i d-yettbinen deg tegruma n yisudaf d yinagrawen n useswi, ladya deg wayen yerzan beṭtu, asefrek d usiden n waman, yettuyalen srid yef uzday anmetti i yen-d-yefkan amedya yef usefrek asmenzag n waman.

Amagrad-a d aglam n unagraw n useswi deg ugelmim n Cennawra, yeqqen leqdic-a yer tezrawin n tesnalesmeslit tamaziyt d yidles agemman n waman.

Iswi n tezwat-a d askan n umanzay n twuri n unagraw n tmeckudt deg usiden n waman, anagraw-a yejlan imi ass-a d tamert tatrart ay yettusemrasen.

Awalen isura

Asiden n waman, tameckudt, idles agemman n waman, asefrek n waman, tasnalesmeslist tamaziyt, agelmim n Cennawra, agelmim n Tkukt tanijit, Awras.

Résumé

Depuis la Préhistoire jusqu'à nos jours, l'être humain a lutté pour assurer sa survie, notamment après la découverte de l'agriculture qui a marqué la naissance des premières sociétés. Afin de garantir la continuité du lien social, ces sociétés ont mis en place plusieurs dispositifs — techniques et économiques — fondés sur des principes précis, en particulier pour la répartition, l'exploitation et la mesure de l'eau. Ces méthodes reflètent une forte cohésion sociale et constituent un exemple de gestion durable des ressources hydriques.

Le présent article rend compte d'une étude de terrain menée à Magen Shanawra. L'enquête s'inscrit dans le champ des études anthropolinguistiques amazighes et s'intéresse à la culture du patrimoine hydraulique. Nous mettons en lumière le fonctionnement du système Mashkoda de mesure de l'eau, aujourd'hui disparu et remplacé par l'horloge moderne.

Mots-clés

mesure de l'eau ; Mashkoda ; culture du patrimoine hydraulique ; gestion de l'eau ; anthropologie amazighe ; Magen Shanawra ; Magen Tkout ; Aurès.

Abstract

Human had struggled since prehistoric times to the present days to survive, especially after discovering agriculture which was the birth of the first human societies, in order to ensure that the continuity of this social bond, it included several, technical, economical based on precise foundation, especially in dividing, exploitation and measuring water this methods reflected the social cohesion which gave an example of sustainable water management. This article describes a field study of Magen Shanawra, the research is about the Amazigh Anthropolinguistic studies and the culture of aquatic heritage, we highlighted the work of the Mashkoda system for measuring water, this system that disappeared , after that it was replaced by the modern clock.

Keywords

water measurement, Mashkoda, water heritage culture, water management, Amazigh anthropology, Magen Shanawra, Magen Tkout, Aures.

ملخص

لقد ناضل الإنسان منذ عصور ما قبل التاريخ إلى يومنا هذا من أجل البقاء، من خلال إكتشافه لعدة أنظمة ساعدته على الإستقرار، من بين هذه الأنظمة، الزراعة. هاته الأخيرة التي مهدت لميلاد أولى المجتمعات الإنسانية. هي التي ارسى أولى الروابط بين الناس. وليضمن استمرارية هذه الرابطة الإجتماعية، خلص إلى عدة مهارات تقنية واقتصادية واجتماعية، متجسدة في نظام سقي مبني على أسس دقيقة لا سيما طرق تقسيم وإستغلال وقياس المياه والتي تعكس التماسك الإجتماعي الذي أعطى مثالا حول التسيير المستدام للماء.

يتناول هذا المقال وصفا لدراسة ميدانية لماجن شناورة. و يندرج هذا البحث ضمن الدراسات الأنثروبولوجية الأمازيغية وثقافة التراث المائي. و الذي نبرز فيه مبدأ عمل نظام مشكودة لقياس الماء، هذا النظام الذي إختفى اليوم بعد أن تم إستبداله بالساعة الحديثة.

الكلمات الرئيسية

قياس المياه، مشكودة، ثقافة التراث المائي، إدارة المياه، الأنثروبولوجية الأمازيغية، ماجن شناورة، ماجن تكوت الأوراس.