

Factors affecting the production of hydrogen by Geewane :

1. The irradiated parental medium of Geewane must be diluted to 4 times its volume of water to observe H_2 formation. No hydrogen production in undiluted parental medium.
2. A certain period of exposure of the parental Geewane mixture is essential.
3. The formation of Geewane's hydrogen decreases with increase in the period of exposure beyond the optimum exposure.
4. The production of hydrogen by Geewane decreases with increasing period of ~~exposure~~ storage.
5. The Geewane stored in sealed bags are more active than in open bags and those stored in the parental medium itself after exposure are most stable.
6. Geewane + water shows production of H_2 on exposure to light but the production stops after a few days.
7. Geewane + mineral solution gives H_2 for a longer period. (2/18) ^{of mineral solution and distilled water} proportion is best.
8. Geewane + environmental medium (2/18) is still better.
9. Geewane + CH_2O gives more H_2 but the mixture becomes blue after a few days and production of H_2 stops. (2/18) is better.
10. Geewane + DAHP (2/18) gives H_2 for a long time. The shape ^{is} ~~is~~ destroyed soon but H_2 formation continues.
11. While exposing the parental mixture of Geewane its ~~first~~ ^{atant} supernatant first becomes blue. With increasing exposure this supernatant ^{is} becomes colourless. When it is colourless, the particles formed in it can produce hydrogen under suitable conditions.
12. Geewane + water with suitable addition which is producing hydrogen under certain conditions as in presence of excess of mineral solution or formaldehyde becomes blue after a few days of exposure. When it becomes blue the production of H_2 stops.
13. No H_2 production is observed by a mixture of ~~Geewane~~ Geewane + water or with suitable addition (JW) if vacuum is created over this mixture. On exposure slowly the vacuum decreases, a gas is produced which is completely absorbed in Pyragallo + NaOH indicating it is O_2 .

14. If no vacuum is created over JW but there is no air over the mixture the production of gas is very slow.
15. The production of gas increases as the volume of air over JW increases upto a certain limit after that if the volume of air is further increased there is absorption of gas than production.
16. Recycling the air over JW produces more gas.
17. If there is O_2 trap in recycling experiment more H_2 is produced.
18. When with a certain JW mixture production of gas stops after a few days of recycling experiment with oxygen trap, a little of fresh air is introduced in the system, the production of H_2 again starts.
19. If in an experiment JW is opened after a few days of H_2 production in recycling experiments with O_2 trap, when the steady state of gas production is reached and the experiments are set again with the same mixture after taking out the mixture (JW) for analysis, the gas production again starts.
 (This is to let the overhead space of the mixture to ^{renew} ~~be~~ renewed with fresh portion of air)
20. In recycle experiments with O_2 trap maximum production of gas is during first $1\frac{1}{2}$ hr. exposure. Often there is another smaller peak after 2 hr. of exposure.
21. During the tail part of the daily exposure often there is absorption of gas in cyclic experiment with O_2 trap, (REOT)
22. A closed JW mixture taken in Warburg's apparatus on exposure to sunlight with pyrogallol + NaOH in side lobe produces a gas, more in presence of Pyrogallol + NaOH in side lobe and less in its absence. Whereas parental medium of J on exposure goes on absorbing air, more if no pyrogallol + NaOH is present in the side lobe and less if pyrogallol NaOH is present in the side lobe.
- ~~23. JW mixtures produces gas in cyclic experiment even if no pyrogallol NaOH trap is in the cycle.~~
24. JW mixture shows fixation of CO_2 and N_2 more in the absence of oxygen ^{and} less in the presence of O_2 .
25. N_2 fixation is observed even in juvenile parental medium which itself has lots of ammoniacal nitrogen.
26. The production of gas is by the Teenanu and not by the environmental medium of JW.

This is to let in fresh air in the overhead space)

Factors affecting the production of hydrogen by Jeewanu

- 1- The irradiated parental medium of jeewanu must be diluted to 4 times its volume of water to observe H_2 formation. No hydrogen production in undiluted parental medium.
- 2- A certain period of exposure of the parental jeewanu mixture is essential.
- 3- The formation of ~~jeewanu's~~ ^{by jeewanu} hydrogen decreases with increase in the period of exposure beyond the optimum exposure.
- 4- The production of hydrogen by jeewanu decreases with increasing period of storage.
- 5- The jeewanu stored in sealed bags are more active than in open bags and those stored in the parental medium itself after exposure are most stable.
6. Jeewanu + water shows production of H_2 on exposure to light but the production stops after a few days.
7. Jeewanu + Mineral solution gives H_2 for a longer period; (2/18) proportion of mineral solution and distilled water is best.
8. Jeewanu + environmental medium (2/18) is still better.
9. Jeewanu + CH_2O gives more H_2 but the mixture becomes blue after a few days and production of H_2 stops; (2/18) is better.
10. Jeewanu + DAHP (2/18) gives H_2 for a long time. The shape is ^(diammonium hydrogen phosphate) destroyed soon but H_2 formation continues.
11. While exposing the parental mixture of jeewanu its supernatant first becomes blue. With increasing exposures this supernatant becomes colourless. When it is colourless, the particles formed in it can produce hydrogen under suitable conditions.
12. Jeewanu ~~as above~~ + water, with suitable addition which is ^{as in presence of excess of mineral solution} producing hydrogen under certain conditions solution or formaldehyde, ^{it} becomes blue after a few days of exposure, ^{when} it becomes

blue the production of H_2 stops.

A little

(JW)

13. ~~the~~ H_2 production is observed by a mixture of jeewanu + water for with suitable addition (JW) if vacuum is created over the mixture. On exposure slowly the vacuum decreases of a gas is produced which is ~~absorbed~~ ^{partially} absorbed in hydrogallol - NaOH indicating ~~it~~ that a part is ~~of~~ H_2 .
14. If no vacuum is created over JW but there is no air over the mixture the production of gas is very slow (Mixture filled upto the top).
15. Production of gas increases as the volume of air over JW increases upto a certain limit, after that if the volume of air is further increased there is absorption of gas than production.
16. Recycling the air over JW produces more gas.
17. If there is O_2 trap in recycling experiment more H_2 is produced.
18. When with a certain J.W. mixture production of gas stops after a few days of recycling experiment with oxygen trap, a little of fresh air is introduced in the system, the production of H_2 again starts.
19. If in an experiment JW is opened after a few days of H_2 production in recycling experiment with O_2 trap when the steady state of gas production is reached and the experiments are set again with the same mixture, the gas production again starts. This is to let in fresh air in the over head space.
20. In cyclic experiments with O_2 trap maximum production of gas is during first $1\frac{1}{2}$ hour exposure. Often there is another smaller peak ^{upto} ~~after~~ 2 hour of exposure.
A

21. During the tail part of the daily exposure often there is absorption of gas in recyclic experiment with O_2 trap, (RECT).
22. A close JW mixture taken in Warburg's ^{flask} ~~apparatus~~ on exposure to sunlight with pyragallol and NaOH in side lobe produces a gas, more in presence of pyragallol + NaOH ^{the} inside lobe and less in ~~the~~ ^{their} absence. Whereas parental medium of J exposure goes on absorbing air, ^{it is} more if no pyragallol + NaOH is present in the side lobe and less if pyragallol + NaOH is present in the side lobe.
23. JW mixture shows fixation of CO_2 and N_2 , more in the absence of oxygen and less in the presence of O_2 .
24. N_2 fixation is observed even in jeewanu parental medium ~~with~~ itself has lots of ammoniacal nitrogen.
25. The production of gas is by the jeewanu and not by the environmental medium of JW.
26. After the JW mixture is exposed to sunlight for about an hour. The evolution of gas bubbles stops. If the mixture is cooled, thoroughly shaken and exposed again, a small second crop of gas bubbles is again obtained. After this evolution stops, a third and then even a fourth crop with diminishing intensity is obtained but each time the number

of bubbles decreases fast and evolution is for a still shorter period. Afterwards no cooling and shaking gives out any gas on exposure to sunlight and the mixture becomes inert for that day. Next day after the mixture is kept in the darkness of the night it is ready for fresh evolution of gas on shaking, irradiation.

27. It is often observed that a new JW mixture shows lesser evolution of gas ^{during} the first one or two days of exposure though the particles are prepared after due exposure, and afterwards the evolution of gas starts normally.

28. If JW has DAMP the mixture remains colourless for longer time and evolution of gas bubbles also continues for a longer period.

26 After the JW mixture is exposed to sunlight for about ^{an hour} ~~1 1/2~~ hr. The evolution of gas bubbles stops. If the mixture is cooled, thoroughly shaken and exposed again, a second crop of ^{small} gas bubbles is again obtained. After this evolution stops, a third and then even a fourth crop with diminishing intensity is obtained but ~~after~~ each time the number of bubbles decreases fast and evolution is for a still ~~longer~~ shorter period. Afterwards no cooling and shaking gives out any gas on exposure to sunlight and the mixture becomes inert for that day. Next day after the mixture has ~~been~~ stood in is kept in the darkness of the night it is ready for fresh evolution of gas on shaking & irradiation.

27 ~~28~~ It is often observed that a new JW mixture does not show ^{thus} evolution of gas ⁱⁿ the first one or two days of exposure though the particles are prepared after due exposure, ~~and~~ and afterwards the evolution of gas starts normally.

29 So far there is evolution of gas from JW mixture, the mixture is usually colorless. And the evolution of gas slows down as the mixture becomes blue no matter it is due to presence of ^{some} mineral solution or CaO in the mixture.

30 If J.W. has DAPP the mixture remains colorless for a day ~~the~~ ~~2~~ ~~of~~ evolution of gas bubbles also continues for a longer period.

Factors affecting the production of hydrogen by Jeewanu

- 1- The irradiated parental medium of jeewanu must be diluted to 4 times its volume of water to observe H_2 formation. No Hydrogen production in undiluted parental medium.
- 2- A certain period of exposure of the parental jeewanu mixture is essential.
- 3- The formation of ~~jeewanu's~~ ^{by jeewanu} hydrogen decreases with increase in the period of exposure beyond the optimum exposure.
- 4- The production of hydrogen by jeewanu decreases with increasing period of storage.
- 5- The jeewanu stored in sealed bags are more active than in open bags and those stored in the parental medium itself after exposure are most stable.
6. Jeewanu + water shows production of H_2 on exposure to light but the production stops after a few days.
7. Jeewanu + Mineral solution gives H_2 for a longer period; (2/18) proportion of mineral solution and distilled water is best.
8. Jeewanu + environmental medium (2/18) is still better.
9. Jeewanu + CH_2O gives more H_2 but the mixture becomes blue after a few few days and production of H_2 stops (2/18) is better.
10. Jeewanu + ^(diammonium hydrogen phosphate) DAHP (2/18) gives H_2 for a long time. The shape is destroyed soon but H_2 formation continues.
11. While exposing the parental mixture of jeewanu its supernatant first st becomes blue. With increasing exposures this supernatant becomes colourless. When it is colourless, the particles formed in it can produce hydrogen under suitable conditions.
12. Jeewanu ~~jeewanu~~ + water, with suitable addition which is ^{as in presence of excess of mineral solution} producing hydrogen under certain conditions solution or formaldehyde, ~~it~~ becomes blue after a few days of exposure. When it becomes

blue the production of H_2 stops.

13. ^{A little} ~~no~~ H_2 production is observed by a mixture of jeewanu - water ^(JW) or with suitable addition ~~(JW)~~ if vacuum is created over the mixture. On exposure slowly the vacuum decreases of a gas is produced which is ^{partially} ~~completely~~ absorbed in hydrogallol - NaOH indicating ~~it~~ that a is ~~no~~ H_2
14. If no vacuum is created over JW but there is no air over the mixture the production of gas is very slow (^{if mixture is filled upto the top.}).
15. Production of gas increases as the volume of air over JW increases upto a certain limit, after that if the volume of air is further increased there is absorption of gas than production.
16. Recycling the air over JW produces more gas.
17. If there is O_2 trap in recycling experiment more H_2 is produced.
18. When with a certain J.W. mixture production of gas stops after a few days of a recycling experiment with oxygen trap, a little of fresh air is introduced in the system, the production of H_2 again starts.
19. If in an experiment JW is opened after a few days of H_2 production in recycling experiment with O_2 trap when the steady state of gas production is reached, and the experiments are set again with the same mixture, the gas production again starts. This is to let in fresh air in the over head space.
20. In recycle experiments with O_2 trap maximum production of gas is during first $1\frac{1}{2}$ hour exposure, ^{often} there is another smaller peak ^{upto} ~~after~~ 2 hour of exposure.

21. During the tail part of the daily exposure often there is absorption of gas in recyclic experiment with O_2 trap, (REOT).
22. A close JW mixture taken in Warburg's ^{flask} apparatus on exposure to sunlight with pyragallol and NaOH in side lobe produces a gas, more in presence of pyragallol + NaOH ^{the} inside lobe and less in ^{their} absence. Whereas parental medium of J exposure goes on absorbing air, ^{it is} more if no pyragallol + NaOH is present in the side lobe and less if pyragallol + NaOH is present in the side lobe.
23. JW mixture shows fixation of CO_2 and N_2 more in the absence of oxygen and less in the presence of O_2 .
24. N_2 fixation is observed even in jeewanu parental medium ^{which} ~~with~~ itself has lots of ammoniacal nitrogen.
25. The production of gas is by the jeewanu and not by the environmental medium of JW.
26. After the JW mixture is exposed to sunlight for about an hour. The evolution of gas bubbles stops. If the mixture is cooled, thoroughly shaken and exposed again, a small second crop of gas bubbles is again obtained. After this evolution stops, a third and then even a fourth crop with diminishing intensity is obtained but each time the number

of bubbles decreases fast and evolution is for a still shorter period. Afterwards no cooling and shaking gives out any gas on exposure to sunlight and the mixture becomes inert for that day. Next day after the mixture is kept in the darkness of the night it is ready for fresh evolution of gas on shaking, irradiation.

27. It is often observed that a new JW mixture shows lesser evolution of gas ^{during} the first one or two days of exposure though the particles are prepared after due exposure, and afterwards the evolution of gas starts normally.

28. If JW has DAHP the mixture remains colourless for longer time and evolution of gas bubbles also continues for a longer period.